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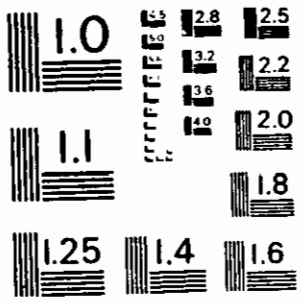

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INVENTORY

REPORT R-123

# AIR-TO-AIR ENCOUNTERS IN SOUTHEAST ASIA (U)

Volume I ACCOUNT OF F-4 AND F-8 EVENTS PRIOR TO 1 MARCH 1967 (U)

[redacted]

John S. Attinclio, Project Leader

October 1967

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INSTITUTE FOR DEFENSE ANALYSES
SYSTEMS EVALUATION DIVISION

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WEAPONS SYSTEMS EVALUATION GROUP
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OFFICE OF THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
WEAPONS SYSTEMS EVALUATION GROUP
WASHINGTON, D.C. 20305

20 October 1967

MEMORANDUM FOR HOLDERS OF VOLUME I, WSEG REPORT 116

SUBJECT: RED BARON Report

1. The Weapons Systems Evaluation Group, in conjunction with the Systems Analysis Division of the Institute for Defense Analyses, has published Volume I of a series of four volumes on "Air-to-Air Encounters in Southeast Asia." Because of the voluminous data collected and the adaptability of the data to analysis from a variety of viewpoints, all of the data collected will be published. Volume I is a compilation of available data on F-4 and F-8 air-to-air encounters between January 1965 and 1 March 1967.

2. Volume II will be a compilation of available data on F-105, RF-4C, RF-8, RF-101, A-1 and A-4 air-to-air encounters between January 1965 and 1 March 1967. Publication date is expected to be March 1968.

3. Volume III will be a compilation of available data on all air-to-air encounters between 1 March 1967 and 1 June 1967, and is expected to be ready for publication in March 1968.

4. Volume IV will be the report of analyses, recommendations, and conclusions derived from the viewpoint of future research and development requirements. This volume will be published in December 1967.

5. The user organizations are encouraged to utilize these data for analyses from the viewpoint most appropriate to their requirements. WSEG would be most interested in receiving copies of any analyses developed. In addition, comments or information concerning the value and method of utilization of these documents would be appreciated.

FOR THE DIRECTOR:

Jack E. McMahan
JACK E. McMAHAN
Colonel, USA
Executive Secretary

-a-

[redacted]

REPORT R-123-A-1-1

# AIR-TO-AIR ENCOUNTERS IN SOUTHEAST ASIA

Volume I.

## ACCOUNT OF F-4 AND F-8 EVENTS PRIOR TO 1 MARCH 1967 (U)

October 1967

This report has been prepared by the Systems Evaluation Division of the Institute for Defense Analyses in response to the Weapons Systems Evaluation Group Task Order SD-DAHC15 67 C 0012-T-104A dated 6 December 1966.

In the work under this Task Order, the Institute has been assisted by military personnel assigned by WSEG.

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## FOREWORD

This report is a product of the Weapons System Evaluation Division of the Institute for Defense Analyses in conjunction with the Weapons Systems Evaluation Group in response to WSEG Task Order SD-35-T-104, as modified in a memorandum for Director, WSED, from Director, WSEG, dated 4 August 1966. The memorandum resulted from a request by the Deputy Director, Tactical Warfare Programs, ODDR&E. The Task was coordinated with the Joint Chiefs of Staff, (J-3 and J-5).

At its inception (October 1966) the RED BARON Project team consisted of:

John S. Attinello, Project Leader
Douglas N. Beatty, Ass't Project Leader
John W. Walden, Cdr., USN, Senior Navy
Malcom J. Agnew, LCol., USAF, Senior Air Force

Phillip J. Conley, Jr., LCol., USAF, and Thomas J. Hughes, Capt., USN, also worked part time on the project from its inception, primarily acting as an interview-debrief team. LCol. Agnew and Cdr. Walden were the other team.

In November John Rubino, Charles Tiffin, William Eason, Capt., USN, and Charles R. Shaw, Col., USA, joined the project. In December Robert J. Lynch, Jr., Col., USMC, joined, and Philip Brooks, Col., USAF, became Senior Air Force representative. Richard Stewart, Capt., USN, was assigned in February 1967. These later military arrivals shared their time with other WSEG projects.

While developing interview methods and techniques, the project was valuably assisted by two psychologists from IDA/RESD, W. Sinaiko and W. Richard Kite.

For interviews in the U.S., teams consisting of military and civilian project members supplemented the two teams designated initially to collect data in the combat theater. In the SEA theater, two Navy-Air Force teams (Conley-Hughes and Agnew-Walden) conducted the interviews. LCol. Agnew and Cdr. Walden also interviewed SEA returnees at European bases.

As interviews were conducted, it became apparent that much more data were being collected than had been initially estimated from official reports. Therefore, a rapid increase in qualified personnel was needed to collate the data for publication.

Roy G. Anderson, Rear Admiral, USN, Senior Navy Member of WSEG, through appropriate channels, obtained the services of four Navy fighter pilots for a period of two weeks. The assistance to the RED BARON Project of the following Navy pilots is acknowledged:

Dennis E. Becker, Lt., USN
Benjamin Cloud, LCdr., USN
Samuel C. Flynn, LCdr., USN
William D. Kiper, LCdr., USN

A. J. Beck, Major General, USAF, Senior Air Force Member of WSEG, with the cooperation of Headquarters, USAF, obtained the services of nine tactical fighter pilots for a thirty-day period. The assistance to the RED BARON Project of the following Air Force pilots is acknowledged:

Thomas H. Curtis, Maj., USAF
Leslie C. Long, Capt., USAF
Robert S. Maxwell, Capt., USAF
R. P. Moore, Maj., USAF
Sam P. Morgan, Jr., Capt., USAF
Michael G. Pennacchio, Capt., USAF
William P. Robinson, Maj., USAF
Ronald W. Scott, Capt., USAF
Ronald J. Ward, Maj., USAF

The project also acknowledges the assistance of the following individuals who assisted the interview teams in the data collection phase:

J. J. Berkow, Col., USAF, ARPA R&D Field Unit, Bangkok, Thailand
R. Hiller, Assistant for Operations Analysis, CINCPACAF Staff
E. Kapos, OEG Representative, CINCPACFLT Staff
G. Koyiades, COMNAVOCEANO
R. Linsenmeyer, Chief, Scientific Research Advisory Group, CINCPAC Staff
J. V. Patterson, Col., USAF, ARPA R&D Field Unit, Saigon, Vietnam
B. Powers, OEG Representative, CINCPACFLT Staff
H. L. Wood, Col., USAF, Headquarters, 7th AF
D. G. Lynch, LCol, USMC, OPNAV

The project acknowledges the assistance of Dennis O. Medlock and his assistant Marie Zoellner and the many members of the IDA support staff who transcribed the interview tapes. The assistance of the SED Publications Department is also acknowledged, particularly that of Walter J. Hamilton and his graphics artists, who were responsible for the special illustrations and who coordinated work with Computer Graphics, The Boeing Company, Seattle.

The commands, whose cooperation made it possible to reach the participants of air-to-air engagements are also acknowledged.

COMMANDS

Commander-in-Chief, Pacific

Commander-in-Chief, U.S. Pacific Fleet

Commander-in-Chief, Pacific Air Forces

Commander, Seventh Air Force, Tan Son Nhut AB, Vietnam

Commander, Task Force Seventy-Seven

Deputy Commander, 7/13th Air Forces, Udorn Airfield, Thailand

Commander, 8th Tactical Fighter Wing (TFW), Ubon Airfield, Thailand

Commander, 366th TFW, Danang AB, Vietnam

Commander, 355th TFW, Takhli AB, Thailand

Commander, 388th TFW, Korat AB, Thailand

Commander, 432nd Tactical Reconnaissance Wing, Udorn Airfield, Thailand

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Commanding Officer, USS BON HOMME RICHARD (CVA-31)

Commanding Officer, USS ENTERPRISE (CVA(N)-65)

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Director, ARPA R&D Field Unit, Saigon, Vietnam

Director, ARPA R&D Field Unit, Bangkok, Thailand

Commander, 41st Air Division, Yakota AB, Japan

Commander-in-Chief, U.S. Air Forces, Europe

Commander, Seventeenth Air Force, Ramstein AB, Germany

Commander, 81st TFW RAF, Bentwaters, England

Commander, 36th TFW, Bitburg AB, Germany

Commander, 50th TFW, Hahn AB, Germany

Commander, Naval Air Forces, U.S. Pacific Fleet

Commander, Fleet Air, Miramar, California

Commander, Tactical Fighter Weapons Center, Nellis AFB, Nevada

Commander, 15th TFW, McDill AFB, Florida

Commander, 831st Air Division (TAC), George AFB, California

Commander, 835th Air Division, McConnell AFB, Kansas

Commander, 3525th PTW, Williams AFB, Arizona

Commander, 4531st TFW, Homestead AFB, Florida

Commander, 4453rd Combat Crew Training Wing, Davis-Monthan AFB, Arizona

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# I. INTRODUCTION

At the request of the Director of Defense Research and Engineering, the Weapons Systems Evaluation Group has undertaken a study of air-to-air encounters in Southeast Asia. The project code name is RED BARON. Data that have been collected on approximately 320 such encounters through 1 June 1967 will be analyzed primarily to assist in the selection of suitable research and development programs for future high-performance fighter aircraft. A secondary purpose of the study is to provide data for use by the military services and of the scientific community. This volume is a partial documentation for the secondary purpose.

## A. DATA SOURCES

Data contained in this report were taken from two sources: the official reporting media and personal interviews with participants. Past WSEG experience in collecting combat data[1,2] has shown that the official reporting media, which are designed primarily for military operational and statistical needs, are inadequate for many analytic purposes. The project groups conducting these earlier studies found that personal interviews with participants were necessary for R&D analyses. In Project RED BARON, interviews were considered the primary data source, supplemented, where available, by official reports.

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[1]WSEG Staff Study 134, Adequacy of Data from Southeast Asia Combat Air Operations for Research and Development Analyses of Aircraft Losses and Damages (U), SECRET, February 1967.

[2]WSEG Report 101, Requirements of Defense R&D Agencies for Data from Combat Air Operations in Southeast Asia, SECRET, August 1966.

For purposes of this study, encounters that were investigated were defined to include the following types:

- Sighting of enemy aircraft (either visually or by radar),
- Either U.S. or enemy aircraft initiating hostile or evasive maneuvers,
- Either U.S. or enemy aircraft expending ordnance, and
- Loss or damage in combat of either U.S. or enemy aircraft.

During the data collection phase, an effort was made to assure the exhaustiveness of the information contained in this report. However, it was established that certain aspects of air-to-air combat could not be included. For example, during the conduct of CAP and escort missions, frequently it was necessary for the fighter force to intercept radar contacts which proved to be friendly aircraft. Also, during the course of missions, aircraft sighted were initially identified and called as enemy, only to be recognized later as friendly. These occurrances were not reported and therefore are not documented in this volume.

While numerous sightings of enemy aircraft are contained in this volume, it is believed that there are many other sightings which were not documented (and therefore not included). This is partially substantiated by the numerous instances which were mentioned during interviews for which no date or location was recalled and which were not correlated with reported sightings.

The first type was considered in detail only if the sighting was of R&D interest, e.g., if a U.S. aircraft made no attempt to engage enemy aircraft because of inferior or malfunctioning U.S. equipment. Where no R&D implications were indicated, sightings were noted to record the information collected for potential use for other analyses.

Since "test type" instrumentation does not exist on most combat aircraft, the validity and quality of data are limited to the tolerances of human senses and recollections (aided where possible by official and personal records, notes, tapes, etc.). A detailed account of the precautions taken to insure the validity and quality of data gathered in such interviews is presented in Section II.

Originally the data sample consisted of 248 encounters through 1 March 1967. However, from this date through 22 May, 65 more encounters were identified (not including "sightings"). In the 23-month period from first encounter to 1 March, 47 "confirmed plus probable" MIG kills were reported. In the six-week period in April-May 1967, the 65 engagements resulted in 37 "confirmed plus probable" MIG kills.[1]

## B. DATA PRESENTATION

Though the analyses to be conducted in the RED BARON study were to be limited to exposing problems for R&D considerations, interest in the basic data was expressed in many areas of the military and scientific communities. To satisfy these needs the data have been formalized and will be published in several volumes as follows:

| | U.S. Aircraft Involved | No. of Encounters to 1 March 1967 |
|---|---|---|
| Volume I | F-4B | 13 |
| | F-4C | 55 |
| | F-8 | 8 |
| | F-104 | 1 |
| | U-2 | 1 |
| | Total Events Reported Volume I - - - - - | 78 |

[1]Concurrently, there was a shift in targeting policy (NVN airfields were bombed by U.S. aircraft from 23 April) and the introduction of new equipment (e.g., SUU-16/A guns installed in some F-4C aircraft). Because of these factors the additional engagements were included in the RED BARON data base.

| | U.S. Aircraft Involved | No. of Encounters to 1 March 1967 |
|---|---|---|
| Volume II | F-105 | 151 |
| | RF-4C, RF-8, RF-101 | 13 |
| | Misc. (Incl. A-1, A-4) | 6 |

Total Events Reported Volume II - - - - 170

Total Events Volumes I and II - - - - - 248

Volume III - Encounters from 1 Mar 1967 through 1 Jun 1967.

For ease of study and analysis, the available information has been summarized under the following headings:

- Primary Mission and Tactical Situation
- Mission Route
- Aircraft Configurations
- Flight Conditions Prior to Encounter
- Initial Detection
- Action Initiated
- Situation Development
- Ordnance
- Equipment Problems
- Aircrew Comments
- Data Sources

Following the above, an edited narrative is presented which integrates all the information sources pertaining to the designated air-to-air engagement. Wherever an air-to-air engagement proved to be of sufficient complexity that a perspective drawing aided in its understanding, such a representation was developed.

Although every precaution has been taken to depict the engagements accurately, the artists' representations serve only as guides to the reader in following through the complex series of situations and should not be interpreted as the precise flight paths of the aircraft involved.

Terrain features have been added to the drawings principally to give perspective and to present an appreciation of ground features that existed in the general locale. Tracks relative to ground features should not be taken literally except where the narrative makes specific reference thereto.

The perspective representations of the air-to-air engagements were the result of cooperative efforts of the SED Graphics Department and the Boeing Company, Computer Graphics Division. These drawings were developed with the aid of a specialized analog computer (Illustromat 1100), by employing maps and overlays developed during interviews. Artists then added perspective views of aircraft in approximate attitudes and positions indicated in the Event Summary charts. Although the flight paths are to the same scale as the terrain, the aircraft shown are greatly enlarged for illustrative purposes.

The names and official call signs of the participants have been replaced by standardized nomenclature to give anonymity to the interviewees. This precaution was followed throughout to encourage frank and honest answers to all questions posed by the interview teams.

## II. DATA DEFINITION AND COLLECTION

### A. BACKGROUND - GOALS AND LIMITATIONS

The broad goal formulated for the data definition/collection effort was to obtain sufficient data to enable reconstruction of the various air-to-air encounters in appropriate detail with maximum accuracy and completeness ("reconstruction" being the key word).

The scope and degree of detail was not simply defined. It revolved around the needs of the R&D community and the limitations of the available data. The primary limitation was human ability to sense and recall. There were no recording devices in U.S. aircraft, and, therefore, with few exceptions (such as taped communications and photographs), all data had to be extracted from the minds of participants and observers.

There was also the question of the adequacy, for event reconstruction, of data reported from Southeast Asia through the standard reporting systems. WSEG experience[1] showed that while these systems offered certain worthwhile information for R&D purposes, they were far from adequate for the purposes of this specific study.

It was decided that WSEG would interview participants in air-to-air encounters as the principal source of data.

---

[1] WSEG Report 101, Requirements of Defense R&D Agencies for Data from Combat Air Operations in Southeast Asia (U), July 1966, (SECRET). WSEG Staff Study 134, Adequacy of Data from Southeast Asia Combat Air Operations for Research and Development Analyses of Aircraft Loss and Damage (U), February 1967, (SECRET).

## B. APPROACH

The data collection program involved several interrelated areas of operations. They were:

1. Identification of air-to-air encounters and the participants.
2. Development of more specific data needs and resolution of needs with limitations.
3. Collection of appropriate documentary information on Southeast Asia air-to-air encounters.
4. Development of optimum interview techniques.
5. Location of and arrangements for interviewing participants.

These operations were not necessarily sequential and were continued throughout the data collection phase.

Items 1 and 3 initially were interrelated, i.e., the means of identifying encounters was through search of existing documentation -- various formally and informally maintained "box scores" and other files.

Early information was gained from the Office of the Chief of Naval Operations and the USAF air staff. Additional basic documentation came from the USAF Tactical Fighter Weapons Center, CINCPACFLT, CINCPACAF, COMNAVAIRPAC, and the Commander, 7th Air Force. It was quickly determined that the various "box scores" did not agree. This was attributed to a variance in definition of what constituted an air-to-air encounter/engagement and possibly administrative or communications failures within the commands.

Additionally, early in the study, the CNO and the Chief of Staff, USAF, were advised of WSEG Project RED BARON and requested to provide reference to appropriate documentation. Numerous replies were received from various offices within the Services.

Gradually, sources of documented information were increased until they included: standard reporting system (OPREPs, COACT, Navy 3480 Reports, Guided Missile Performance Reports); various reports of associated studies made by OEG representatives and other analytical groups; letters from pilots who could not be interviewed; various records kept at all levels of command; gun-camera films; tapes of communications made by pilots; and miscellaneous message traffic among military commands.

Identification of participants was a particular problem since there is no existing mechanism for providing this information. With a relatively few exceptions, names of participants were not included in reports. However, names were gradually acquired through informal communications with USN and USAF pilots and, as the interview program proceeded, other persons were identified by the interviewees.

Some specific items of data desired were defined by visits to various Service R&D and training organizations and through meetings with representatives of various industrial organizations concerned with components of U.S. fighter weapons systems. (These visits and conferences also provided information on the technical and operational aspects of the weapons systems concerned.) Eventually, a categorized list of data specifically desired from each encounter was formulated.

Having established the data requirements, an interview program was desired which would:

- Allow the greatest number of interviews, while
- Maximizing the quality, depth, and scope of information obtained from each interview.

There were uncertainties about the interview program, however. They involved such considerations as the human ability to recall stressful incidents and the effect of elapsed time between the event and attempt to recount it. Large numbers

of people throughout the world had to be interviewed, great quantities of interview data had to be reduced, and time and manpower had to be considered.

With the assistance of IDA psychologists, H. W. Sinaiko and W. R. Kite, basic interview concepts were delineated. These concepts stressed unhurried informality, anonymity of the interviewee, a chronological approach to the entire flight in question (not just the air-to-air encounter period of it), and much use of visual aids -- maps, sketches, airplane models -- to reconstruct events.

A systematic program was developed to interview a maximum number of participants in the combat theater and throughout CONUS and Europe. There was little chance to control the elapsed time between events and interview. As a result, the elapsed time varied from days to more than one year.

Efficiency of operation was approached in various ways. Several levels of encounter were defined according to their complexity and intensity,[1] and the basic interview procedure was somewhat expanded or abbreviated according to the level of encounter and the knowledge of the interviewee. Data formats were devised which attempted to facilitate the recording (and subsequent reduction) of information while stimulating the memory of the interviewee.

A total of ten persons were trained as interviewers. Where it was possible to communicate with a participant but not practical or possible to interview him, he was contacted by mail.

While there was the desire to interview a maximum number of pilots, it was superseded by a desire to maximize coverage over the largest number of encounters. Consequently, where a

[1] Sighting only (visual or radar); either side taking hostile or evasive action; expenditure of ordnance by either side; loss or damage by either side.

choice had to be made as to whom to interview, breadth of coverage was the first consideration.

At the start, various test interviews were conducted, their results evaluated, and improvements made before a large scale program was undertaken. Minor changes in procedure were made throughout the program.

## C. DESCRIPTION OF INTERVIEW PROCEDURE

In spite of the small changes that evolved and flexibility included to accommodate each situation, the basic interview procedure remained largely constant after the early test cases.

Ideally, the interviewee was given advance notice and a general idea of what would be discussed. The interview team consisted of two persons, one a military pilot with a significant amount of flying experience and the second person a military officer or civilian. The team would meet with one crewman at a time in a closed room, with minimum distraction, and with what was intended to be more than ample time allotted for the meeting. The team attempted to create an air of relaxed informality.

The interviewee was given an explanation of the study, how it came about, what it hoped to accomplish, and what his role was. It was emphasized that his name would not appear in print and that, in general, attempts would be made to preserve the anonymity of the persons interviewed. This was done to encourage frank and honest answers. The complete interview procedure was explained in detail.

Next, the pilot was asked to give an uninterrupted narrative of the encounter in question. He was asked to start from planning for the mission and discuss all aspects through the flight's return to base. He was first given examples of the kind of detail desired. Early in the project it became standard for the interviewers to use a tape recorder for the

narrative phase. This, of course, depended upon the interviewee's consent and he was always free to go back and erase anything he wished from the tape. He was assured that the tape was only for the use of the interviewers in gaining complete, accurate information from the meeting and its use was limited to the project.

Next, depending on the intensity and complexity of the encounter, a sketch of the action was made. Again, the sketch covered a greater part of the mission than just the air-to-air encounter, dealing with ingress and egress as well. The technique was to put a transparent paper overlay on a large scale map and trace the paths, in plan view, of the various aircraft known to have been present (as they were believed to be) relative to known geographical points. The third dimension to the picture was introduced by means of a keyed time-sequence vs. altitude plot at the top of the overlay.

With regard to time, early in the study it became clear that the air-to-air combatant rarely had any reasonable concept of the time duration of events or phases of the combat. He could, however, recall well the sequence of events. This caused the injecting of time-sequences into the interview process. The procedure was for the interviewer to "stop the action" at a point where something significant was occurring and try to elicit a detailed account of the scene at that instant -- the location and altitude of each participant; status of the interviewee's aircraft in the way of speed, g's, fuel state, avionics modes, etc.; action by the individual and his reasons therefor; communications which took place; enemy actions; etc.

After such a stop the description would continue until the next significant event occurred at which point the action would be stopped again. These stops correspond with the "T" (or "Time") marks in events and pictures. While one team member

worked with the pilot in making the sketch, the other kept notes on a specially designed note pad.

Upon completion of this step-by-step microscopic phase, the interviewers consulted their checklist on data items and asked specific questions about points which had not come out.

Finally, the interviewee was encouraged to comment on the whole range of considerations which might be of interest to the study -- comments derived from his experience in this specific encounter as well as from his overall experience.

The duration of an interview was from minutes to several hours, depending on the significance and complexity of the encounter and the knowledge of the interviewee.

## D. GENERAL COMMENTS ON DATA

WSEG identified 248 air-to-air encounters that occurred prior to 1 March 1967. Participants in 164 of these encounters were interviewed, with a total of 331 interviews conducted.[1] In addition, 37 written accounts of engagements were received. In general, priority was given to the more complex encounters; events for which no interviews were conducted were usually a sighting only, with no R&D significance.

The study group found that human ability to recall the details of incidents stressful to them is sometimes quite remarkable. With regard to the validity of recall, various comparisons were made between OPREP reports of the encounter and interviews and between interviews of various participants in the same encounter. There was generally good agreement. Where significant discrepancies appeared, they could usually be traced to the confusion of a fast moving, complex situation

[1] If an individual was interviewed in connection with two or more different encounters, this would be considered as two or more interviews.

rather than memory failure or some psychological phenomena. (Discrepancies between various accounts of the same event did cause some difficulty in the final reconstruction process. In almost all cases, discrepancies were resolved through repeated study of the data, use of logical deductions, and/or reinterview.)

Intuitively, it might appear that the best information would be obtained by minimizing the time lapse between encounter and interview. However, there are opinions and illustrations which counter this. The thought cannot be proved or disproved at this time. As noted earlier, elapsed time between encounter and interview ran from a period of days to more than a year. Dates of events and interviews have been included in the published data.

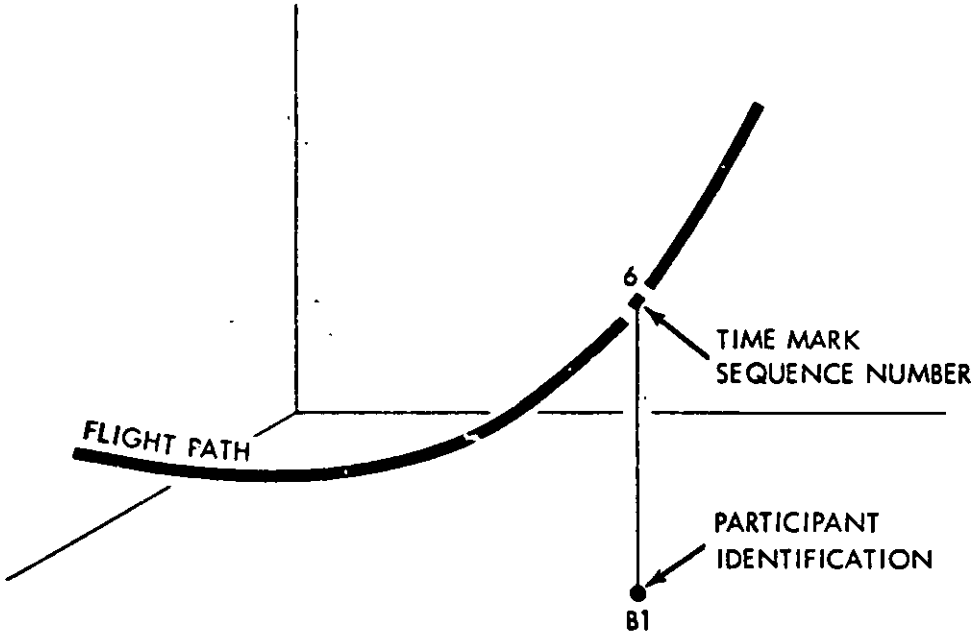
The interview techniques, in general, were highly regarded by interviewees for effectiveness in stimulating accurate, detailed recall. In some cases, through the procedures used, interviewees were able to correct and clarify their conceptions of events.

## III. EVENT RECONSTRUCTIONS

The account of each event is presented in at least two basic parts: (1) An outline which gives an abbreviated presentation of the highlights of the event, and (2) A narrative of the encounter.

All of the events contained in this Volume are summarized in Table 1. A Glossary of Terms was developed to aid in the interpretation of events and is included at the end of this report. The glossary also contains descriptions and illustrations of the more common aircraft maneuvers.

In addition, whenever an air-to-air engagement proved to be of sufficient complexity that a perspective drawing aided in its understanding, such a representation was developed. The perspective drawings were keyed by an Event Summary Chart which describes the actions of friendly aircraft (BLUE 1, 2, etc.), and enemy aircraft, as well as known communication information, at significant points in the event. As explained in Section II, these are identified by "time marks" ($T_0$, $T_1$, $T_2$, etc.), and are instants in time when significant points arose and are not intervals of seconds or minutes of clock time. In the perspective sketch, a vertical line representing altitude appears on the flight path at each of these "time marks" with the time mark sequence number printed at the top and the participant to which it referred printed at the bottom (e.g., B2, M3, etc.). The keyed flight paths presented in the sketches were color coded such that the paths of all friendly aircraft were shown in blue and those of enemy aircraft, in red.




It is recognized that precise flight paths could not be reconstructed since the participating airplanes did not carry instrumentation for recording of position. Thus, while every effort was made to depict the engagements as accurately as possible, it must be remembered that artists' representations serve only as guides to the reader in following the complex series of situations and should not be interpreted as the precise flight paths of the aircraft involved.

Terrain features have been added to the drawings principally to give perspective and to present an appreciation of the ground features that existed in the general locale. Sometimes these features were referenced during interviews to assist the pilot to recall details of the event, but it was rare that exact features played a significant part in the encounter even though most encounters took place at low altitude. Tracks relative to ground features should not be taken literally except where the narrative makes specific reference thereto.

Table 1. LIST OF EVENTS

| Event | Date/Time | Aircraft Involved No./Type U.S. | Aircraft Involved No./Type Enemy | Results Lost/Damaged U.S. | Results Lost/Damaged Enemy |
|---|---|---|---|---|---|
| I-1 | 3 Apr'65/1110H | 4 F-8E | 3 MIG-17 | 0/1 | 0/0 |
| I-2 | 9 Apr'65/0840H | 4 F-4B | 4 MIG-17 | 1/0 | 1 Prob/0 |
| I-3 | 31 May'65/1505H | 2 F-4C | 8 Poss MIG | 0/0 | 0/0 |
| I-4 | 4 Jun'65/0712H | 2 F-4B | 4 MIG-17 | 0/0 | 0/0 |
| I-5 | 17 Jun'65/1030H | 2 F-4B | 4 MIG-17 | 0/0 | 2/0 |
| I-6 | 10 Jul'65/1700H | 4 F-4C | 2 MIG-17 | 0/0 | 2/0 |
| I-7 | 11 Jul'65/1520H | 1 F-4C | 2 Unid. | Sighting | |
| I-8 | 5 Oct'65/1040H | 4 F-4C | 5 MIG-17 | 0/0 | 0/0 |
| I-9 | 6 Oct'65/1040H | 2 F-4B | 3 MIG-17 | 0/0 | 1 Prob/0 |
| I-10 | 8 Oct'65/1530H | 4 F-4C | 2 Unid. | Sighting | |
| I-11 | 1 Nov'65/1030H | 4 F-4C | 4 Unid. | Sighting | |
| I-12 | 23 Dec'65/0730H | 2 F-4C | 2 MIG? | Sighting | |
| I-13 | 9 Jan'66/0925H | F-8E | Unkn. | Radar | |
| I-14 | 22 Jan'66/1925H | 2 F-4C | 1 Unid. | Sighting | |
| I-15 | 3 Feb'66/2100H | 4 F-4B | Unknowns | 0/0 | 0/0 |
| I-16 | 3 Feb'66/2100H | 1 F-4B | 1 MIG-17 | 0/0 | 0/0(deleted) |
| I-17 | 6 Feb'66/----- | 1 U-2 | 1 MIG-21 | Sighting | |
| I-18 | 4 Mar'66/1703H | {2 F-4C<br>{4 F-4C | {3 MIG-17<br>{3 MIG-17 | {0/0<br>{Sighting | 0/0 |
| I-19 | 10 Mar'66/1025H | 4 F-4C | 1 YAK-25 | Sighting | |
| I-20 | 5 Apr'66/0915H | 2 F-8E | 1 Unid. | Sighting | |
| I-21 | 21 Apr'66/1232H | 2 F-4C | Unknown | Radar | |
| I-22 | 23 Apr'66/1615H | 2 F-4C | 1 MIG-21 | 0/0 | 1 Prob/0 |
| I-23 | 23 Apr'66/1421H | 4 F-4C | 4 MIG-17 | 0/0 | 2/0 |
| I-24 | 25 Apr'66/1137H | 2 F-4C | 2 MIG-21 | 0/0 | 0/0 |
| I-25 | 25 Apr'66/mid-afternoon | 4 F-4C | 2 MIG-21 | 0/0 | 0/0 |
| I-26 | 26 Apr'66/1520H | 2 F-4C | 3 MIG-21 | 0/0 | 1/0 |
| I-27 | 26 Apr'66/1425H | 4 F-4C | 1 MIG-21<br>4 MIG-17 } | 0/1* | 0/0 |
| I-28 | 29 Apr'66/mid-afternoon | 4 F-4C | 4 MIG-17 | 0/0 | 2/0 |
| I-29 | 30 Apr'66/0900H | 2 F-4C | 4 MIG-17 | 0/0 | 1/0 |
| I-30 | 8 May'66/1515H | 4 F-4C | 3 Unid. | Sighting | |
| I-31 | 10 May'66/1810H | 4 F-4C | 3 MIG-17 | 0/0 | 0/0 |
| I-32 | 12 May'66/1622H | 3 F-4C | 4 MIG-17D | 0/0 | 0/0 |
| I-33 | 30 May'66/1750H | 2 F-4C | 4 MIG-17 | Sighting | |
| I-34 | 12 Jun'66/1446H | {2 F-8E<br>{2 F-8C | 4 MIG-17 | 0/0 | 1+1 Prob/0 |
| I-35 | 14 Jun'66/0040H | 2 F-4B | 2 Colt | 0/0 | 1 Prob/0 |

*Damaged by AAA.

| Event | Date/Time | Aircraft Involved No./Type | | Results Lost/Damaged | |
|---|---|---|---|---|---|
| | | U.S. | Enemy | U.S. | Enemy |
| I-36 | 21 Jun'66/1535H | 4 F-8E | 4 MIG-17 | 1/0 | 2/0 |
| I-37 | 13 Jul'66/1102H | 4 F-4B | 6 MIG-17 | 0/0 | 1/0 |
| I-38 | 14 Jul'66/1251H | 3 F-8E | 3 MIG-17 | 1/0 | 0/1 |
| I-39 | 14 Jul'66/1200H | 4 F-4C | 2-3 MIG-21 | 0/0 | 2/0 |
| I-40 | 20 Jul'66/1550H | 3 F-4C | 1 MIG-? | Sighting | |
| I-41 | 7 Aug'66/0910H | 1 F-104C | 1 MIG-21 | Sighting | |
| I-42 | Aug-Sep'66/1430H | 3 F-4C | 1 MIG-? | Sighting | |
| I-43 | 5 Sep'66/1645H | 2 F-8E | 2 MIG-17 | 1/1 | 0/0 |
| I-44 | 14 Sep'66/1655H | 4 F-4C | 1 MIG-21 | 0/0 | 0/0 |
| I-45 | 16 Sep'66/1020H | 3 F-4C | 4 MIG-17 | 1Prob*/0 | 1/0 |
| I-46 | 20 Sep'66/0920H | 3 F-4C | 2 MIG-17 | 1/0 | 0/0 |
| I-47 | 21 Sep'66/1121H | 2 F-4C | 2 MIG-21C | 0/0 | 0/0 |
| I-48 | 23 Sep'66/0800H | 2 F-4C | 4 MIG-17 | Sighting | |
| I-49 | 27 Sep'66/1600H | 4 F-4C | 2 MIG-17 | Sighting | |
| I-50 | ---Sep'66/----- | 2 F-4C | 3 MIG-? | Sighting | |
| I-51 | 1 Oct'66/0814H | 1 F-4B | 1 MIG-? | 0/0 | 0/0 |
| I-52 | 5 Oct'66/0748H | 2 F-4C | Poss MIG | 1 Prob/0 | 0/0 |
| I-53 | 9 Oct'66/0830H | 2 F-4B | 2 MIG-? | 1/0** | 0/0 |
| I-54 | 9 Oct'66/0845H | 4 F-8E | 2 MIG-21 | 0/0 | 1/0 |
| I-55 | ---Oct'66/----- | 3 F-4C | Unknown | Sighting | |
| I-56 | 2 Nov'66/1700H | 3 F-4C | 1 MIG-21 | Sighting | |
| I-57 | 3 Nov'66/1541H | 3 F-4C | 2 MIG-21D | 0/0 | 0/0 |
| I-58 | 4 Nov'66/1548H | 4 F-4C | 1 MIG-17 | Sighting | |
| I-59 | 4 Nov'66/1556H | 3 F-4C | 1 MIG-? | Sighting | |
| I-60 | 5 Nov'66/1630H | 4 F-4C | 2 MIG-21D | 0/0 | 2/0 |
| I-61 | 5 Nov'66/----- | 1 F-4B | Unknown | Two radar contacts | |
| I-62 | 21 Nov'66/Late morn | F-4B | MIG | Radar | |
| I-63 | 4 Dec'66/1665H | 4 F-4C | 2 Unid. | Sighting | |
| I-64 | 5 Dec'66/1105H | 4 F-4C | 1 MIG-? | Sighting | |
| I-65 | 30 Dec'66/1620H | 2 F-4C | 3 MIG-17 | 0/0 | 0/0 |
| I-66 | 20 Dec'66/0207H | 2 F-4B | 2 Colt ? | 0/0 | 1/0 |
| I-67 | 30 Dec'66/1610H | 4 F-4C | 1 MIG-21? | 0/0 | 0/0 |
| I-68 | 2 Jan'67/1500H | 4 F-4C | 5-7 MIG-21 | 0/0 | 3/0 |
| | 2 Jan'67/1510H | 4 F-4C | 5 MIG-21 | 0/0 | 1/0 |
| | 2 Jan'67/1515H | 4 F-4C | ? MIG-21 | 0/0 | 3/0 |
| I-69 | 3 Jan'67/1550H | 4 F-4C | MIGs | Sighting | |
| I-70 | 5 Jan'67/1201H | 4 F-4C | 2 MIG-21 | 0/0 | 0/0 |
| I-71 | 6 Jan'67/1030H | 2 F-4C | 4 MIG-21C | 0/0 | 2/0 |
| I-72 | 6 Jan'67/0920H | 3 F-4C | 2 MIG-? | 0/0 | 0/0 |
| I-73 | 16 Jan'67/1545H | 4 F-4C | 3 MIG-21 | Sighting | |
| I-74 | 17 Jan'67/0807H | 4 F-4C | 2 MIG-17 | 0/0 | 0/0 |
| I-75 | 21 Jan'67/0855H | 3 F-4C | 1 MIG-17D | 0/0 | 0/0 |
| I-76 | 22 Jan'67/1140H | 4 F-4C | 2 MIG-? | 0/0 | 0/0 |
| I-77 | 23 Jan'67/----- | 12 F-4C | None-SAMs | 1/1 | 0/0 |
| I-78 | 5 Feb'67/1530H | 4 F-4C | 8 MIG-17 | 0/0 | 0/0 |

* Loss probably due to MIG.

** Not Included in official box score.

GLOSSARY OF TERMS
(All Terms Unclassified Unless Otherwise Stated)

AA - air-to-air weapon

AAA - antiaircraft artillery

AAM - air-to-air missile

AAWC - Anti-Air-Warfare Commander

AB - afterburner

ACM - air combat maneuvering

ACT - air combat tactics

ADF - automatic direction finder

AEW - airborne early warning

AGL - above ground level

AIM-7 (D&E models) (SPARROW) - semiactive radar type, air-to-air missile

AIM-9 (B&D models) (SIDEWINDER) - passive IR type, air-to-air missile

AIM-9C (SIDEWINDER) - Radar guided air-to-air missile

AI radar - airborne intercept radar

Aircraft commander - a pilot designated pilot-in-command of a given aircraft (Air Force name for front seater in F-4)

ALKALI - Soviet air-to-air missile - radar beam rider type

ALQ-51 - Broadband deception ECM system

ALQ-71 - Noise jamming ECM pod (production model of QRC-160-1)

ANCHOR (Various colors) - See Figure 9 on page 31 - code names for specific refueling tracks

AN/APA-157 - CW radar illuminator and fire control computer for SPARROW missile system.

Angle-off - angular position off the tail of the reference aircraft

APQ-72 - airborne intercept radar in F-4B aircraft

APQ-94 - airborne intercept radar in F-8E aircraft

APQ-100/109 - airborne intercept radar in F-4C/D aircraft

APR-25 - vector homing and warning system - providing 360° directional warning of threat signals in certain bands with instantaneous bearing to radiating source.

APR-26 - crystal video airborne warning receiver to detect SA-2 guidance signals

APR-27 - airborne radar warning receiver

armed reconnaissance - an air mission flown with the primary purpose of locating and attacking targets of opportunity, i.e., enemy materiel, personnel, and facilities in assigned general areas or along assigned ground communications routes, and not for the purpose of attacking specific briefed targets.

ASE circle - allowable steering error - circle on radar display provided by fire control computer.

ATOLL - Soviet air-to-air missile, infrared seeker type

autotrack - automatic tracking in which a servo mechanism keeps the radar beam trained on the target.

Back - the individual occupying the back seat of the F-4; in Navy called RIO, in Air Force called pilot or GIB.

BARCAP - Barrier combat air patrol - a MIGSCREEN for one or more missions

barrel roll - See Figure 2 (page 27) - a 360° rolling maneuver in which the flight path of the aircraft describes a helix about the intended direction of the flight.

BDA - bomb damage assessment

BINGO (fuel) - minimum fuel quantity reserve established for a given geographical point to permit aircraft to return safely to home base or aerial refueling point.

bogey - unidentified aircraft

boresight mode - in the boresight mode the radar antenna is aligned and locked to the roll axis of the aircraft.

break - an emergency turn in which maximum performance is desired instantly to destroy an attackers tracking solution.

break X - minimum range indication for missile launch. X appears in the radar scope at minimum range.

CAP - combat air patrol - an aircraft patrol provided over an objective area, over the force protected, over the critical area of a combat zone, or over an air defense area, for the purpose of intercepting and destroying hostile aircraft before they reach their target.

(NAVY) Condition I CAP (Standby): aircraft ready for immediate (maximum delay of two (2) minutes) takeoff. Aircraft with engine not running (starter batteries plugged in) will be positioned for take-off. Pilots in cockpit and deck drew on alert.

CAS - calibrated air speed (knots)

CBU-24 - canister dispensed air-to-ground bomblet type munition; the canister is carried externally on the aircraft and opens after release at a preset altitude.

centerline tank - a fuel tank carried externally on centerline of aircraft.

chaff - a type of confusion reflector, which consist of thin, narrow metallic strips of various lengths to provide different responses, used to create false signals on radarscope.

chandelle - a maximum performance climbing turn in which speed is converted to altitude while reversing direction.

CMR-312 (Little Ears) - aural radar warning receiver

CROWN - call-sign for rescue force commander

CRT - Combat Rated Thrust - maximum augmented thrust condition of engine

DF - direction finder

DME - distance measuring equipment

dot - (aim dot, steering dot) - electronic dot appearing in radar scope when radar is locked on providing computed steering vector information

element - Air Force term for the basic fighting unit (two aircraft)

EWO - electronic warfare officer

FANSONG - tracking radar for Soviet SA-2 surface-to-air missile system (CONFIDENTIAL)

fighting (wing) position - an area for the wingman in which optimum coverage and maneuverability is achieved in maximum performance maneuvers.

finger-four formation - see Figure 6 (page 29) - also fingertip formation - a four-plane formation in

which the aircraft occupy positions suggested by the four finger tips of either hand, the fingers being held together in a horizontal plane.

flak - antiaircraft fire

fluid element - the second or supporting element in fluid four formation, flying in a high or low element position.

fluid-four - see Figure 5 (page 29) - a tactical formation having the second element spread in both the vertical and horizontal planes to enhance maneuverability, mutual support and look-out ability.

fragged - mission directed by fragmentary operational order from higher headquarters.

Front - the individual in the front seat in the F-4 aircraft; in the Navy called the pilot, in the Air Force called the aircraft commander.

g - unit of acceleration (32.2 ft/sec$^2$)

gaggle - slang for a number of aircraft operating in close proximity, not necessarily in any semblance of formation.

GAM-83 - BULLPUP; air-to-ground guided missile

GCI - ground control intercept

GUARD - emergency UHF radio channel usually monitored by all aircraft and ground stations as a secondary frequency.

Hard turn - a planned turn in which the intensity of the turn is governed by the angle-off and range of the attacking aircraft.

HEAT - armament switch setting for using infrared missiles

hot mike intercom - intercommunication system continuously active (hot)

IAS - indicated air speed

ICS - intercommunication system

ID - identification; to make identification

IFF - identification, friend or foe; aircraft transponding beacon received by radar distinguishing friend from foe.

Immelmann - see Figure 8 (page 30) - maneuver in which the aircraft completes the first half of a loop and then rolls over to an upright position thus changing direction 180° with a simultaneous gain in altitude.

IMN - indicated Mach number

IP - initial point; a well-defined point, easily distinguishable visually and/or by radar, used as a starting point for a bomb run to the target.

IR missile - an infrared or heat-seeking missile

IRON HAND - a code name for a flight with special ordnance and avionics equipment whose mission is to seek and destroy enemy surface-to-air missile sites.

JCS target - a target appearing on the JCS target list

jinking - constant maneuvering in both the horizontal and vertical planes to present difficult target to enemy defenses by spoiling the tracking solution. Bank, pitch and velocity are all simultaneously changed in this maneuver.

karst - a limestone outcropping or ridge

kt - abbreviation for knot (nautical miles/hour)

LAU-3 - a rocket launcher adaptable to external bomb racks holding 19 2.75 inch air-to-ground folding fin rockets

LAU-17 adapters - stub pylon on F-4

loose deuce - a term to describe fighter tactics in which two to four airplanes maneuver to provide mutual support and increased fire power.

Lufberry circle - a circular tail chase, ascending or descending

M - abbreviation for Mach number

MER - multiple ejection rack

mi - nautical mile, as used in this report

MIGCAP - combat air patrol mission whose actions are directed against MIG aircraft

MIG SCREEN - mission wherein protecting fighters are placed between the threat and the protected force in a specific area

military power - maximum unaugmented thrust condition of engine

missile free - authority is granted to fire unless target is identified as friendly

missile tone - audio signal indicating AIM-9 is locked on to an IR source

MRT - military rated thrust - see military power

MSL - altitude referenced to mean sea level

OPREP - message report in joint operational reporting system

PANAMA - call sign for GCI site located near Danang

pipper - aircraft weapon sight indicator (a dot of light within a lighted ring)

PIRAZ - positive identification radar zone

PRF - pulse recurrence frequency

QRC-160 - noise jamming ECM pod

RAG - replacement air group

ready light - light which indicates a particular avionics/munitions system is operating and available for use

RED CROWN - voice call for USS LONG BEACH (CLN-9)

RESCAP - rescue combat air patrol

RHAW - radar homing and warning

RIO - radar intercept officer

RO - abbreviated form of RIO

road interdiction - to prevent or hinder, by aerial means, enemy use of a road or route

ROLLING THUNDER - code name for air strikes against North Vietnam

Route Package - see Figure 9 - geographical division of North Vietnam for purposes of air strike targeting

rudder reversal - a climbing aircraft maneuver in which direction is changed by rotation around the aircraft's vertical axis

SA-2 - Soviet surface-to-air missile system

SAM - surface-to-air missile

SAR - search and rescue

scissors - See Figure 1 (page 27) - a defensive maneuver in which a series of turn reversals are executed in an attempt to achieve offensive after an overshoot by the attacker.

SCAN-ODD - MIG airborne intercept radar (CONFIDENTIAL)

section - a Navy term for a tactical element of two or more aircraft (usually two)/an Air Force term for two flights of four

SHRIKE (AGM-45) - air-to-surface radar seeking missile

SIDEWINDER - see AIM-9

SIDEWINDER tone - see missile tone

SIF - selective identification feature - electronic device with variable codes for identification

SILVER DAWN - a code name for an intelligence collecting aircraft (SECRET)

"S" maneuver - a weave in a horizontal plane

Snap-up - a rapid pullup to establish a climb in order to launch a weapon

SPARROW - see AIM-7

"Split-S" maneuver - see Figure 7 (page 30) - 180° rotation about the aircraft longitudinal axis followed by a 180° change of heading in a vertical plane (half loop starting from top)

STBY - standby

steering dot - see dot

Switchology - a coined word addressing the human engineering considerations of switch arrangements

TACAN - tactical air navigation - an active electronic navigational system which locates the aircraft with respect to another installation

TARCAP - target combat air patrol - aircraft assigned the air-to-air defense role in the target area

TAS - true air speed in knots

TCA - track crossing angle - the angle between flight paths measured from the tail of the reference aircraft

TOT - time over target

TRACK (various colors) - see Figure 9 -- code names for specific refueling tracks

TROJAN HORSE - a code name of a U-2 air reconnaissance program (SECRET)

unit (of turn) - divisions on an angle-of-attack indicator on F-4 aircraft

UHT - unit horizontal tail (applied to F-8 aircraft) - a tail design whereby the whole surface rotates about a pivot point

unloading - decreasing g's

$V_c$ - closing velocity (relative)

vector box - see APR-25

WILD WEASEL - F-105F specially equipped for locating and attacking SA-2 sites (employed on IRON HAND missions)

yo-yo - see Figures 3, 4 (Page 28)

High Speed - an offensive tactic to in which the attache maneuvers through both vertical and horizontal planes to prevent an overshoot in the plane of the defender's turn.

Low Speed - a dive for airspeed and a pull up for position closure.

ZUNI - five inch air-to-ground unguided rocket

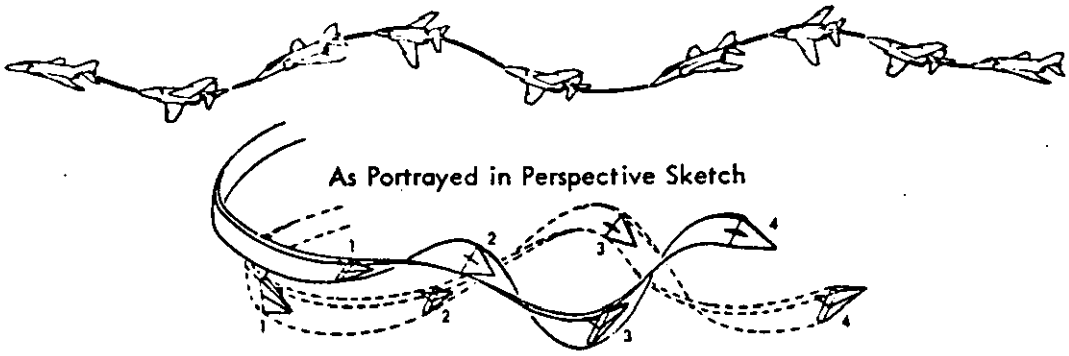
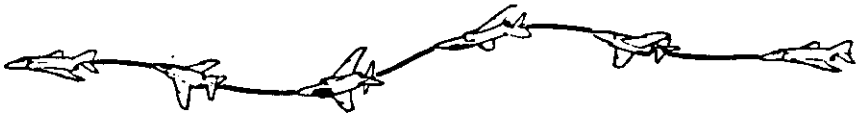



FIGURE 1. Scissors



As Portrayed in Perspective Sketch

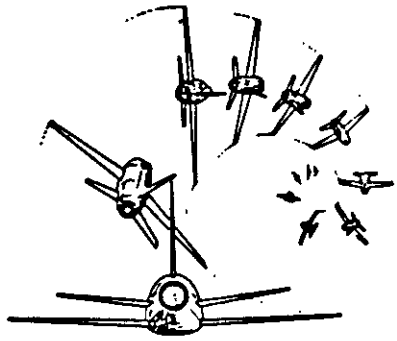


FIGURE 2. Barrel Roll

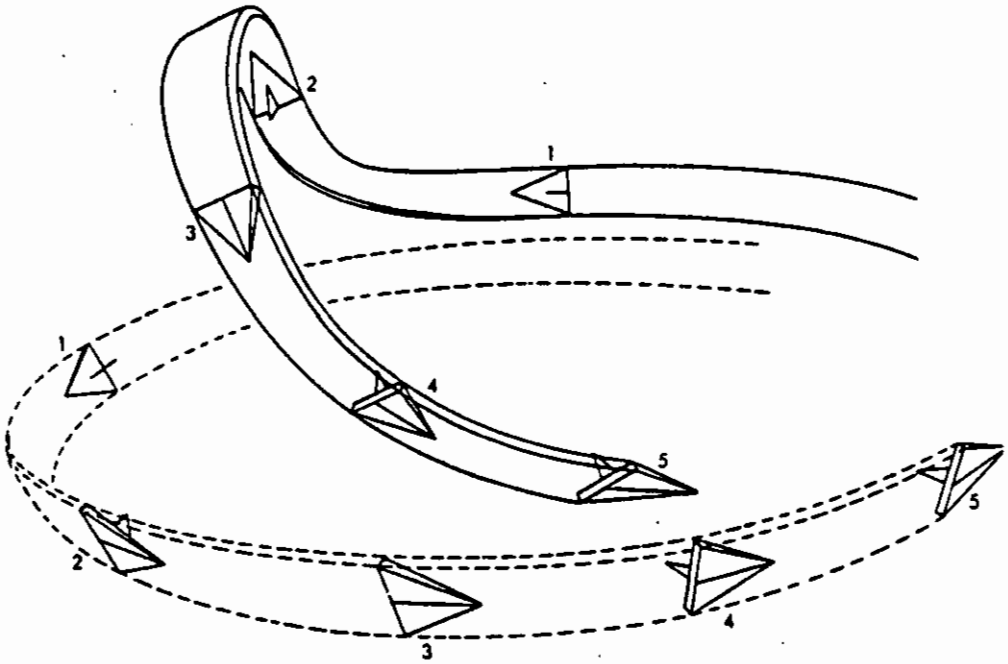



FIGURE 3. High-Speed Yo-Yo

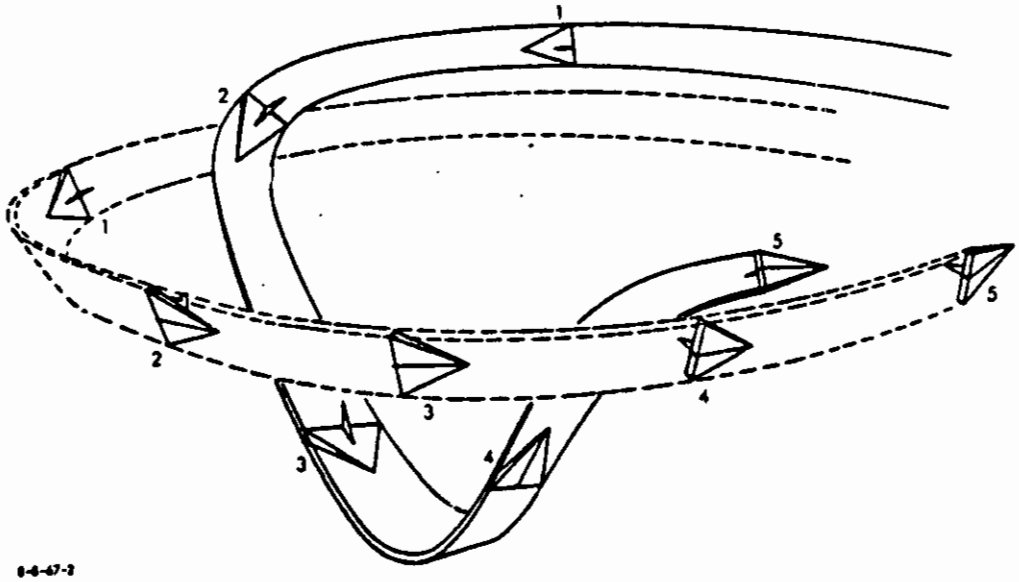



FIGURE 4. Low-Speed Yo-Yo

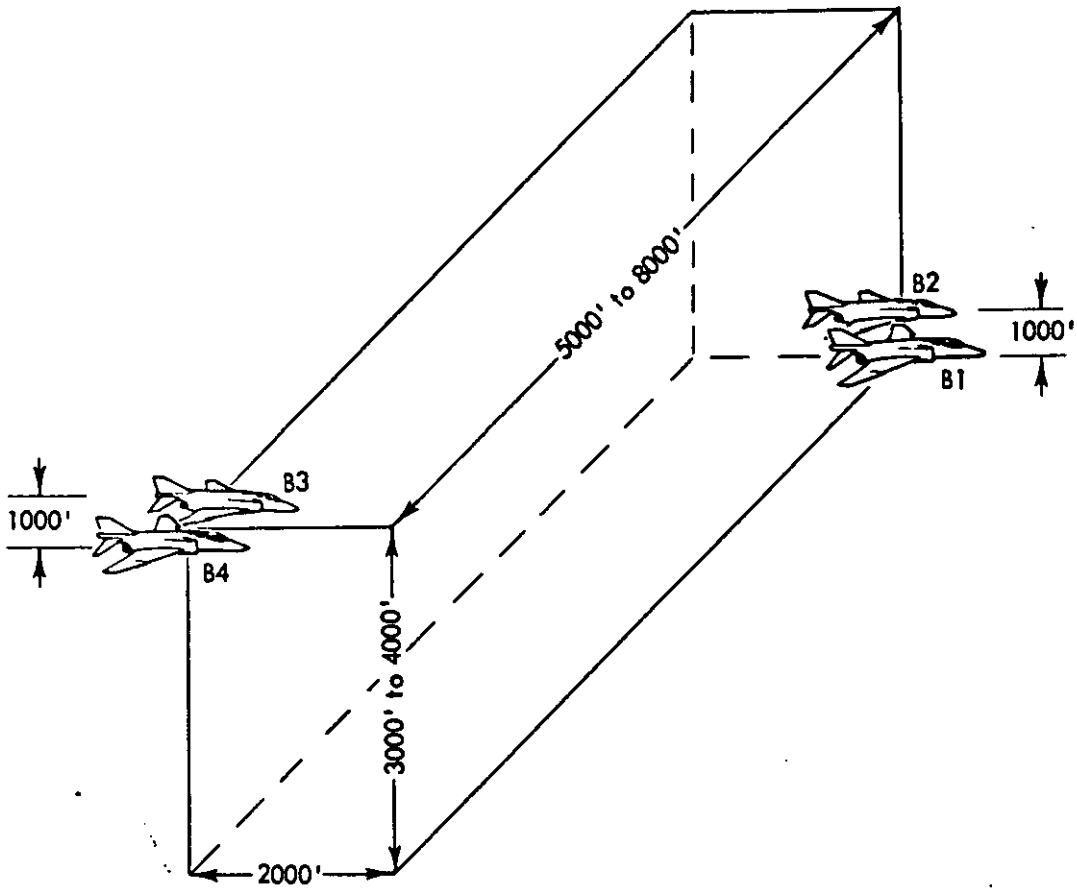



FIGURE 5. Fluid Four

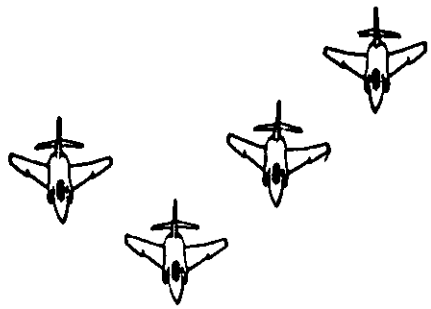


FIGURE 6. Fingertip or Finger Four (All at Same Elevation)

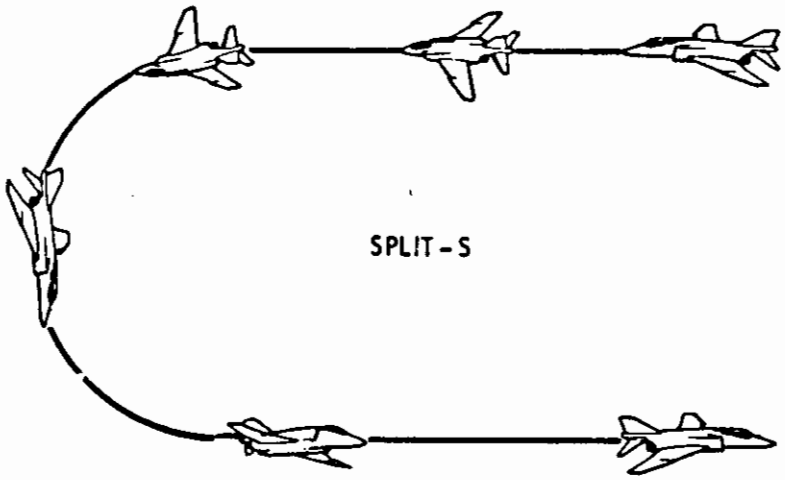



FIGURE 7. Split-S

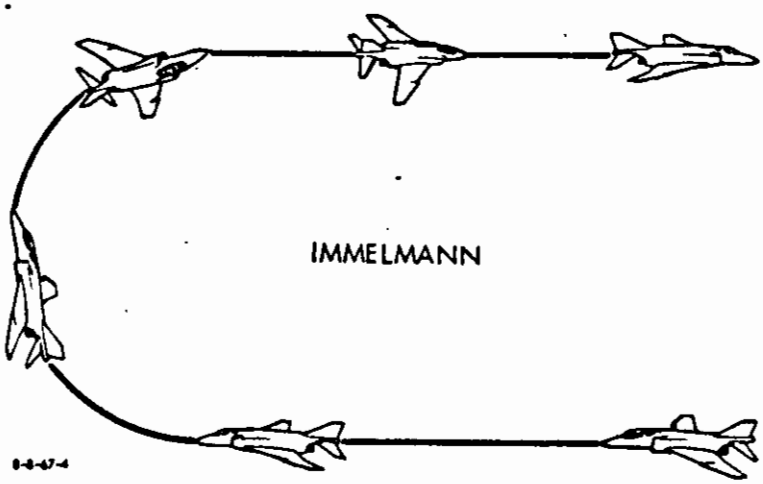



FIGURE 8. Immelmann

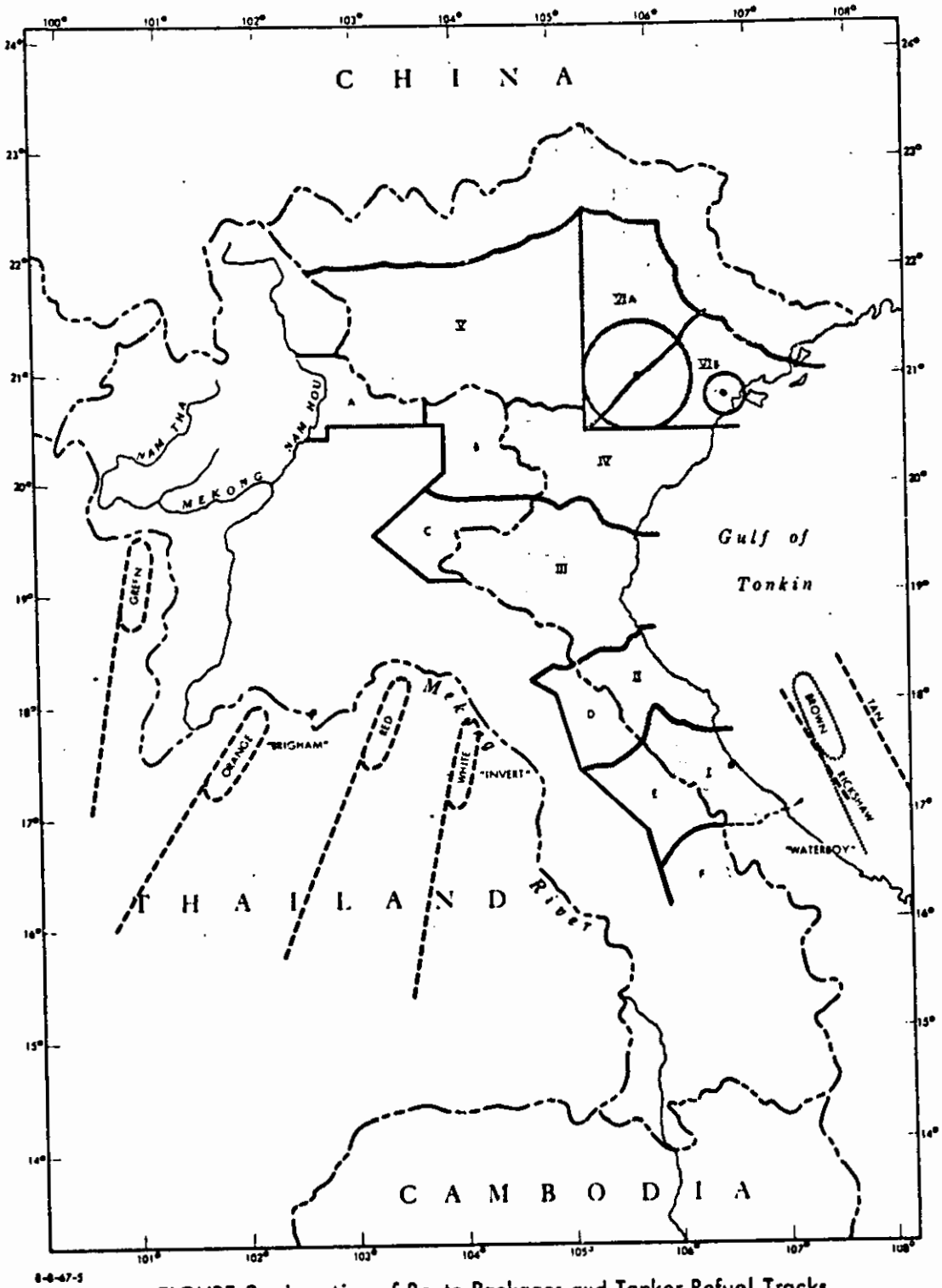



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FIGURE 9. Location of Route Packages and Tanker Refuel Tracks

EVENT I-1

Aircraft Involved: Four F-8Es vs three MIG-17s[1]

Result: One F-8E damaged

Vicinity of Encounter: 19°58'N/105°51'E
Route Package IV

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 3 Apr 1965/1110H

Four F-8E aircraft (BLUE flight) were providing flak suppression and TARCAP for a strike group of eight A-4C aircraft (GREEN flight). BLUE flight had completed a ZUNI attack on each end of the target bridge where flak sites were suspected. The attack was the last made of a larger (34 aircraft) flight group on the target.

2. MISSION ROUTE

The strike group, with BLUE flight, was launched from the aircraft carriers in the Gulf of Tonkin, and proceeded on a northwesterly heading to the coast. The coast line was crossed east of the target. The flight approached the target on a westerly heading. Egress from the area was by reverse route except for the airplanes that diverted to Danang.

3. AIRCRAFT CONFIGURATIONS

F-8E BLUE 1, 2, 3, 4

2 - SIDEWINDER (AIM-9D)
4 - ZUNI (expended on flak suppression)
500 rds - 20mm
IFF, TACAN, APQ-94, UHF operating, gray and white paint

MIG-17 MIG 1, 2, 3

Estimate 23mm and 37mm guns
Believed to be silver colored.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: A haze condition reduced visibility in the target area to 1-2 mi. Weather was clear above 12,000 ft.

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | --8000-11,000 ft--- | | | |
| Heading: | Circling target, left turn (30-40° bank) | | | |
| Speed: | ------350 kt------- | | | |
| Fuel State: | ------4000 lb------ | | | |
| Flight Formation: | | | | |

BLUE flight had completed a ZUNI attack with each aircraft making individual runs. In recovering from the attack, BLUE 1 pulled off the target and established a tight orbit. BLUE 2 went wide. BLUE 3 saw BLUE 2 in a wide orbit and followed. BLUE 4 joined the orbit on opposite side of the circle from BLUE 1. Low visibility in the area was a factor.

5. INITIAL DETECTION

The MIGs were first sighted by a member of the strike group, but were mistaken for A-4s in the haze and at the range first sighted. Three MIGs were sighted in a dive toward BLUE 1 and were evaluated as hostile as one MIG opened fire on BLUE 1.

6. ACTION INITIATED

BLUE 1 observed tracers passing his left wing and felt hits. The tracers were thought to be AA ground fire. No report of MIGs had been received. BLUE 1 turned hard right and exited the area, while climbing to about 18,000 ft.

7. SITUATION DEVELOPMENT

At the coast BLUE 1 turned SE and again saw tracers pass the left side. A reverse turn to the left revealed a MIG at 7 o'clock, 2000 ft behind. BLUE 1 engaged afterburner, accelerated to 1.0 Mach, turned hard left, and was unable to locate the MIG. BLUE 1 diverted to Danang because of damage and loss of utility and PC-2 hydraulic systems.

8. ORDNANCE

No ordnance expended by BLUE 1, except four ZUNIs in air-to-ground. MIGs fired an unknown number of 23mm/37mm rounds.

9. EQUIPMENT PROBLEMS

Utility and PC-2 hydraulic systems rendered inoperative by enemy gunfire. Emergency utility system operated satisfactorily.

## 10. AIRCREW COMMENTS

Experience

| | Total Hours | F-8 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 2500 | 600 | | Pilot had flown TF-9 and A-4. |
| BLUE 2, 3, 4 | -------Not interviewed-------- | | | |

Comments on this Encounter

BLUE 1 - Radio was clear of chatter. Felt he had received insufficient training in air combat tactics. Did not realize there were MIGs in the area until second sighting of tracers. The pilot was directing his attention to look for flak and was not looking for air targets. Low visibility due to haze contributed to the loss of flight integrity.

Comments from Overall Experience

BLUE 1 - Good, reliable guns are required with the restraint of a positive ID. A lead computing gunsight with minimum tracking requirement needed. Tail warning highly desirable. For interceptor role or for use of AI radar a second crewman very desirable.

## 11. DATA SOURCES

Project Interviews: BLUE 1, 3 March 1967
Messages, Reports:

CTG 77.7 Msg 030417Z Apr 1965
CTG 77.7 Msg 030441Z Apr 1965
CTG 77.7 Msg 031451Z Apr 1965
CTG 77.7 Msg 040117Z Apr 1965
CTG 77.7 Msg 040202Z Apr 1965
CTG 77.7 Msg 040221Z Apr 1965

## 12. NARRATIVE DESCRIPTION

Following a flak suppression run, the four members of BLUE flight became separated in the haze, which reduced visibility in the target area to 1-2 mi. BLUE 1 was orbiting over the target at about 8000 ft when tracers and hits were observed by the pilot. B-1 was in a 30-40° bank speed 350 knots. BLUE 1 immediately broadcast that he was hit, and turned right to exit the area heading 100°. BLUE 1 thought the tracers were from ground fire. BLUE 1 was concentrating on looking for flak in the target area, and was not maintaining a lookout for enemy fighters.

On the way to the coast, BLUE 1 climbed to about 18,000 ft. After crossing the coast BLUE 1 turned to a southerly heading and upon rolling out on course the pilot saw more tracers, again on the left side. BLUE 1 turned hard right, saw nothing, reversed the turn to the left and saw a MIG at 7 o'clock at a range of 2000 ft and 200 ft up not firing. BLUE 1 engaged afterburner, nosed over, and accelerated to 1.0 Mach and came out of AB. While in a shallow dive, to maintain 1.0 Mach in military power, BLUE 1 turned hard left to reacquire the MIG, but it was not in sight.

BLUE 1 broadcast the presence of the MIG and established a course for Danang. The gunfire damaged the utility and PC-2 hydraulic systems in BLUE 1. En route, BLUE 4 joined BLUE 1, confirmed the damage, and escorted BLUE 1 to Danang. The emergency utility system functioned satisfactorily and allowed the pilot to land safely. Most hits were by the 37mm cannon.

BLUE 4 was in a left turn at 11,000 ft about 220° and three miles from the target when on rolling his wings level he saw two airplanes at his 3 o'clock position level at a range of about two miles and identified them as friendly aircraft. As BLUE 4 banked left and continued to observe the target, he saw three airplanes assumed to be A-4s diving towards the target area and one opened fire with guns. This airplane was then observed to flatten out in a pursuit curve, while the other two continued to dive on the target area. At this time BLUE 4 positively identified all three attacking airplanes by their silver color and silhouette as MIGs. He went to 100 percent power and attempted to close on the firing MIG. BLUE 4 selected an AIM-9D and had a good tone but withheld launch of the missile because of the many friendlies in the area. At this time BLUE 4 heard BLUE 1 report that BLUE 1 was hit and was exiting. BLUE 4 then broke off the chase to locate and join BLUE 1.

BLUE 2 and 3 did not see the MIGs in the haze.

The F-4 flight assigned as TARCAP at 25,000 ft never made contact with the MIGs.

The F-8s in the strike group had used radar to spot the attack aircraft but at the time of the encounter were watching the target for flak.

[1] MSG 030441Z Apr 65 and CINCPACFLT Staff Study 3-67 quote MIGs as MIG-15.

EVENT I-2

Aircraft Involved: Four F-4Bs and four MIG-17s

Result: One F-4B missing
One MIG-17 probably destroyed

Vicinity of Encounter: Gulf of Tonkin, 25 mi SW of Hainan Island

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 9 Apr 1965/0840H

MIG barrier in northern Tonkin Gulf about halfway between Haiphong and Hainan (approx 20°00'N/108°00'E) to divert any MIGs away from a strike in the Hanoi/Haiphong area. The first element (BLUE 1 (Lead) and 2) launched about 20 min ahead of the second element (BLUE 3 and 4) because one aircraft aborted launch and had to be replaced. Each element engaged MIGs independently.

2. MISSION ROUTE

Element 1 (BLUE 1 and 2), launched in vicinity of Point Yankee, proceeded to the NW (heading: 315°) clearing Hainan Island by about 30 mi, proceeding to the CAP station (approx 20°00'N/108°00'E). Element 2 (BLUE 3 and 4) launched approximately 20 min later and proceeded on same general heading.

3. AIRCRAFT CONFIGURATIONS

F-4B BLUE 1, 2, 3

2 - SPARROW (AIM-7D)
2 - SIDEWINDER (AIM-9B)
1 - centerline tank
No camouflage paint.

BLUE 4

4 - SPARROW (AIM-7D)

MIG-17 MIG 1, 2, 3, 4

No missiles
Cannon
Not all-weather version; no radome in duct
Highly polished silver finish.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Solid undercast with few breaks, tops at 23,000 ft. Visibility at altitude, unlimited.

| | BLUE 1 | BLUE 2 | BLUE 3 | BLUE 4 |
|---|---|---|---|---|
| Altitude: | 35,000 ft | | Data not available | |
| Heading: | 135° | | | |
| Speed: | Mach 1.2 | | | |
| Fuel State: | Unknown (probably full internal) | | | |
| Flight Formation: | First and second elements were about 50 mi apart at initial MIG detection. | | | |

5. INITIAL DETECTION

(First element data only)

First element heard that second element had MIGs on radar. First element turned south, went to AB, to attempt to join engagement. First element sighted four MIGs at great distance (30-50 mi) pulling contrails. As they approached, they could also distinguish F-4Bs pulling contrails.

6. ACTION INITIATED

BLUE 1 requested clearance to fire, and used radar acquisition to begin SPARROW attack.

7. SITUATION DEVELOPMENT

BLUE 1(L) fired SPARROWs at MIG and followed up with SIDEWINDERs, breaking off engagement when other MIG section started to pull behind him. He departed area to the south, checked fuel, and requested permission from ship to reattack and pursue over land (Hainan) if necessary. He reentered area and resumed engagement using boresight acquisition (optical sight plus radar). Proceeded with another SPARROW attack and then departed area because of low fuel.

Engagement took place at supersonic speeds at about 40,000 ft. Total time of engagement was approximately 20 min.

BLUE 3, 4 (second element) were seen to fire missiles at MIGs. BLUE 4 did not return from mission; cause of loss is unknown. BLUE 4 credited with shooting down one MIG.

8. ORDNANCE

| | (No. fired/No. hits) SPARROW AIM-7D | SIDEWINDER AIM-9B | Remarks |
|---|---|---|---|
| First Element: | | | |
| BLUE 1 | 2/0 | | 1 did not guide, 1 motor did not fire |
| | | 1/0 | Target evaded missile successfully |
| BLUE 2 | 2/0 | | 2 motors did not fire |
| | | 1/0 | 1 did not guide; the other would not fire--was returned to ship |
| Second Element: | | | |
| BLUE 3 | 0/0 | 0/0 | |
| BLUE 4 | 4/1 | | BLUE 3 reported seeing MIG on fire in level fight at contrail level. BLUE 4 did not return from mission. |

9. EQUIPMENT PROBLEMS

BLUE 1 had great difficulty with the SPARROW missile systems, in that missiles would eject but motor would not fire. Subsequent investigation at the Naval Missile Center, Point Mugu, revealed a malfunction in the launching mechanism switches, which caused the umbilical to separate prior to motor ignition thus accounting for the motor no-fires. Shipboard test equipment available at the time did not have the capability to detect this problem.

BLUE 2 had one SIDEWINDER that would not fire.

10. AIRCREW COMMENTS

BLUE 1(L) (Front)

Squadron Commanding Officer, had about 1000 hr in the F-4B, and had many missile firings -- a well-experienced pilot. This was first MIG engagement. Data on other crew members not available.

Comments from Overall Experience

Air-to-air IFF would help by clearly identifying friendly targets in a poor visibility condition. (Not a factor in this engagement.)

There is a need for a close-in weapon as a backup on any missile system. If an ID pass has to be made, aircraft should have a weapon to give him an immediate attack capability if the target proved hostile. Guns would also be useful as an air-ground weapon (stopping a truck convoy, for example).

11. DATA SOURCES

Project Interviews: BLUE 1 (Lead) - Front, 17 January 1967

Messages, Reports:

CTF77 110322Z (MIG Encounter Recap)
CTG87.4 100745Z
Amplifying Reports on Missile Firings by BLUE 1 and 2.

12. NARRATIVE DESCRIPTION

BLUE 1 and 2 were launched from carrier at about 0800H and proceeded to the NW on a heading of 315°, clearing Hainan Island by about 30 mi and then proceeding to the CAP station in the Gulf of Tonkin. They then proceeded to orbit at their assigned stations. The second element (BLUE 3 and 4) was not able to launch from the ship until about 0820H. BLUE 3 and 4 rendezvoused and proceeded in a northwesterly direction to join the first element. At about 0840H, BLUE 3 and 4 radioed that they had obtained a radar contact and were "going to investigate." Their altitude at the time was "at or about the contrail level" (approx 40,000 ft). Shipboard radar observed BLUE 3 and 4 turning right and advised them that they were to the right of track. By about 0842H, BLUE 3 and 4 were advised that they were overland; however, radar position was indefinite due to the close proximity to Hainan and NVN which was causing sidelobing and ringing on the scope from land returns.

$T_0$ BLUE 3 and 4 sighted the MIGs visually at this time and engagement, which lasted until about 0905H, started in the vicinity of 18°20'N/108°30'E. Targets were identified as MIG-17s. MIG 4 dropped his tanks and attacked BLUE 3 and the action ensued.

In the meantime, BLUE 1 and 2 were on their patrol mission approximately 50 to 60 mi north of this area. When they heard radio transmissions, they turned and headed south to assist BLUE 3 and 4. BLUE 1 directed the other members of the flight (BLUE 2, 3, and 4) to go to afterburner and obtain separation from the MIGs. BLUE 1 then requested and was granted clearance by the carrier to fire. At a distance of about 30 to 50 mi. BLUE 1 sighted the MIGs.

$T_1$ He could distinguish contrails of both MIGs and the F-4Bs, as the color was distinctively different. The F-4B contrail was considerably darker and heavier than that of the MIG-17. BLUE 1 and 2 continued to head towards the MIGs, and as they approached, BLUE 2 acquired targets on radar and made a left turn to fly on a collision course with MIGs.

$T_2$ BLUE 2 started to climb up to MIG altitude, which at that time was about 44,000 ft. The MIGs were in a westerly heading in a wide finger-4 formation -- one of the MIGs was well below the contrail level.

$T_3$ BLUE 2 then fired a SPARROW missile at a range of 5 mi. The missile could not be observed even after sharply banking the aircraft. Apparently the missile motor did not fire.

$T_4$ At this point BLUE 1 was passing under the MIGs, turning right to obtain separation. The MIGs turned to left, were still in a widely spread formation. Individual airplanes were clearly discernible.

$T_5$ BLUE 1 flying at 40,000 ft with BLUE 2 in a wide-wing position acquired a MIG on boresight at 6 mi to right and obtained a radar lock-on.

$T_6$ BLUE 1 fired a SPARROW at a range of 3 mi. His steering dot was steady, slightly beyond optimum but still well within range. The missile fired, trajectory appeared normal, but did not appear to guide.

$T_7$ BLUE 1 then switched to HEAT and continued, just turning in behind the MIGs. He pulled up on the left rear MIG, heard a SIDEWINDER tone, closed in behind him with a straight tail shot and fired a SIDEWINDER at 1.5 mi.

$T_8$ At this point the MIG broke hard left and the missile tried to follow but slid just behind him. BLUE 1 pilot was surprised that at this altitude the MIG could turn as fast as he did. The other MIG section started to drop behind BLUE 1.

$T_9$ BLUE 1 and 2 dropped their noses down as they broke off and accelerated, departing the area to the south, while they came out of burner and orbited. When in orbit they dropped their centerline tanks, called the ship and requested permission to make another attack and pursue the MIGs over land if necessary. Communication was relatively poor but they received what they thought was an affirmative answer. BLUE 1 and 2 then returned north to resume the attack. During this time they could see the other element (BLUE 3 and 4) firing missiles at MIGs in the distance.

BLUE 3 heard BLUE 4 reporting that he had one more missile and was making his last run. Immediately thereafter both pilot and RIO of BLUE 3 saw an F-4B making a snap-up towards the MIGs which were at the contrail level. They lost sight of the F-4 as he zoomed and then heard the transmission "Op away." Within 30 sec to 1 min after they saw the F-4 in the zoom climb, both crew members of BLUE 3 saw a MIG on fire flying straight and level at the contrail level. The MIG fell slowly off into a dive. The rear seater of BLUE 3 heard BLUE 4 report "Good shooting; all missiles gone; I'm going home." BLUE 3 then questioned who got the MIG. Transmission was made -- no answer to the transmission was received. Both crew members of BLUE 3 were positive that the burning aircraft was a MIG-17.

$T_{10}$ BLUE 1 and 2 then reentered the area, made a boresight acquisition on MIGs, heading east at an altitude of 47,000 ft. The initial lock-on was made at 12 mi. BLUE 1 and 2 were in afterburner.

$T_{11}$ They broke lock and reacquired at a range of 7 mi. The 3 MIGs were still heading east, not maneuvering.

$T_{12}$ BLUE 1 fired a SPARROW at a range of 3-1/2 mi. The missile ejected, but the motor did not fire.

$T_{13}$ BLUE 1 noted that his fuel was approaching BINGO and he did not have enough for another SIDEWINDER attack. BLUE 1 then broke left and headed south to depart the area.

BLUE 2 remained in the area and continued the attack. He acquired a MIG in a right turn at 10° left, 6 mi. He then turned hard right to pull the dot into the ASE circle and fired a SPARROW at a range of 3-1/2 mi in a right turn. The missile motor apparently did not fire. He then fired a SIDEWINDER missile acquiring the target at 10° right, 3 mi, and launched the missile at about 1-1/2 mi. BLUE 2 attempted to fire the missile on station 8D but this one did not fire. He then rejected the right missile and selected the left SIDEWINDER which did fire but apparently did not guide, although the target was in afterburner. BLUE 2 then maneuvered into a stern position on the MIG-17 and again attempted to fire the SIDEWINDER missile on station 8D at a range of 1.2 mi. Again the missile would not fire. BLUE 2 then returned to the ship. This SIDEWINDER was examined back aboard the ship and the EPU was found to have fired, but not the motor.

BLUE 4 did not return from this mission. The cause of loss was not known. Extensive investigation of the [illegible]ent was made and no definite conclusions were reached. The Chinese claimed that on that day an F-4 was shot down by friendly forces, but careful investigation of that possibility has been made and this has been ruled out. It is presumed that BLUE 4 was lost either due to fuel exhaustion or hit by a MIG.

## EVENT I-2 SUMMARY

Note: This reconstruction covers the first element only.

| Time Mark | Action Aircraft (BLUE 1, 2) | | Other Friendly | Communications | Enemy Actions (MIG 1,2,3,4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | Alt: 35,000 ft<br>Approx Mach 0.9 | Lit AB and headed south<br><br>B1(L) instructs second element. (See Communications) | | B3, 4 reported targets on radar, identified visually as MIGs<br><br>B1 directed other element to go to AB and obtain separation from MIGs | MIG 4 dropped tanks. All rolled in to attack B3, 4 | First element was 50-60 mi N of second element, heard activity on radio and headed S to join engagement |
| $T_1$ | Alt: 38,000 ft (B1)<br>Mach 1.2<br>Alt: 35,000 ft (B2)<br>Mach 1.2 in AB<br>MIGs sighted by B1 and 2 | | B4 requested clearance to fire on MIGs | B1(L) requested clearance to fire from ship | | MIGs approx 30-50 mi away. Could see contrails of both MIGs and F-4Bs. F4B contrail was considerably darker and heavier than MIGs. |
| $T_2$ | Alt: 38,000 ft (B1)<br>Alt: 35,000 ft (B2)<br>Mach 1.3 in AB | B1 gave clearance to fire<br>B2 acquired target on radar, made left turn to obtain collision course with MIGs, started climb | | Ship gave clearance to fire | MIGs appeared to turn into first element (B1, 2)<br>MIGs were in westerly heading, wide finger-four formation. One MIG was well below contrail level | |
| $T_3$ | Alt: 41,000 ft (B2)<br>Mach 1.3 in AB | B2 fired SPARROW missile | | | | Range - 5 mi. MAP mode, wide display, linear polariz., narrow speed gate, 10 mi range. Interlocks IN<br>Missile motor did not fire |

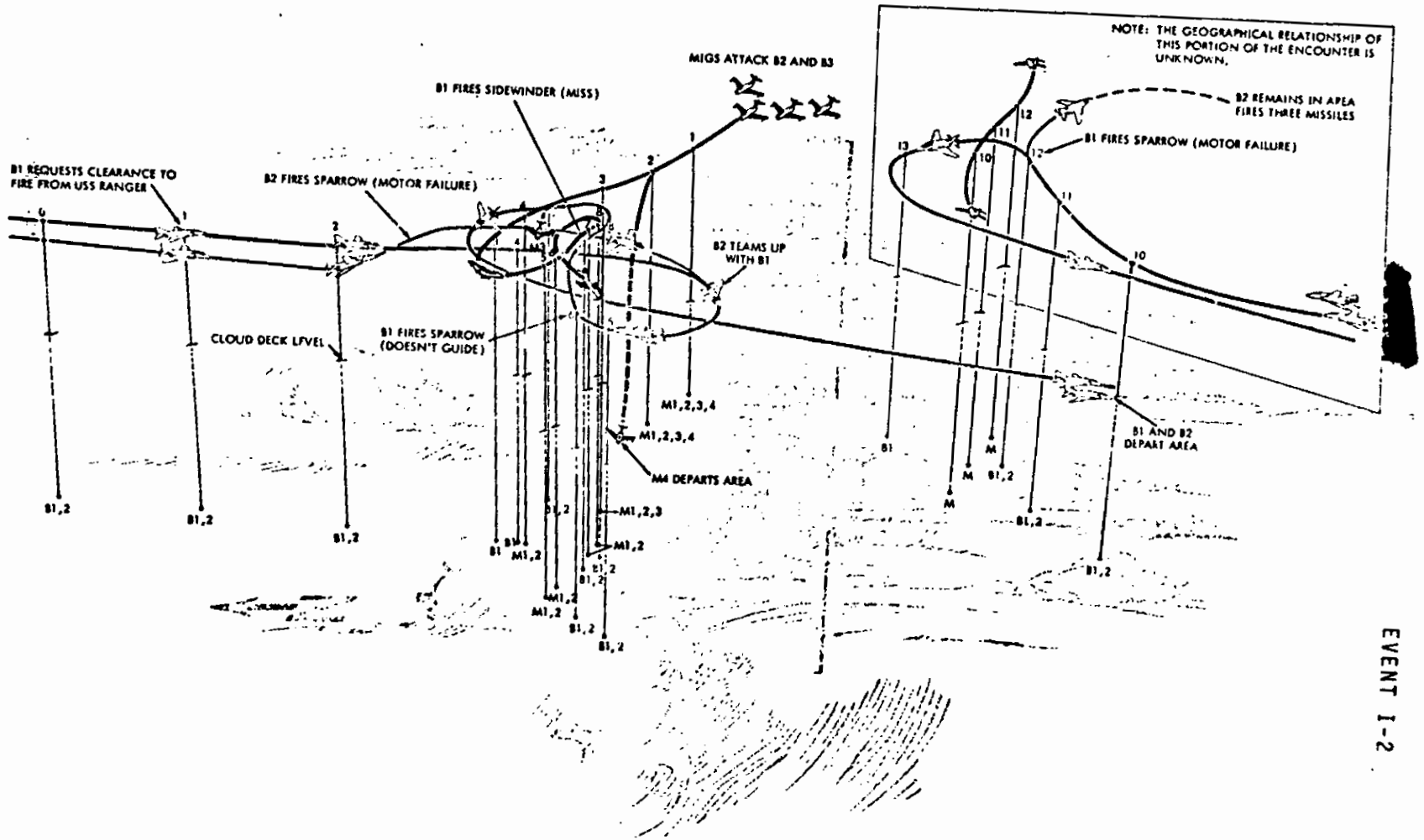
EVENT I-2 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2) | | Other Friendly | Communications | Enemy Actions (MIG 1,2,3,4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_4$ | Alt: 40,000 ft (B1)<br>Mach 1.6 in AB<br>Passed under MIGs<br>Position of B2 not known | Turned right to get separation | | | MIGs turned left, were in widely spread formation | Individual airplanes clearly discernible |
| $T_5$ | Alt: 40,000 ft (B1)<br>Mach 1.1<br>B2 flying wide wing position | Acquired MIG on boresight at 6 mi off to right. At 5 mi obtained radar lock-on (B1) | | | MIG-17 at 44,000 ft Mach 0.9, not maneuvering. Heading E. | Range - 5 mi radar lock on, switched to MAP mode to obtain autotrack |
| $T_6$ | Alt: 40,000 ft (B1)<br>Mach 1.1<br>30° right bank | Fired SPARROW at range of 3 mi to target<br>(Nose was pulled to right to center the steering dot) | | | MIG at 44,000 ft | Had steady steering dot, slightly below optimum, but well within range. Missile fired, trajectory good but did not guide. |
| $T_7$ | Alt: 44,000 ft (B1)<br>Mach 1.2<br>10° left bank | Switched to HEAT, obtained good tone, fired SIDEWINDER at 1.5-mi range.<br>Target heading ENE | | | MIG at 44,000 ft | SIDEWINDER picked up guidance |
| $T_8$ | Alt: 44,000 ft (B1)<br>Mach 1.2 | Tried to follow MIG but could not turn with him | | | MIG broke hard left and down | SIDEWINDER could not follow hard left turn and went behind MIG-17 |
| $T_9$ | In turn trying to follow MIG (B1) | B1 dropped nose down and broke off, eased off g, accelerated, and departed area 5. Came out of AB, orbited. B2 followed B1(L). | | Called others to check fuel state | Other element of MIGs dropping behind B1 | |

While in orbit, B1 and B2 dropped centerline tanks. Called ship, requesting permission to make another attack and to pursue over land if necessary. Got apparently affirmative answer. Element returned N to resume attack. During this time saw other element firing missiles at MIGs in the distance.

EVENT I-2 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2) | | Other Friendly | Communications | Enemy Actions (MIG 1,2,3,4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{10}$ | Alt: 40,000 ft (B1)<br>Mach 1.3<br>Heading 030°, in AB | Boresight acquisition, initial lock-on at 12 mi. Lock-on was broken. Did not see second element (B3,4) | | | Three MIGs headed E at altitude of 47,000 ft | |
| $T_{11}$ | Alt: 43,000 ft<br>Mach 1.3 (B1) | Lock on again at range of 7 mi | | | MIGs headed E, not maneuvering | |
| $T_{12}$ | Alt: 43,000 ft<br>Mach 1.3<br>20° right bank (1.2 g) (B1) | SPARROW fired at range of 3.5 mi | | | | MAP mode, wide display, normal clutter linear polar, narrow speed-gate, Interlocks IN<br>Missile ejected, but motor did not fire |
| $T_{13}$ | Fuel was getting low -- not enough for another SIDEWINDER attack (B1) | Broke left and headed south to depart<br>B2 remained in area and continued attack | | | | |
| B2 fired 3 additional missiles (see narrative for details). There was insufficient information available to reconstruct that part of the engagement. | | | | | | |


B1 REQUESTS CLEARANCE TO FIRE FROM USS RANGER
B2 FIRES SPARROW (MOTOR FAILURE)
B1 FIRES SIDEWINDER (MISS)
MIGS ATTACK B2 AND B3
B2 TEAMS UP WITH B1
CLOUD DECK LEVEL
B1 FIRES SPARROW (DOESN'T GUIDE)
M1,2,3,4
M1,2,3,4
M4 DEPARTS AREA
M1,2,3
M1,2
B1,2
B1
M1,2
NOTE: THE GEOGRAPHICAL RELATIONSHIP OF THIS PORTION OF THE ENCOUNTER IS UNKNOWN.
B2 REMAINS IN AREA FIRES THREE MISSILES
B1 FIRES SPARROW (MOTOR FAILURE)
B1 AND B2 DEPART AREA
M
M
M
B1,2

EVENT I-2

[redacted]

EVENT I-3

Aircraft Involved: Two F-4Cs vs eight possible MIGs

Result: No damage

Vicinity of Encounter: 20°26'N/105°33'E Route Package IV

## I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 31 May 1965/1505H was TOT; sighting took place after strike aircraft had completed attack.

Two F-4Cs (BLUE 2 and 3) out of a total of eight F-4Cs conducting escort and high cover for a flight of 16 F-105s striking JCS Target 47.11, Hoai An Ammo Depot at 20°25'57"N/105°32'45"E.

## II. DATA SOURCES

Messages and Reports:

OPS-4 Wrap-Up ROLLING THUNDER 6 Alpha Three Telecon NR1246 (311439Z May 65)
PACAFCC msg. 311419Z May 65

## 12. NARRATIVE DESCRIPTION

BLUE flight was from Ubon.

While climbing out from air-to-ground delivery after MIGCAP -- heading 180° at 16,000 ft, BLUE 2 sighted two flights of four suspected MIG-15s or 17s at 7000 to 8000 ft above him. BLUE 2 executed a right 180° climbing turn into the MIGs' 6 o'clock position at 10-mi range. MIGs jettisoned their drop tanks and proceeded north at estimated speed of Mach 0.8. BLUE 2 reached BINGO fuel at this time and was forced to break off pursuit. While climbing off target, BLUE 3 sighted four unidentified aircraft approximately 10,000 ft above him. No chase was attempted because of BINGO fuel state.

The weather was 0.4 to 0.8 cloud cover with bases at 9000 ft and tops at 17,000 ft. Visibility was about eight miles.

[redacted]

EVENT I-4

Aircraft Involved: Two F-4Bs vs four MIG-17s

Result: No damage

Vicinity of Encounter: 20°20'N/105°20'E
Route Package V

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 Jun 1965/0712H

F-4B aircraft (BLUE flight) were on BARCAP for ROLLING THUNDER armed recce mission (17C1). CAP was positioned west of normal station to provide measure of protection for rescue operation of downed pilot 11 mi east of Sam Neua.

2. MISSION ROUTE

BLUE flight came from Yankee Station. Route unknown.

3. AIRCRAFT CONFIGURATIONS

F-4B BLUE 1, 2

SPARROWS and SIDEWINDERS

MIG-17 MIG 1, 2, 3, 4

Unguided rockets

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 15,000 ft overcast

| | BLUE 1 | BLUE 2 |
|---|---|---|
| Altitude: | 13,000 ft | |
| Heading: | 120° | |
| Speed: | Unknown | |
| Fuel State: | Unknown | |
| Flight Formation: | Abeam | |

5. INITIAL DETECTION

BLUE flight initially sighted MIGs (MIG 1, 2) 4 mi on the left, heading 250°, in left turn, followed by second section in long trail.

6. ACTION INITIATED

BLUE 1 continued straight ahead and BLUE 2 turned left for the identification run.

7. SITUATION DEVELOPMENT

MIGs 3 and 4 attacked BLUE 2 and fired air-to-air rockets. BLUE 1 then attacked MIGs 3 and 4, obtained radar lock-on at 4 mi, closed to 2-1/2 mi, however the SPARROW missile would not fire. BLUE 1 continued from 60° angle off toward the trail position and attempted a SIDEWINDER attack. MIGs 1 and 2 attacked BLUE 1 and fired two salvos of 6-10 unguided rockets. BLUE 1 broke off the attack and took evasive action. BLUE 2 was never in position to fire.

8. ORDNANCE

BLUE 1, 2 - None expended (B-1 attempted to fire AIM-7 but no missile select light)

MIG 1, 2, 3, 4 - Three salvos of unguided rockets (no hits)

9. EQUIPMENT PROBLEMS

BLUE 1 could not fire missiles due to missile malfunction. The missiles had checked out properly on deck and system was in standby, but the light did not come on when switched to ready. After recovery, the right missile would not check out, and the left missile was slow to tune. Aircraft system checks were good. If the AN/APA 157 had been "ON" instead of in "Standby," the pilot would have known he had a bad missile and the left missile should have tuned and been ready for firing.

10. AIRCREW COMMENTS

Not interviewed

11. DATA SOURCES

Messages, Reports: CTG77.6 040446Z June 65
CTG77.6 041255Z June 65

12. NARRATIVE DESCRIPTION EVENT I-4

BLUE 1 and 2 were in abeam formation at 13,000 ft, heading 120°, airspeed unknown, and sighted four MIG-17s (two leading, two trailing farther back (distance unknown)) in a left turn heading 250°, altitude unknown. The MIGs appeared to be under GCI control. BLUE 1 continued straight ahead, and BLUE 2 turned left to make an identification run on the MIGs (1 and 2). MIGs 3 and 4 fired unguided rockets at BLUE 2 and missed. BLUE 1 turned left behind MIGs 3 and 4, obtained radar lock at 4 mi, and attempted to fire a SPARROW from 2-1/2 mi. There was no missile select light and the pilot could not fire. The missile system had been in standby, and when switched to ready, the light would not come on thus indicating a malfunction. BLUE 1 continued through 60° angle off toward trailing position to make a SIDEWINDER attack on MIGs 3 and 4. He was then attacked by MIGs 1 and 2 firing two salvos of 6-10 unguided rockets at BLUE 1 which missed. MIGs 1 and 2 had pulled up into a 15,000 ft overcast and commenced their attack from above, apparently GCI directed. BLUE 1 broke off attack on MIGs 3 and 4 and took evasive action. BLUE 2 made an identification pass but was never in position to fire. The engagement lasted 3-4 minutes.

EVENT I-5

Aircraft Involved: Two F-4Bs vs four MIG-17s
Result: Two MIG-17s destroyed
Vicinity of Encounter: 20°08'N/105°15'E
Route Package V

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 17 Jun 1965/1030H

Six F-4B aircraft (BLUE flight) in three elements were on BARCAP for two strike groups attacking the Thanh Hoa bridge and the Ninh Binh barracks. The F-4s were in the last orbit after 30 min on station as the last strike group was just completing its attack. The three elements were separated.

2. MISSION ROUTE

Departed YANKEE Station and after refuel from A-3B tankers proceeded to CAP station located about 30 mi NW to Thanh Hoa. The sections were to patrol on a line running from 20°08'N/105°45'E to 20°55'N/105°25'E.

3. AIRCRAFT CONFIGURATIONS

F-4B BLUE 1, 2

3 - SPARROW (AIM-7D)
2 - SIDEWINDER (AIM-9B)
600-gal centerline tank
IFF not on
Grey and white paint

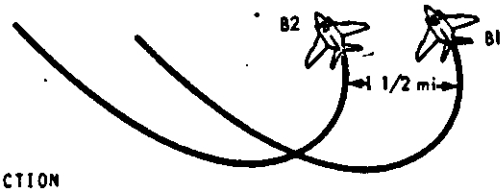
MIG-17 MIG 1,2,3,4

2 wing tanks
No missiles
Wing markings
Silver

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Ceiling (0.8 to 0.9 cover) at 17,000 ft with tops below 30,000 ft. Visibility unlimited.

| | BLUE 1 | BLUE 2 |
|---|---|---|
| Altitude: | 10,000-11,000 ft | |
| Heading: | 310°, just turning NW | |
| Speed: | 375 to 400-kt CAS | |
| Fuel State: | 7000 lb | |
| Flight Formation: | Other two sections of 2 aircraft each were stationed to east of position of BLUE 1 and 2. | |




5. INITIAL DETECTION

Contacts detected at 30 to 35 mi on radar, closed at high speed to visually acquire four bogeys on heading of 200°, 5 mi at 15,000-ft altitude. BLUE flight heading 280° at visual contact.

6. ACTION INITIATED

At radar sighting, an intercept course was established and speed increased. At visual sighting, course held to intercept range.

7. SITUATION DEVELOPMENT

On visually acquiring MIGs, BLUE flight continued intercept course, and each aircraft fired a SPARROW when the MIGs turned into the flight. BLUE 1 fired at MIG 2 and BLUE 2 fired at MIG 3, both BLUE aircraft scored hits.

BLUE flight then climbed to 30,000 ft above overcast to gain separation. BLUE flight then turned left and descended to scene of engagement but could not reacquire other MIGs.

8. ORDNANCE

| | (No. fired/No. hits) SPARROW AIM-7D | Remarks |
|---|---|---|
| BLUE 1 | 1/1 | Fired at 2 to 3-mi range, almost head on. |
| BLUE 2 | 1/1 | Fired at max range. |
| MIGs | | None observed. |

9. EQUIPMENT PROBLEMS

None reported.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | 4000 | 400 | 30 | Sixty combat missions in A-1 in Korea and two SPARROW firings. |

Not available for other crew members

Comments on this Encounter

BLUE 1

Switchology is a concern in getting SPARROW ready. Normal procedure is to tune SPARROW and put it in "standby." When ready to fire, two switches have to be thrown (CW and ARM) with a short interval between each operations. More automatic switching is desirable in times of high stress.

The F-4s had a centerline tank. When they made radar contact, they boosted up to about 550 kt to investigate and this is above the speed at which one can safely jettison the centerline tank. One cannot afford to jettison tanks every time there is a radar contact, because such contacts are frequent and have to be investigated. This event took place with the centerline tanks still in place. This should be considered in designing systems to strip cleaner for an encounter.

Frequent nonenemy contacts were made on such missions, and aircraft lacked a good identification capability. They cannot identify at long enough range. A positive means of identification is required; the intercept with the EF-10 BRAVOS in the last stages of this event points this out very clearly.

11. DATA SOURCES

Project Interviews: BLUE 1 (Front), 7 Dec 66; BLUE 1 (Back), 2 Nov 66; Letter from BLUE 2 (Front), 20 Mar 67.

Messages, Reports:

Air-to-Air Missile System Flight Report for BLUE 1 and BLUE 2.

CTF 77, Msg 1815182 June 1965

CTG 77.6, OPREP-5 170359Z June 1965

CTG 77.6, Msg 172026Z June 1965

12. NARRATIVE DESCRIPTION

Replacement Air Group (RAG) trained the squadron principally for night intercepts. Because of visual identification requirements, they developed "ident-SPARROW" tactics after deploying whereby the head aircraft made identification (and fired, if not outside parameters) while the second aircraft was the primary firing aircraft. After a head-on pass, the element was to continue, climbing for about 5-mi separation and turning back into MIGs. This tactic was developed because of the concern for the MIGs better turning capability.

This mission was prebriefed to protect two strike groups that were to hit the Thanh Hoa bridge and the Ninh Binh barracks. They departed the carrier, refueled at 20,000 ft, and proceeded to station at 35,000 ft. There were six F-4 aircraft involved. They broke up into three sections of two each. Two aircraft orbited north of Thanh Hoa, two east of Ninh Binh, and two NW of Thanh Hoa. The two NW of Thanh Hoa are the subject of this event.

At about 1025H after being on station at 10,000 to 11,000 ft in a counter-clockwise, NW-SE orientation, race-track pattern in line abreast, 1-1/4 to 1-1/2 mi apart, for approximately 30 min, BLUE 1 switched to strike frequency to check when the strike would be completed. One strike group reported that they had finished and another strike group said that they would be finished in 5 min. Lead then went back to the BARCAP frequency, told the flight that they would make one more turn and depart the area at 1035H.

At approximately 1030H with both aircraft flying at approximately 10,000 to 11,000 ft in a race-track pattern with radar on 50-mi scale, just as they turned to the NW, BLUE 1 picked up a radar contact about 30-35 mi, which was interpreted to be coming from the vicinity of Hanoi or just to the west of it. They went into an "idcnt-attack" formation. The wingman went in a 3-mi trail and the element headed directly for the contact. During the run-in toward the contact, they noted drift on the radar scope and established from that, that the unknowns were on somewhat of a southerly to southwesterly heading. They turned from a heading of about 330° to a heading of about 280° to effect an intercept. (RIO thought intercept course 310°, turning to 280° prior to firing.) The element accelerated to about 550 kt. They climbed slightly to 14,000 ft and spotted the contacts visually at about 5 mi (four airplanes) 15° to the right. Both RIOs had determined that there were four contacts, and they had determined that they were not locking up on the same airplane. BLUE 1 was locked on the MIG 2 contact and BLUE 2 was locked up on either MIG 3 or MIG 4. The bogeys were cutting across the F-4B's nose at almost a 90° angle, just slightly above at 15,000 ft, just under the overcast; MIG 2 was flying in trail of MIG 1 at about 1500 to 2000 ft. MIG 3 and MIG 4 were in a good section formation in the neighborhood of another 2000 to 3000 ft behind MIG 2. At almost the same time that BLUE 1 spotted them, they either spotted the F-4s or got a vector in their direction. MIG 1 turned, came directly towards BLUE 1. BLUE 1 could tell that they were "small silver airplanes," but no positive identification was made at this time. MIG 2, instead of cutting across the corner to join his leader to close the gap, flew the same track over the ground that his leader did. By the time he turned the corner, banked up in a steep bank turning toward his leader, the lead F-4 was close enough to make a positive ID on him. He shouted "MIGs;" BLUE 1 RIO reported "...we are in range. Fire. Fire. Fire." The steering dot was just slightly out of the circle. Lead made a slight turn and fired Station 8, right-wing SPARROW at about 2-mi range (RIO reported firing at 3.5 mi). It appeared that the SPARROW went off about 10 ft behind the MIG 2 tail. About this same time, MIG 2 rolled up on his wing and was a mass of flames. Smoke started pouring from the center of the aircraft on aft, and "the whole thing was a sheet of flame." The F-4 wingman saw this also. In the meantime, the second section of MIGs had tended to cut across the corner of this turn and close on MIG 1. The F-4 wingman fired at MIG 3 and his missile hit when MIG 3 was directly above BLUE 1 and MIG 1 (which passed about 500 ft to the left, canopy-to-canopy, of BLUE 1). Neither BLUE 1 nor the pilot of BLUE 2 saw MIG 3 get hit; both were engrossed in the maneuvers of MIG 1. BLUE 2 RIO observed his missile hit a MIG and explode. The MIGs did not appear to fire at any time.

The F-4s commenced a separation maneuver in AB, flew into the clouds, lost sight of the MIGs, completed the separation maneuver, turned to the left at 30,000 ft and came back out of AB; no radar contacts and no visual sightings were made. They could see the vapor trails from a SPARROW missile. It was obvious that they returned to the same area, but made no sightings or radar contacts. While attempting to reacquire the MIGs, radar contacts were detected to the SE. The F-4s thought it logical for the MIGs to head that way, toward the strike force. BLUE flight headed toward the contacts and identified them as friendly EF-10Bs. BLUE then returned to the firing area. They searched the area and sighted one parachute about 2000 ft off the ground. They were extremely low on fuel and departed the area. BINGO fuel was 5800 lb and the initial contact had been made at 7000 lb.

## EVENT I-5 SUMMARY

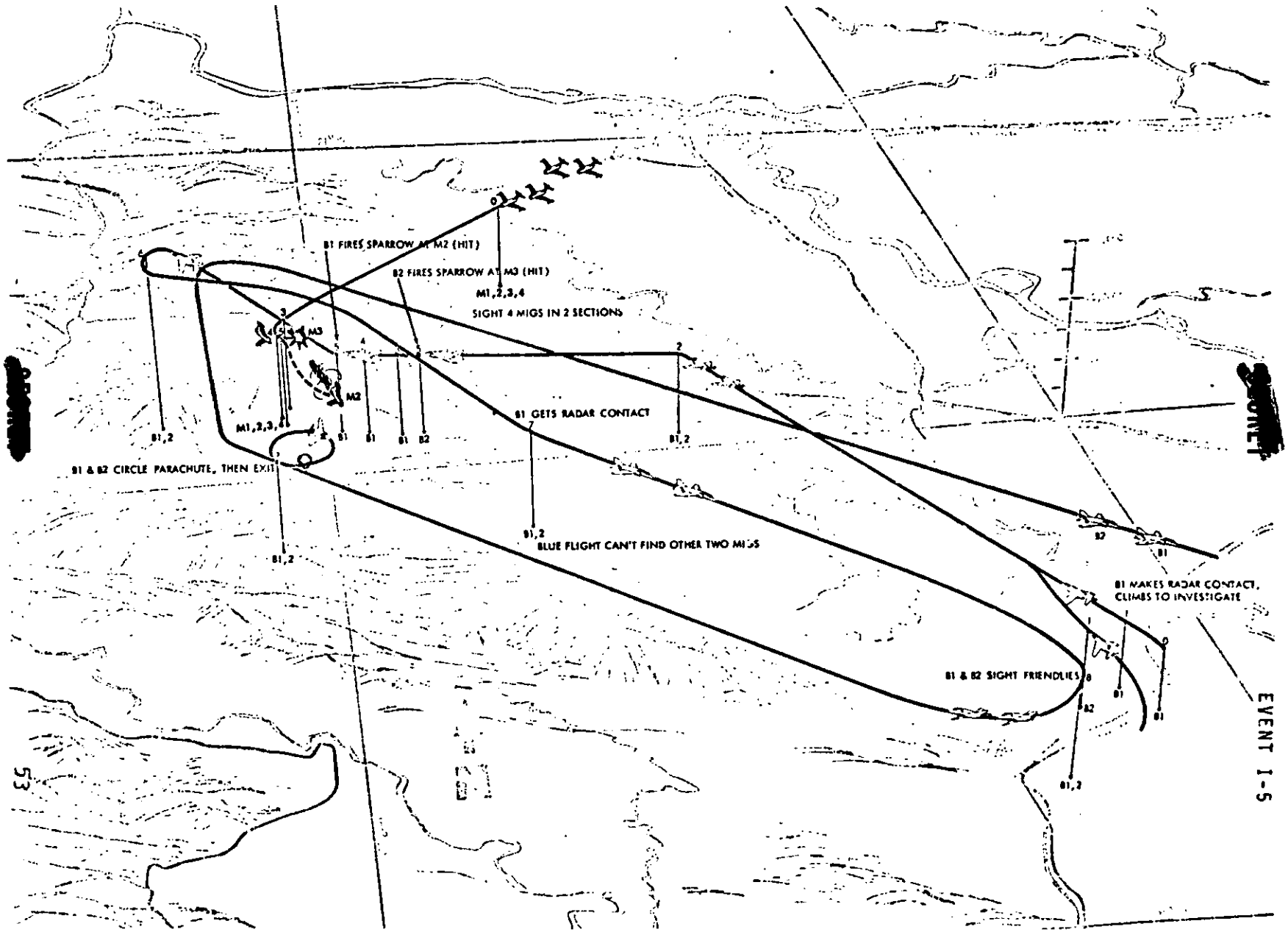
| Time Mark | Action Aircraft (BLUE 1) | | Other Friendlies | | Enemy Actions (MIG 1,2,3,4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | BLUE 2 | Communications | | |
| $T_0$ | B1 coming left counterclockwise to NW orbit, 375 to 400-kt IAS, 10,000-11,000 ft. Configuration: centerline tank 3 SPARROW 2 SIDEWINDER | | B2 slipping back to line abreast at 1-1/4 mi as section approached NW leg. | Checked with progress of strike and shifted back to CAP frequency | | BARCAP to NW of target. Radar on 50-mi scale. Missiles turned and CW on. |
| $T_1$ (about 1032) | B1 made radar contact about 340° True at 30-35 mi as he came out of turn. | B1 accelerated to 550-kt IAS and proceeded on heading of about 330° climbing to 14,000 ft to investigate | B2 slipped into 3-mi trail. B2 obtained radar contact at about 25 mi. | Lead directed: "ARM; fuel transfer switches on." | Heading S to SW at 400 to 450-kt IAS. | Attempting to establish drift. |
| $T_2$ (about 1034) | Contacts drifted left. Intercept course of 280°, section at 550-kt IAS and 14,000 ft. | Changed course to 280° True. | | Backs of B1&2 agreed that contacts were multiple bogeys, agreed to different "lock-ons." B1 took M1; B2 took M3. | Continued straight and level at about 15,000 ft. | |
| $T_3$ (about 1035) | Sighted contacts visually about 15° to starboard, 5 mi. | | Both aircraft were locked on. | | Four silver aircraft in two sections turned left into F-4s. M2 followed path of M1, M3&4 cut inside of turn to close on leader. | |

EVENT I-5 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1) | | Other Friendlies | Communications | Enemy Actions (MIG 1,2,3,4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | BLUE 2 | | | |
| $T_4$ (about 1035+) | B1 identified second aircraft as it presented plan view in turn as MIG-17 about 3-mi range. | B1 called "MIGs." B1 may have changed course slightly (up to 10°) but basically was flying straight and level; dot was in circle but out of center. | | Lead RIO reported "... we're in range. Fire...." | Lead MIG approached head on. | |
| $T_5$ (about 1036) | Jockeying slightly to get dot in center | B1 fired one SPARROW at M2 at 2-3 mi; went to AB after firing and commenced climb to 30,000 ft | B2 fired at M3; firing at maximum range with interlocks completing the firing circuit. After firing and seeing his SPARROW leave rail, B2 saw M2 burst into flames from B1 missile. | | M1 passed 500 ft on left on opposite heading to B1.<br>M1 passed 100 yd abeam B2. | SPARROW appeared to explode 10 ft aft of M2.<br>B2 saw M2 brought down, but didn't see his own hit because of concern for M1. RIO of B2 saw their missile impact and M2 explode. |
| $T_6$ (about 1037) | B1&2 in AB climbing to 30,000 ft on a heading of about 280° | On reaching about 5-mi separation, B1&2 turned to port and descended back through clouds, dropping out of AB - looking for remaining two MIGs. | | B1 RIO had called for turn to right because MIGs last seen on stbd quarter. | M2 rolled in a sheet of flame from center fuselage aft and went out of control<br>M3 exploded. | F-4s returned to scene of engagement (could still see smoke trail of SPARROW) but could not detect MIGs. |

EVENT I-5 SUMMARY (Continued)

| Mark Time | Action Aircraft (BLUE 1) | | Other Friendlies | Communications | Enemy Actions (MIG 1,2,3,4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | BLUE 2 | | | |
| $T_7$ (about 1038) | B1 heading to SE searching for MIGs, got radar contact toward strike group and investigated | B1 prepared to engage radar contacts | B2 returned to ident-trail formation. | | | |
| $T_8$ (about 1040) | B1 maneuvering to visually identify radar contacts and be ready to fire | B1&2 sighted EF-10Bs which were providing active ECM support for strike group | B2 in trail | | | Turned back to NW to search area of engagement for remaining MIGs. |
| $T_9$ (about 1043) | B1 searching for remaining MIGs, sighted parachute about 2000 ft from ground and watched it descend to ground | B1 departed area, low on fuel after parachute landed and MIGs not located during search. | B2 continued in trail. | | | |


B1 FIRES SPARROW AT M2 (HIT)
B2 FIRES SPARROW AT M3 (HIT)
M1,2,3,4
SIGHT 4 MIGS IN 2 SECTIONS
M3
M2
M1,2,3,4
B1,2
B1 & B2 CIRCLE PARACHUTE, THEN EXIT
B1 GETS RADAR CONTACT
B1,2
BLUE FLIGHT CAN'T FIND OTHER TWO MIGS
B1 MAKES RADAR CONTACT, CLIMBS TO INVESTIGATE
B1 & B2 SIGHT FRIENDLIES

EVENT I-5

EVENT I-6

Aircraft Involved: Four F-4Cs vs two MIG-17s

Result: Two MIG-17s destroyed

Vicinity of Encounter: 21°17'N/105°18'E
Route Package VI

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 10 Jul 1965/1659H

A flight of F-4C (BLUE flight) aircraft was to follow a force of F-105s striking the Yen Bai ordnance and ammunition depot and provide MIGCAP.

## 2. MISSION ROUTE

Take-off from Ubon, refueled at approximately 18°00'N/104°00'E and proceeded to just south of the target 21°40'N/104°50'E, turned east and established an orbit 25 mi east of the target.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

4 - SPARROW (AIM-7)
4 - SIDEWINDER (AIM-9B) on inboard pylons
2 - 370-gal tanks on outboard pylons
Radar on; TACAN and IFF off
Painted light grey on upper surfaces, white underneath

MIG-17 MIG 1, 2

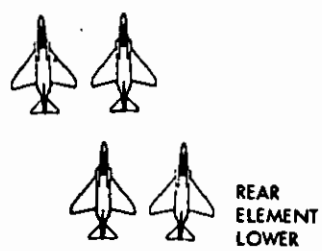
Silver with North Vietnamese markings
Red stripes on the wings
Two external fuel tanks per aircraft
No missiles observed
No afterburner operation observed

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered cumulus with bottoms at 8000-10,000 ft, tops about 14,000 ft. To the northwest of the target there were thunderstorms, buildups with tops at 28,000-30,000 ft. The action of the engagement took place mostly in clear areas.

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | ------22,000 ft------- | | | |
| Heading: | --Turning through E--- | | | |
| Speed: | ------Mach 0.92------- | | | |
| Fuel State: | About 8000-8500 lb, near BINGO | | | |

Flight Formation: (Fluid-four)




## 5. INITIAL DETECTION

The MIGs were initially detected on radar at about 33-mi range, dead ahead. Visual contact was made head-on at 10 mi by BLUE 1 (Back). The MIGs' track was displaced about 1/2 mi to the left and at the same altitude as BLUE flight. Due to the element separation, BLUE 1 and 2 saw the MIGs before the following element (BLUE 3 and 4). In the lead element BLUE 2 identified the MIGs first, In the second element BLUE 3 sighted the MIGs first.

## 6. ACTION INITIATED

At radar contact it was decided to go to an identification formation called the loose-deuce, with the lead element (composed of BLUE 1 and 2) making the identification pass. Due to fuel considerations, the lead element did not accelerate in afterburner, and insufficient separation was achieved at identification.

## 7. SITUATION DEVELOPMENT

As enemy and friendly flights passed, each turned into the other, but due to separation of the elements of the BLUE flight, the MIGs ended up attacking BLUE 3 and 4, firing cannon at a high angle off. During the turn into the MIGs the two elements of the flight became separated, and after the MIGs attacked, BLUE 3 and 4 split.

SITUATION DEVELOPMENT (Continued) EVENT I-6

BLUE 4 unloaded g's and after accelerating to supersonic speed, executed a steep zoom-climb. A wing-over and a 180° turn at the top enabled him to get on the tail of the MIG who could not follow the maneuver. BLUE 4 then fired four SIDEWINDERS, resulting in a kill.

BLUE 3 attempted to gain separation through a scissors maneuver but was unable to gain an advantage. However, through acceleration separation was achieved and on reattack BLUE 3 was able to force the MIG to overshoot. BLUE 3 fired four SIDEWINDERS resulting in a kill. Time lapse from first radar sighting to the time BLUE flight was headed home was less than 4 minutes. The engagement of BLUE 3 from the initial turn to the firing of his last missile was about 1-1/2 minutes. The engagement of BLUE 4 from the split until the last missile was fired was judged to be "1-1/2 minutes at the most."

8. ORDNANCE

(No. fired/No. hits)

| | SIDEWINDER AIM-9B | CANNON | Remarks |
|---|---|---|---|
| BLUE 1, 2 | No firing. | | |
| BLUE 3 | 4/2 | | Fired No. 1--no tone; No. 2 and 3 exploded to the right of the MIG; No. 4--unknown. |
| BLUE 4 | 4/2 | | No. 1 and 3 detonated near MIG; No. 2 and 4 fired in haste. |
| MIG 1 | | 1/0 | Fired on BLUE 3 and 4 on initial break and on BLUE 3 in scissors maneuver. |
| MIG 2 | | 1/0 | Fired at BLUE 3 and 4 on initial break. |

9. EQUIPMENT PROBLEMS

BLUE 2 - Radar was not operating at peak performance.

BLUE 3 - Radar became inoperative during the high-g scissors maneuver.

BLUE 4 - Intercom between cockpits went out during the engagement. Could only operate radar on emergency and, therefore, was not searching. No automatic lock-on could be established. The radar later failed.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | 2500 | 250 | Unknown | Had not completed checkout until Ubon. |
| BLUE 2 | | | | |
| Front | 1000 | 250 | 75 | TAC background. |
| Back | 700 | 400 | 60 | Had only observed one SIDEWINDER firing. |
| BLUE 3 | | | | |
| Front | 2600 | 250 | 60 | Little ACM. Fired only one SIDEWINDER. |
| BLUE 4 | | | | |
| Front | 2700 | 200 | 50 | Never fired a SPARROW or SIDEWINDER; air-to-air experience. |
| Back | 2000 | 350 | 50 | Had never fired a SPARROW. ADC experience with GENIE firing. |

Comments on this Encounter

BLUE 1 (Front) - Expressed desire for a fighter with maneuverability and some advantage that can be exploited. Some optical aid should be available for visual ID. Ash tray would be desirable in F-4. Seat restraint harness is too restrictive for good visibility. Canopy distorts view in some areas. Heads-up display to give range to target would be helpful. Had trouble with SIDEWINDER due to head pitting. Believed caused on takeoff when AB kicked up debris.

BLUE 2 (Front) - Expressed desire for a tail warning radar. Needs missile with less minimum range. Backseat is helpful for radar observation.

BLUE 2 (Back) - Feels that MIGs were GCI'd since they made 180° turns away from them and into them.

Comments on this Encounter (Continued) EVENT I-6

BLUE 3 (Front) - Gun not necessary; it will get people into trouble. Would like capability to fire all missiles on F-4 with centerline tank on. Less minimum range for missiles instead of guns. Front cockpit means of going to boresight on F-4. Command destruct on SIDEWINDER in case it locks on friendly. Had intercepted Navy aircraft many times that he did not know were in the area. Because of lack of ACT at time of event, did not know how to maneuver the F-4 as well as he could later after some experience.

BLUE 4 (Front) - Felt that all the requirements demanded of pilots flying multi-mission aircraft meant that some aspects (e.g., ACM) would not receive sufficient training.

BLUE 4 (Back) - Expressed desire for better visibility at 6 o'clock. Could not see MIG when they pushed the nose over. Would like internal gun. Ran a lot of intercepts on Navy aircraft and first thought the bogey picked up was Navy. Likes two-man crew but wants an RIO for the second crew. Second crew needed as specialist to operate the equipment, particularly in degraded environment.

## 11. DATA SOURCES

Project Interviews: BLUE 1 (Front), 13 Jan 1967; BLUE 2 (Front), 9 Jan 1967; BLUE 2 (Back), 7 Mar 1967; BLUE 3 (Front), 9 Jan 1967; BLUE 4 (Front), 16 Mar 1967; BLUE 4 (Back), 9 Mar 1967.

Messages, Reports:

2AD, 101509Z July 65, 2DOTO 03538
2AD, 101159Z July 65, 2DOTO 03532
CINCPACAF 110101Z July 65, DO 31195
PACAF Tactics & Techniques Bulletin No. 25, 27 Sep 65
USAF Fighter Weapons School CAD Bulletin No. 10, 7 Feb 67
CINCPACFLT Staff Study 11-66

## 12. NARRATIVE DESCRIPTION

As bombing action was initiated in the northernmost part of Vietnam in the summer of 1965, particularly north of Hanoi, a certain pattern of enemy air activity was noted. As the bombing flights continued to follow a pattern, the enemy actions also assumed a pattern.

The pattern was evident in the MIG warnings which were broadcast by the BIG EYE support aircraft. The MIG warnings at this time were of two types: Yellow warning signified the MIGs were airborne, and red warning signified the MIGs were about 10 min away from a possible engagement. The following events developed the pattern of interest. As the first strike entered the area, the first warning was "yellow," followed by "red"; however, shortly afterward the red warning was changed to yellow. As the last flight departed the area after the strike, the red warning would be called, and the MIGs would follow the flight out of the area. Unaccountably, the MIGs did not attack.

The timing of the second red warning was such that the escort had only minimum fuel remaining. Information would be received that MIGs were coming up from Phuc Yen, and it was suspected that the MIGs could determine from their GCI, when the escorts would return to base. Consequently, the only possible action on the part of the escorts, which were low on fuel was at most one fast intercept or attempted intercept.

The pattern was noted by the strike force pilots. A recommendation was made to Seventh Air Force to take advantage of the fact that the MIGs always retreated when the attack force came into the area and then attempted attacks on the last flights. On 10 July, the morning strike flights again observed this pattern of MIG activity. As a result, the afternoon flight was briefed that a plan to engage the harassing MIGs would be put into effect. BLUE flight was instructed to change the takeoff time for this particular flight, 20 min later than the normal strike flights. The escort would then follow the last F-105 flight and arrive approximately 15 min after the normal F-4 flight.

A tactic was designed to give the F-4 flight the appearance of the last F-105 flight on target. They would actually meet the last strike flights and press on to the north, on a search-type mission. Radio silence was to be maintained, and the speeds and altitude flown on the way into the orbit area would also give the appearance of an F-105 flight. From the planned holding orbit the F-4s would be in a position to attack any MIGs attempting to attack the withdrawing strike flights.

Action Prior to Engagement

BLUE flight consisted of four F-4C aircraft. Each aircraft was armed with four SPARROW (probably AIM-7D) missiles and four SIDEWINDER missiles -- two each on each of the inboard wing pylons. The outboard wing pylons carried the 370-gal fuel tank. No centerline tank was carried since there were only a few in the theater at that time. The aircraft were not camouflaged, but painted light grey on the upper surfaces and white on the lower surfaces.

More than the normal ground checks were performed for this mission. During climb-out, SPARROW missile tuning was accomplished. The SIDEWINDER was checked on the ground to see if its head would track a flashlight, and in the air by sighting another aircraft to assure that a tone developed. The SPARROW missile tuning was accomplished every 15 min. If one would not tune immediately, the pilot was instructed to leave it on. This procedure insured that the SPARROWS were immediately available despite wear on the radar.

As planned, BLUE flight maintained radio silence from Ubon to the refueling point. The rendezvous, refueling, and subsequent departure from the tankers with full tanks was accomplished in complete radio silence. The tankers had been briefed on this special mission, and no radio contact was attempted. The refueling point as noted on the map (Figure 1) was not the one that was later chosen for communication. BLUE flight was assigned a radio frequency different from that of the strike flights, although the strike frequency was monitored.

Formation and Radar Search

The flight refueled at 28,000 ft (MSL) and 310-kt CAS and proceeded north at Mach 0.85 and about 20,000-ft altitude which approximated that of the F-105 strike aircraft. The track was toward the target, and the flight was spread in a fluid-four formation -- BLUE 1 and 2 on the left, BLUE 3 and 4 on the right roughly 2000 ft apart and the elements spread approximately 5000 ft. This formation was selected to obtain more coverage to the rear of the F-4. The second element (BLUE 3 and 4) provided cover by weaving behind the Lead. The radar coverage was assigned to BLUE 1 and 3 (the element leaders); one searched high and the other searched low. BLUE 2 and 4 were assigned the responsibility for visual search. If a target appeared it would be called out until Lead (BLUE 1) locked on. After lock-on the flight would resume its assigned sweep modes.

En route to the orbit area the radar was set on a range scale of 100 mi. In the area, each aircraft was assigned quadrants for search with the Front scanning the sky visually, and the Back responsible for the radar contacts. The track to the orbit area was in the direction of the target. As a result, the aircraft searched ahead and to the side as they orbited, expecting the MIG threat in the area indicated in Figure 1.

During the orbit, BLUE 4's radar was not operating properly. Although the radar checked at take-off, after reaching altitude, loss of pressurization in the wave guide caused the radar malfunction. The radar could be operated in emergency mode but due to other failures the automatic lock-on feature did not function. Consequently, all operation of BLUE 4's radar was manual and was not operated unless other flight members reported a contact.

BLUE flight was far enough behind the preceding flight of F-105s to be out of radar range. The IFF was switched off during this mission, and the flight employed the inertial system for navigation.

Just south of the target, the flight turned east. To minimize detection the turn was executed by a single radio command.

In addition to the F-105 strike aircraft, two other CAP flights of F-4s and a few B-66 aircraft were in the area. An EC-121 BIG EYE aircraft was stationed over the Gulf of Tonkin. The flight did not recall receiving any warning or other information from the BIG EYE aircraft. (Note: This disagrees with CINCPACFLT 110101Z July 65 which states that "...MIGCAP which subsequently destroyed two MIG-17s reports receipt of BIG EYE warning.") The BIG EYE aircraft later reported that it had identified six or eight MIGs airborne during the engagement.

During the flight to the orbit area and during the time spent in clockwise NE/SW orbit, BLUE flight investigated several radar contacts. The contacts proved to be either friendly aircraft or radar lock-on to ground clutter. The orbit altitude was 22,000 ft since SAMs were not considered a threat at that time. The orbit altitude was slightly lower than normal (30,000-38,000 ft) to simulate an F-105 flight.

When almost to BINGO fuel levels for normal return (which was about 8000 lb in this area), it was decided to make one more pass to the N, from which the threat was expected.

Action at MIG Detection

After just completing the turn at the southern end of the orbit, BLUE 1 picked up a radar contact at 33 mi (one other flight member quoted 45 mi). Shortly afterward, BLUE 3 also locked on. BLUE 1 instructed the flight to assume the loose-deuce formation. The element composed of BLUE 1 and 2 was to make the identification by accelerating ahead of BLUE 3 and 4. The ideal separation was from 7-10 mi to permit the lead element to break away after identification and permit the second element to fire SPARROW missiles.

Due to the fuel state, which was about 7000-8000 lb at this time the lead element chose not to use afterburner and accelerated in military power. The absolute BINGO fuel levels for the area of operation were 6500 lb to engage in combat and 3500 lb to reach home. In order to enter the engagement at a reasonably high airspeed and prevent losing radar contact, the second element (BLUE 3 and 4) flew an S-pattern to gain separation for the identification. The result of these conflicting requirements was that when the MIGs were visually contacted, the elements were separated by only 2-3 mi instead of 7-10 mi desired. As a result a SPARROW shot could not be safely attempted by the second element.

When BLUE flight prepared for the ID, BLUE 1 had no confirmation that the other flight members had acquired the target. Actually, they had. The lack of communication resulted from a continuing attempt to minimize radio transmissions to conceal the presence of the aircraft. At initial contact by BLUE 1, one bogey was noted. It tracked down the scope and then turned 180° and went away from BLUE flight. After following the radar contact for awhile, it was realized that there was an overtake velocity of about 200 kt.

The flight continued to follow the target, until it was clear the target would reach China before an intercept could be accomplished. A right turn toward home was initiated when the overtake velocity changed to 900 kt. The flight immediately returned to an intercept course. Due to the high overtake velocity, the MIGs were visually sighted a short time thereafter.

$T_0$ - Only two MIGs were seen slightly high and to the left.

$T_1$ - BLUE 2 (Front) identified the MIGs first; they were difficult to identify and were not smoking. Positive identification was not made until the MIGs were at 90°N beam (9 o'clock).

The MIGs started to turn after the lead element but rolled out and continued to turn after the second element. The two MIGs were in close formation, not in fighting position.

$T_2$ - BLUE 1 and 2 turned left into the MIGs. During ID BLUE 1 led the first element only while BLUE 3 was in control of the second element. BLUE 1 and 2 jettisoned tanks, lit AB, and in the turn observed the MIGs turning behind BLUE 3 and 4 and jettisoning their tanks. (BLUE 1 mistakenly assumed the tanks were missiles.)

$T_3$ - BLUE 1 and 2 initially started to turn left, but BLUE 1 unloaded and accelerated while BLUE 2 started a climbing turn which split the element.

$T_4$ - After accelerating, BLUE 1 climbed to 24,000 ft and orbited the area. During this orbit the other members of the flight were contacted and their actions were monitored.

$T_{5,6}$ - BLUE 1 called for a "join up" south of the river at the termination of the engagement.

$T_4$ - BLUE 2 started a climbing left-hand turn and jettisoned tanks when the Back reported that the MIGs had done likewise. BLUE 2 continued looking for two other MIGs since they had been briefed to look for MIGs in groups of four, but none were ever seen. During the turn the MIGs were lost from view.

$T_5$ - At the top of the climb to 35,000 ft BLUE 2 observed BLUE 4's attack and subsequent hit on a MIG.

$T_6$ - BLUE 2 flew toward BLUE 4, but the action was completed before BLUE 2 had joined.

$T_2$ - BLUE 3 and 4 heard BLUE 2 call identifying the bogeys as MIGs and lit afterburners at ID. As the MIGs passed BLUE 3 and 4, the MIGs dropped their tanks, and ($T_3$) BLUE 3 and 4 did likewise, ($T_4$) breaking into the MIGs. The MIGs then turned very tightly behind BLUE 3 and 4, firing. Both BLUE 3 and 4 saw the firing, but BLUE 3 did not notice any tracers, just "the nose of the MIG lighted up" by muzzle flashes. The MIGs were not tracking, and although the MIGs initially out-turned BLUE 3 and 4, the F-4s accelerated during the turn which permitted BLUE 3 and 4 to gain separation.

BLUE 4 was initially flying a fighting wing position with BLUE 3, at 200 ft out and 200-300 ft behind. Because he felt that BLUE 3 had sufficient lookout protection (i.e., from BLUE 3, Back), BLUE 4 broke right during the turn in an attempt to either "sandwich or split" the MIGs.

The MIGs split, one following BLUE 3 and the other following BLUE 4.

$T_5$ - After the MIGs split, BLUE 3 executed several reverses, the MIG slid by behind in an overshoot and BLUE 3 again reversed. During these maneuvers BLUE 3 felt that the MIG had an airspeed advantage, hence BLUE 3 did not unload the aircraft and attempt to disengage.

During the scissors maneuvers BLUE 3's radar went out. When the MIG overshot, BLUE 3 decided to gain separation.

$T_6$ - BLUE 3 executed a roll right and went into a 30° dive. The MIG tried to follow ending up at 7 o'clock, three-fourths of a mile away. This was followed by a slight left turn resulting in a 5-mi separation. During this period, Back proved extremely helpful to Front by keeping him informed of the enemy positions.

$T_7$ - After gaining the separation BLUE 3 started a hard left turn into the MIG, attacking in almost a head-on position. The Back, aware that the radar was out, told the Front to "Go HEAT." The Front interpreted this as a problem in acquiring the MIG, and replied, "Go boresight." During the subsequent communications resulting from the misunderstanding ($T_8$) the MIG passed head-on, very close and firing but scored no hits.

After the aircraft had passed, BLUE 3 made a slight left turn to keep the MIG in sight and then made a very steep (about 60°) dive to 10,000 ft. The afterburner had been turned on in the initial break and was still operating so that the speed increased to Mach 1.3.

$T_9$ - BLUE 3 then initiated a high-g barrel roll with the MIG behind at approximately 1 mi. After reaching the 270° position, ($T_{10}$) the MIG opened fire from 7 o'clock at 1/2-mi range; however, the firing range was excessive and no hits were scored. As BLUE 3 dished back (emerged from the maneuver), the MIG overshot. The MIG changed his attitude to pull up but could not change the direction in which the aircraft was moving due to a stall.

After the MIG overshot, he started to turn, then leveled and descended toward a cloud.

$T_{11}$ - BLUE 3 was now at about 13,000-15,000 ft, Mach 0.9-0.95, with the MIG ahead. BLUE 3 fired a SIDEWINDER at 1-1/4-mi range, without tone. This first missile went unobserved. Shortly thereafter, BLUE 3 fired a second SIDEWINDER which produced a large fireball at, or just to the right of, the tail cone. A third missile was fired and detonated slightly to the right of the MIG. A fourth missile was fired but was unobserved. Following the first missile, the next three were fired within a period of 10 sec, all with a good tone. BLUE 3 did not see the MIG blow up, just the fireball entering the cloud.

$T_{12}$ - After the fourth missile was fired, BLUE 3 broke left with the intent of heading to Udorn as fuel level had reached 3000 lb.

$T_5$ - BLUE 4, after breaking right, started a dive from 20,000 ft in afterburner and unloaded the aircraft. BLUE 4 accelerated to about Mach 1.4 at 12,000 ft ($T_6$) and started a 4-g pull-up. The MIG had lost ground, but continued to follow BLUE 4. During the pull-up, BLUE 4 lost sight of the MIG. He climbed to 33,000 ft ($T_7$) and came back over the top, inverted in a "sort of Immelmann" to rejoin the engagement. At this time the radar was completely inoperative.

On rolling out at the top of the climb, BLUE 4 observed the MIG at about 28,000 or 29,000 ft falling off on the left wing in a 090° bank, doing a vertical recovery. The MIG smoothly pulled out in a 020° bank, descending slightly, to the left. The MIG at this time was 4000-5000 ft in front of BLUE 4, as BLUE 4 came out of afterburner.

BLUE 4 felt that the MIG must have started to climb at the same time as BLUE 4's climb was initiated, and lost sight of BLUE 4 during the ensuing climb.

$T_8$ - The fall-off to the left and the turn gave BLUE 4 an excellent firing position. BLUE 4 came out of afterburner, completed the Immelmann, made a slight turn to the left, fired the first SIDEWINDER. At the time BLUE 4 was straight and level with a slight descent (15° nose down) closing on the MIG. The first missile, fired with tone, did not contact the MIG. It went by the tail pipe and then detonated off to the left about 4-6 ft from the left wing tip. On detonation, the MIG rocked the wings six to seven times rapidly and at low amplitude. A second SIDEWINDER was fired rapidly without tone.

The MIG was still flying and continued to roll slowly to the left in a left bank. BLUE 4 then established a tone with the third SIDEWINDER and fired. The missile tracked well and exploded short of the tail pipe but in line with it. The fireball expanded until only the wing tips were seen. No debris was seen leaving the aircraft at any time during the encounter, but when the fireball subsided, the MIG started to emit dense white smoke from the tailpipe. Before the explosion of the third missile, BLUE 4 saw fire in the MIG tailpipe but could not ascertain if it was afterburner operation or not.

During the firing BLUE 4 continued to descend with the MIG, continuously closing. At the time the MIG reached about 6000 ft, the MIG was 60° nose down and inverted.

$T_9$ - BLUE 4 was about to overshoot so he rolled inverted, pulled the nose through the MIG and fired a fourth SIDEWINDER but did not observe the missile.

At this time BLUE 4 (Back) broadcast flak warning. The flak was in the area of both BLUE 4 and the MIG. BLUE 4 lit the afterburner and began maneuvers to evade the flak while exiting the area.

BLUE 4 never considered firing the SPARROW. He had set up for HEAT at the initial encounter and planned to use the SIDEWINDER.

The intercom was not functioning properly, and BLUE 4 had difficulty communicating with the Back whose duty was to "clear the 6 o'clock position."

After the encounter, all aircraft exited the area low on fuel and joined about 30 mi from Udorn. The flight landed at Udorn with about 1800 lb of fuel.

Later information from the BIG EYE aircraft revealed that a large flight of MIGs was 10-15 mi behind the flight as they exited the area.

EVENT I-6 SUMMARY
Keyed to Figure 1

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{0A}$ | B1,2,3,4 altitude 22,000 ft, Mach 0.9, almost at BINGO fuel | Coming out of turn at southern end of orbit, in fluid-four formation | | | | |
| | B1 fuel state 6000 lb | B1 (Back) picks up one bogey at 33 mi goes to military power | | B1 calls contact ahead at 30 mi and ID posture. No confirmation that others have acquired bogey. | Bogey at 11:30 o'clock at same altitude | Military power used since fuel is low |
| | B2 fuel state 8000 lb | Goes to military power | | None | | |
| | B3&4 | Throttle back and start weave to gain separation. Acquires targets on radar | | None | | |
| | B4 fuel about 8500 lb | | | | | B4 is not searching due to radar problems. He operated it on emergency only after others had called bogeys. |
| $T_{0B}$ | | | | | Bogey turns 180° closing velocity 200 kt | |
| $T_1$ | B1 Mach 0.92 altitude 22,000 ft | Range of bogey 20 mi, breaks lock and un reacquisition identifies two targets | | B1 (Front) asks B1 (Back) to check lock-on. | | Lead almost calls off the chase at this point since Lead felt bogeys would fly into Red China. |
| | B2 Mach 0.92 altitude 22,000 ft | Gets radar lock-on at range 17-20 mi. | | | | |
| | B3&4 Mach 0.85 fuel 8000 lb | Both have radar lock at this time | | | | |

EVENT I-6 SUMMARY (Continued)
Keyed to Figure 1

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_2$ | Status for all aircraft same | | | | Closing velocity goes from 200 to 900 kt. Heading stays same, indicating 180° turn by MIGs, range about 18 mi. | |
| $T_3$ | B1&2 Mach 0.92 altitude 22,000 ft<br>B3&4 Mach 0.85 altitude 22,000 ft 2-1/2 mi in trail of lead element | Visually acquire MIGs | | | | |
| | | | | | | |

EVENT I-6 SUMMARY (Continued)
Keyed to Perspective Sketch

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | B1 Mach 0.92 altitude 22,000 ft in full military power, tanks on | MIGs visually acquired by B1 | | | MIGs about 2000 ft higher, range approximately 1 mi MIGs in close formation, level | |
| | B2 Mach 0.92 altitude 22,000 ft on left in close wing formation on B1 | MIGs sighted at about 11 o'clock up, hard to identify at first, no smoke from MIGs. B2 sees the MIGs first. Back sees MIGs at about 045° off, range less than 1 mi, seen now due to canopy restrictions | | B2 (Back) starts to call out over air but advises Front who calls | | Sun behind them helped to identify as MIGs pass abeam, since silhouette "stood out." |
| | B3&4 Mach 0.85 altitude 22,000 ft about 2-1/2 mi in trail | | | | | |
| $T_1$ | B1 same status | Lights afterburner accelerates | | B1 calls ID and break to left for B1 and B2 only | MIGs pass to left of B1&2, 1/2 mi away in a close formation. Pass about 1500 ft up | |
| | B2 same status | B2 gets definite ID when MIGs pass 9 o'clock, lights afterburner | | | | |
| | B3&4 same status | | | | | |
| | At this point the action of the flight has sufficiently separated to treat each aircraft individually. | | | | | |

EVENT 1-6 SUMMARY (Continued)
Keyed to Perspective Sketch

| Time Mark | Action Aircraft (BLUE 1) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_2$ | B1 in afterburner Mach ~0.95 altitude 22,000 ft | Starts a 4 to 5-g level turn, jettisons tanks | | None | MIGs start to turn after B1&2, see second element (B3&4) roll out and continue | |
| $T_3$ | In afterburner, has completed 180° of turn, altitude 22,000 ft, tanks gone | Goes to 0 g and accelerates for separation | | None | | During turn loses track of all other aircraft, except MIGs. Sees MIGs jettison tanks and thinks MIGs are firing missiles at him |
| $T_4$ | In afterburner, Mach 1.3, altitude 15,000 ft | Has accelerated sufficiently, starts climb. Sees enemy aircraft during climb. | | None | During the climb B1 sees an enemy aircraft 5000-7000 ft below and back at 7 o'clock | Loses contact with MIGs |
| $T_5$ | In afterburner, Mach 1.2, altitude 25,000 ft | Ends climb, shuts off afterburner and sets up orbit | | B1 calls rest of flight. Contacts B2,3,4, and monitors their actions. Hears B3 call that he is in a scissors. Also hears B3 call, "I got one." Hears B2 say that B2 has B4 in sight | | |
| $T_6$ | Mach ~0.9, altitude 24,000 ft | Has B2&4 on radar. Join up with others south of Red River | | B1 calls for join-up and egress, because fuel is low. Join-up south of River. | | |

EVENT I-6 SUMMARY (Continued)
Keyed to Perspective Sketch

| Time Mark | Action Aircraft (BLUE 2) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_2$ | In afterburner | Starts wide turn and climb to the left | | | MIGs start to turn into B1&2, see second element (B3&4), roll out and continue. Then turn after B3&4. MIGs at 7:30 o'clock | |
| $T_3$ | Climbing in afterburner | After receiving word that MIGs jettisoned tanks, B2 punches off tanks | | B2 (Back) sees tanks jettison and advises Front to do same. Front advises flight to drop tanks | MIGs start very tight turn and drop their tanks. Turn is "amazing." | During the climbing turn, wings are rolled level periodically to check airspace for other possible MIG, as they were advised to expect them in flights of four. Also plenty of jinking |
| $T_4$ | Climbing in afterburner | B2 loses sight of MIGs. | | | | |
| $T_5$ | Altitude 35,000 ft | Sees B4 at 2 o'clock down maybe 5000-10,000 ft and a "couple of miles out." Sees B4 fire at least two missiles. At 25,000-30,000 ft sees one missile detonate behind MIG. Following this MIG noses over trailing smoke, into an increasingly steep dive. | | | | |

EVENT I-6 SUMMARY (Continued)
Keyed to Perspective Sketch

| Time Mark | Action Aircraft (BLUE 2) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_5$ (Continued) | | Back sees MIG trailing light greyish-white smoke in a 050°-055° dive. Also sees a missile fired, and the aircraft nose over trailing more smoke. | | | | |
| $T_6$ | Altitude 35,000 ft | Descends to altitude of B4 to join up. Joined at 25,000 ft and then climbed together to optimum cruise altitude | | | | |

EVENT I-6 SUMMARY (Continued)
Keyed to Perspective Sketch

| Time Mark | Action Aircraft (BLUE 3) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_2$ | Altitude 22,000 ft Mach ~0.85 | Li: afterburner | | Hears B2 call, "They're MIGs, they're MIGs, break left." | MIGs start to turn after B1&2 see second element (B3&4) roll out and continue MIGs at 11 o'clock 1-2 mi from B3 | B3 is in command of his element (B3&4). |
| $T_3$ | Altitude 22,000 ft Mach ~0.85, afterburner on | Jettisons tanks | | | MIGs jettison tanks and start a hard turn | B3 calls the MIGs turn "unbelievable." |
| $T_4$ | Breaking to left, afterburner on | Continues turn to left accelerating, loses track of B4 | | | MIGs shooting one at B3 and one at B4. Range 2000-3000 ft and coming up | B3 sees no tracers just nose of MIG light up. B3 now follows only the MIG which stayed behind him. |
| From $T_5$ on the actions of B3 and B4 are separated and the time marks are not synchronized. | | | | | | |
| $T_5$ | Afterburner on | Reversed and started several "scissors" or reverses with the MIG. Did not go to 0 g because B3 felt MIG had airspeed advantage. | | Calls B4 for help, but B4 says he cannot help, has a MIG on him. | MIGs split. MIG slid by behind in overshoot and reversed. | B3 feels MIG made a mistake in reversing after the overshoot. The MIG should make a single pass only.<br><br>Radar goes out during the scissors maneuvers. MIG shoots at each crossover. |

EVENT 1-6 SUMMARY (Continued)
Keyed to Perspective Sketch

| Time Mark | Action Aircraft (BLUE 3) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_6$ | Afterburner on | Rolled right and down in 030° dive, then made a slight left turn, gaining separation | | | MIG seen at 7 o'clock, range 3/4 mi, continues to follow B3 | Has gained speed advantage so B3 decides to gain separation |
| $T_7$ | Altitude 20,000 ft Afterburner on | Start hard (6.5 to 7 g) left turn into MIG | | Back calls, "Go HEAT." Front replies, "Go boresight." | | Front thought could not get lock on and did not realize that the radar was out |
| $T_8$ | | MIG passes head on, starts slight left turn to keep MIG in sight and then dives at 060° to 10,000 ft | | Conversation between Front and Back | MIG shoots, nose lights up | |
| $T_9$ | Altitude 10,000 ft Mach 1.3 | Starts high-g barrel roll. Comes out of afterburner. | | | MIG astern at 1 mi | |
| $T_{10}$ | 270° through barrel roll (i.e., in a 090° bank to left) | Dished back from the barrel roll in a left turn | | | MIG at 7 o'clock range 1/2 mi and firing<br>During left turn MIG overshoots due to higher speed of MIG. MIG changes attitude to pull up but cannot change direction.<br>MIG starts to turn then leveled and headed toward a cloud, descending range 1-1/4 mi | B3 felt MIG was out of range<br>MIG is now stalled as indicated by condensed vapor over the wings. |

EVENT I-6 SUMMARY (Continued)
Keyed to Perspective Sketch

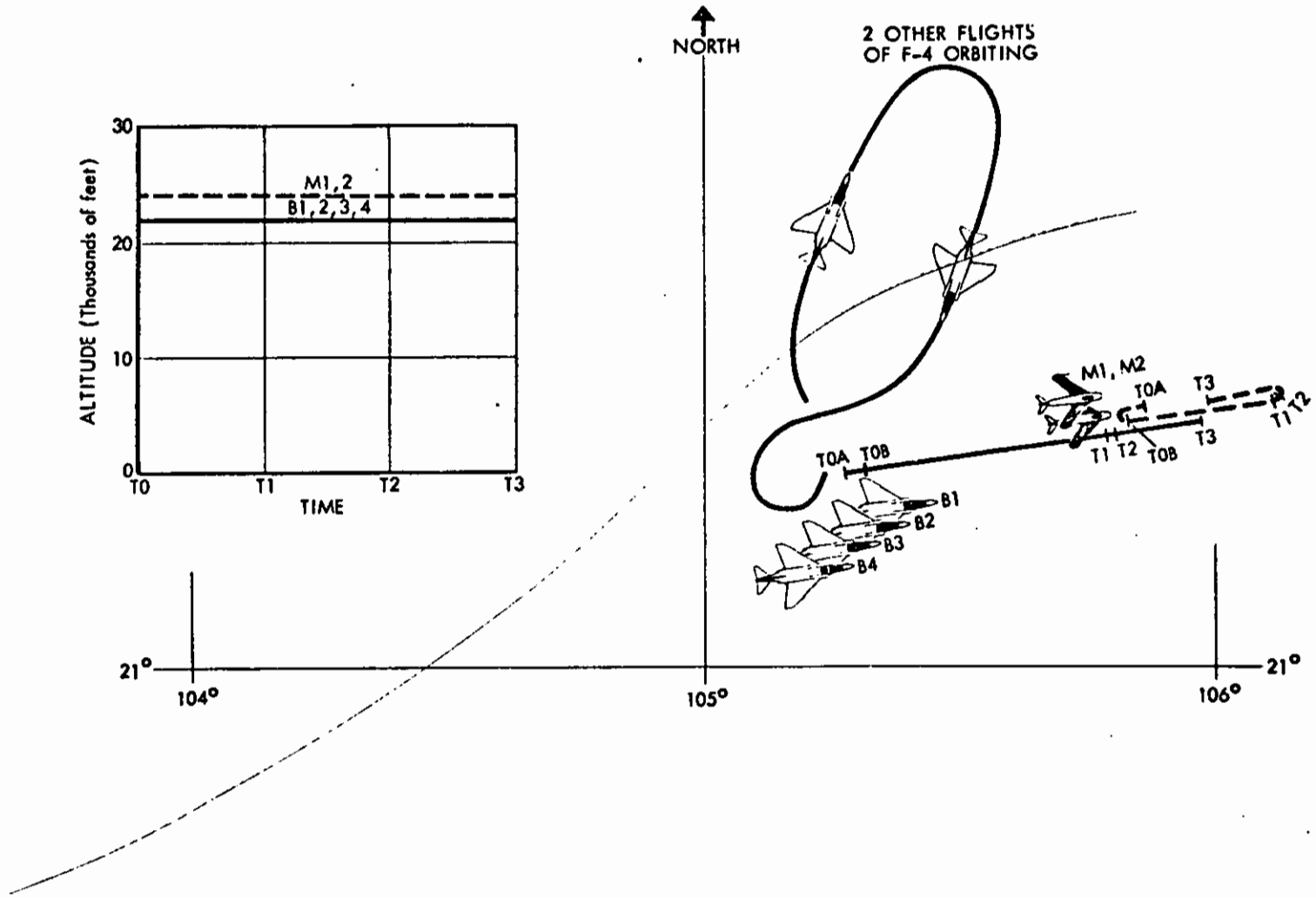
| Time Mark | Action Aircraft (BLUE 3) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{11}$ | Altitude 13,000-15,000 ft. Mach ~0.9-0.95 | Fired first SIDEWINDER, no tone<br>Fired three more SIDEWINDERS within 10 sec. good tone on all missiles | | | | B3 does not know what happened to missile<br>Missile #2 detonates with large fireball at the tail cone or just to the right of it<br>Missile #3 detonates slightly to right of MIG |
| $T_{12}$ | Fuel State 3000 lb | After firing last missile broke hard left with intent to go home.<br>En route to Udorn, joins up with B1,2,4. | | | | fuel was main concern throughout encounter. |

EVENT I-G SUMMARY (Continued)
Keyed to Perspective Sketch

| Time Mark | Action Aircraft (BLUE 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_2$ | Altitude 22,000 ft Mach ≈0.85 | Lights afterburner, sees MIGs | | | MIG starts to turn after B1&2 see second element (B3&4) roll out continue, MIGs about 2000 ft up and to the left | |
| $T_3$ | Altitude 22,000 ft Mach ≈0.85, afterburner on | Jettisons tanks | | | MIGs jettison tanks and start a hard turn. MIGs pass about 2000 ft to left side | |
| $T_4$ | Afterburner on | Accelerating and descending in a left turn. In fighting wing 200 ft out and 300 ft back of B3. During turn B4 slips to outside of B3 | | | MIGs turn to inside, start firing | MIGs were not tracking |
| | From $T_5$ on the actions of B3 and B4 are separated and the time marks are not synchronized. | | | | | |
| $T_5$ | Afterburner on, altitude 20,000 ft, Mach 0.9 | Hard right break and descent away from B3 | | | MIGs split, one follows B3, other follows B4. MIG following B4 back about 5000 ft | Maneuver planned to split MIGs or permit sandwich of MIGs. |
| $T_6$ | Mach 1.4, Altitude 12,000 ft | Starts a smooth 4-g pull-up. Pulls straight up, relaxed g's momentarily, and then comes back over the top. | | | MIG pulls up at same time as B4 | |

EVENT I-6 SUMMARY (Continued)
Keyed to Perspective Sketch

| Time Mark | Action Aircraft (BLUE 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_7$ | Altitude 32,000 ft 350-kt CAS, came out of afterburner | Topped out of vertical climb inverted, 1/4 roll to 135°, slight turn to left, range to target 4000-5000 ft | | | MIG at 28,000 or 29,000 ft in a vertical recovery to the left in 090° bank, nose to the west | Radar completely out in B4 at this time |
| $T_8$ | Altitude 28,000 ft 015° nose down level | Fired first SIDEWINDER missile. Good tone closing on target, range 3500 ft<br>Fired second missile in haste. No tone, range 2500 ft<br>Fired third missile, good tone, range 2000 ft | | | 020° bank in left turn, descending to pick up air-speed<br>Still in left turn, 050° bank, 020°-030° nose down. Emits white smoke from tail after explosion. No debris | Missile detonates 4-6 ft from left wing tip. MIG rocks wings, in shallow rapid fashion 5 or 6 times<br>Unknown results for second missile<br>Missile detonates in line with tail-pipe, but short |
| $T_9$ | Inverted in steep dive after MIG, Altitude 6000 ft | Fired fourth missile range 1000 ft, closing rapidly, about to overshoot. Nosed over, lit afterburner, went supersonic, climbed to altitude and cruised home.<br>Meets B2 first, then B3&1. Sees B2 conning at 5-7 mi behind. B4 is at 45,000 ft. | | Back starts yelling flak | 060° nose down in left turn, almost inverted | B4 did not observe the missile |


NORTH
2 OTHER FLIGHTS
OF F-4 ORBITING
ALTITUDE (Thousands of feet)
30
20
10
0
M1, 2
B1, 2, 3, 4
T0
T1
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T3
TIME
M1, M2
T0A
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T0A T0B
B1
B2
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B4
21°
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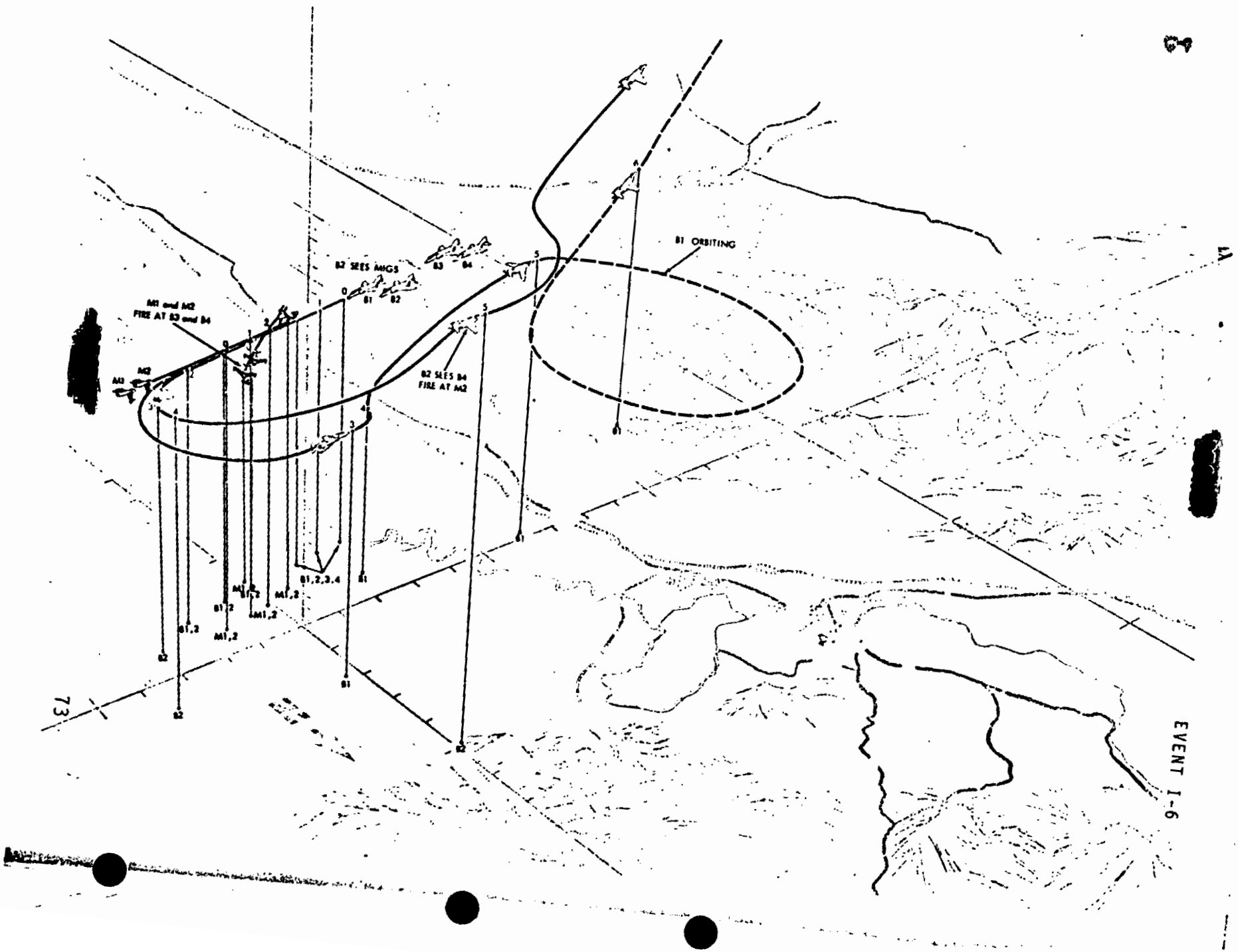
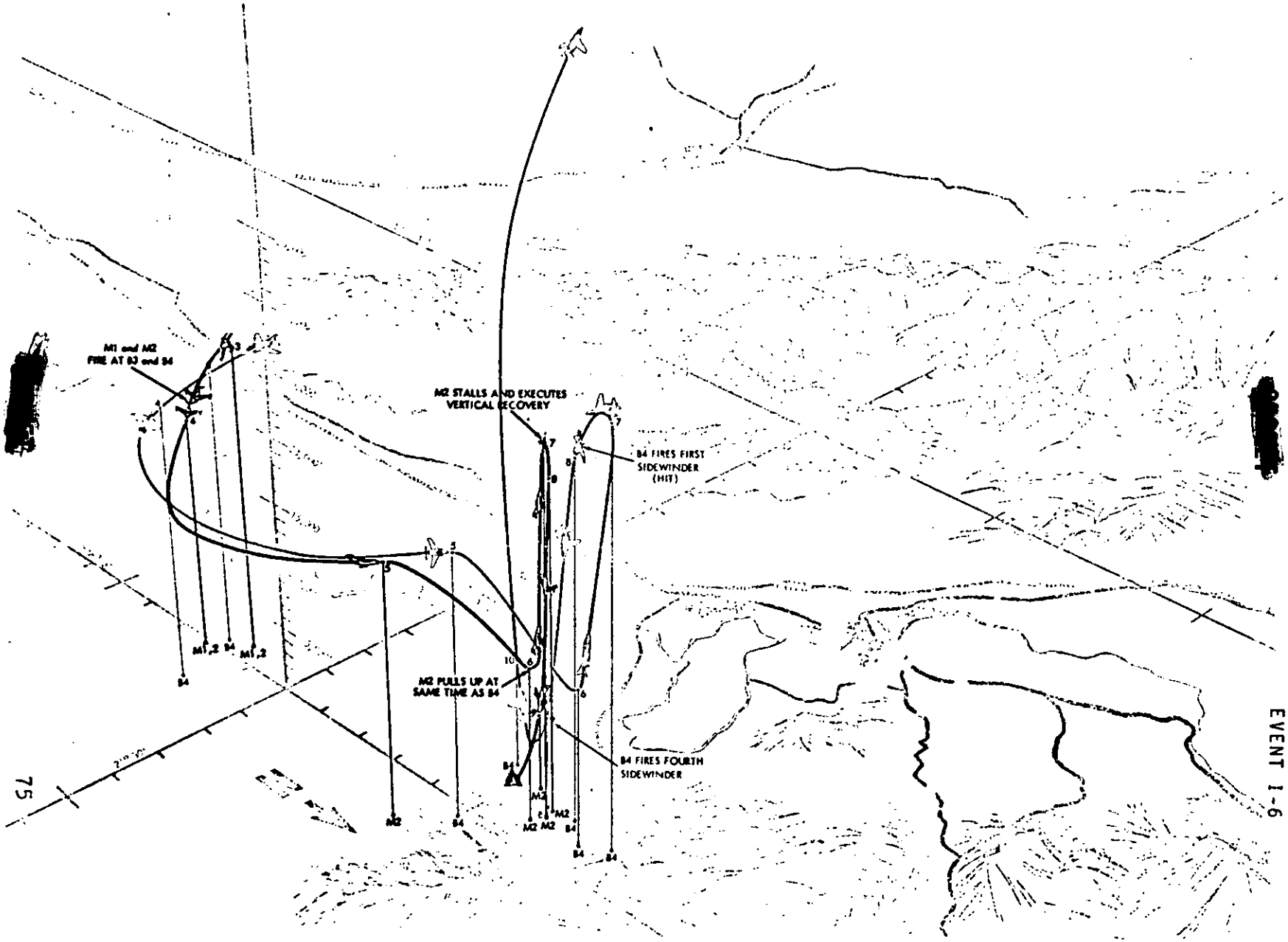
105°
106°
21°

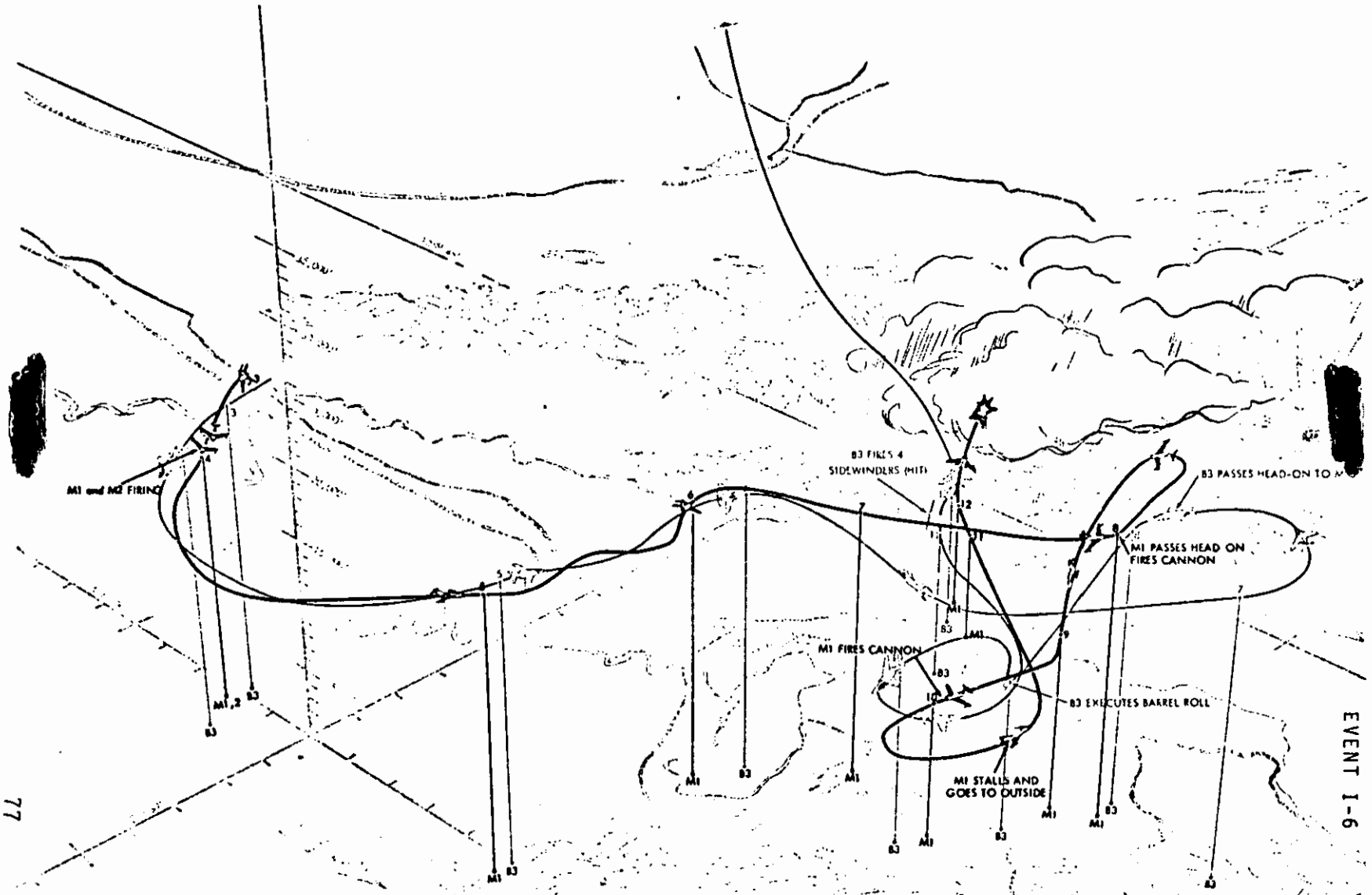
EVENT I-6


B1 ORBITING
B2 SEES MIGS
M1 and M2
FIRE AT B3 and B4
B2 SEES B4
FIRE AT M2
B1,2,3,4

EVENT I-6


M1 and M2
FIRE AT B3 and B4
M2 STALLS AND EXECUTES
VERTICAL RECOVERY
B4 FIRES FIRST
SIDEWINDER
(HIT)
M2 PULLS UP AT
SAME TIME AS B4
B4 FIRES FOURTH
SIDEWINDER

EVENT I-6


M1 and M2 FIRING
B3 FIRES 4 SIDEWINDERS (HIT)
B3 PASSES HEAD-ON TO M
M1 PASSES HEAD ON FIRES CANNON
M1 FIRES CANNON
B3 EXECUTES BARREL ROLL
M1 STALLS AND GOES TO OUTSIDE

EVENT I-6

[redacted]

EVENT I-7

Aircraft Involved: One F-4C vs two unidentified aircraft

Result: Sighting only

Vicinity of Encounter: 21°55'N/105°30'E
Route Package VI

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 11 Jul 1965/1520H

BLUE flight of F-4C.

II. DATA SOURCES

Messages, Reports:

2AD 112142Z July 1965 DOCO 03558
CINCPACFLT Staff Study 3-67

12. NARRATIVE DESCRIPTION

At 1520 local time BLUE flight located approximately 21°55'N/105°30'E noticed two contrails heading SE at approximately 22°45'N/104°40'E. Flight headed toward tracks, jettisoned tanks and applied maximum power. The two aircraft in question made 180° turn and took an apparent NW heading to Meng-Tzu. When BLUE flight determined that the two aircraft had crossed the Chinese border, BLUE flight returned to Phuc Yen area until BINGO fuel and returned to home station.

[redacted]

[redacted]

EVENT I-8

Aircraft Involved: One RB-66 and four F-4Cs vs five MIG-17s[1]

Result: No damage

Vicinity of Encounter: 21°30'N/106°40'E Route Package VI

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 Oct 1965/1241H

One RB-66 (GREEN flight) on an ECM mission with four F-4Cs (BLUE flight) in the general area to provide MIGCAP for both GREEN flight and the strike force. BLUE flight was not in orbit with GREEN flight.

2. MISSION ROUTE

BLUE flight took off from Korat and flew due east to rendezvous with the tanker over the Gulf of Tonkin. BLUE flight flew north to just above Haiphong and flew west to the orbit area.

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

4 - SPARROW (AIM-7)
4 - SIDEWINDER (AIM-9D)
2 - 370-gal tanks
1 - 600-gal centerline tank

RB-66 GREEN 1

Unknown

MIG-17 MIG 1, 2, 3, 4, 5

Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Reported as good, with no thunderstorms.

| | BLUE 1 | BLUE 2 | BLUE 3 | BLUE 4 | GREEN 1 |
|---|---|---|---|---|---|
| Altitude: | -25,000-26,000 ft-- | | | | 33,000 ft |
| Heading: | ------Unknown------ | | | | |
| Speed: | ------Unknown------ | | | | |
| Fuel State: | Full internal and partial in external tanks | | | | |

Flight Formation:

Unknown

5. INITIAL DETECTION

GREEN gave MIG alert for the area. About a minute later GREEN was alerted to MIG presence at sound of firing. GREEN then called for BLUE flight MIGCAP. BLUE flight obtained a radar contact in the general location of the bogey.

6. ACTION INITIATED

GREEN turned to follow MIGs. BLUE pursued the radar contact.

7. SITUATION DEVELOPMENT

The MIGs made one more pass at GREEN flight after the initial run, and then broke away. BLUE flight followed the contact until they entered a high threat SAM area, then disengaged. The command post gave instructions to terminate the strike and GREEN and BLUE flights exited north of Haiphong.

8. ORDNANCE

BLUE 1, 2, 3, 4 - None

MIGs 1, 2, 3, 4, 5 - Guns

9. EQUIPMENT PROBLEMS

None reported

[1] CINCPACFLT Staff Study 3-67 gives aircraft as MIG-15.

[redacted]

[redacted]



## AIRCREW COMMENTS

| [illegible] | Total Hours | F-4 Hours | Combat Missions | |
|---|---|---|---|---|
| [illegible] | 800 | 150 | 30 | No air-to-air gun experience; no missile firing. |

[illegible] Overall Experience

[illegible] - likes F-4 radar. Wants more ACT training for this environment.
[illegible] (Back) - Weather not a factor.

## DATA SOURCES

[illegible] Interviews: BLUE 3 (Back), 10 March 1967

[illegible] Reports: CINCPACFLT Staff Study 3-67

## NARRATIVE DESCRIPTION

[illegible] and GREEN flights proceeded to the planned orbit area, with GREEN preceding [illegible]. Upon arrival in the area, BLUE flight was in radio contact with the airborne [illegible], strike force and GREEN flight.

[illegible] flight notified GREEN that they were about 20 mi from GREEN and GREEN gave a [illegible] for the area they were in. About 45 to 60 sec later, GREEN called MIG attack.

[illegible] was at 33,000 ft and jamming when the crew noted sound of firing plus "slight [illegible]" thought to be a near miss. The pilot saw three MIGs followed by two others. [illegible] turned to follow the MIGs and transmitted for DF steer to BLUE flight. The MIGs [illegible] off after another pass on GREEN, two went north and three went south.

[illegible] hearing the call, BLUE flight jettisoned all external tanks and lit afterburner. [illegible] original plan was for BLUE to CAP about 1000-2000 ft below the altitude of the B-66s [illegible] another flight of F-4s at lower altitude to "sandwich" anyone attacking the B-66s. [illegible], at the time of the call, the flight was at 25,000-26,000 ft. BLUE flight was [illegible] a random radar search. Part of flight was searching on the 25-mi scale and the [illegible], on the 50-mi scale.

[illegible] after hearing the call, BLUE 3 (Back) got a single radar contact at 18-20 mi. [illegible] almost a team contact and BLUE flight swung in behind the contact. The contact was [illegible] parallel course heading south. They locked on at 1½ mi with 200-kt overtake.

[illegible] flight followed the contact but broke off due to the proximity to Hanoi missile-[illegible] area and the fact that the B-66 needed protection. BLUE flight never closed to [illegible] to the bogey.

[illegible] the time BLUE flight disengaged, the command post called off the strike. BLUE [illegible] then rendezvoused with GREEN and stayed with the B-66 until the GREEN left the [illegible] after the strike force.

[redacted]

[redacted]

**EVENT I-9**

Aircraft Involved: Two F-4Bs vs three MIG-17s

Result: One MIG probable kill

Vicinity of Encounter: 21°30'N/106°15'E
Route Package VI

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 6 Oct 1965/1040H

Two F-4Bs (BLUE 1, 2) BARCAP for strike group attacking JCS target 18.74 Vu Chua Railroad Bridge north of Keo airfield. In NNW racetrack pattern north of Kep airfield.

## 2. MISSION ROUTE

Departed carrier on YANKEE Station at about 18°30'N/between 107° and 108° E, rendezvoused overhead with A-3 tanker, taking on about 4000 lb fuel. Then proceeded on heading 360° to 15 mi north of Cam Pha then westward to TARCAP in vicinity of 21°30'N/106°15'E.

## 3. AIRCRAFT CONFIGURATIONS

F-4B BLUE 1, 2

3 - SPARROW (AIM -7D)
2 - SIDEWINDER (AIM-9B)
1 - 600-gal centerline tank
Radar and TACAN operating
Navy color (not camouflaged)

MIG-17 MIG 1, 2, 3

Silver color

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Broken to scattered clouds 3000 ft with tops about 4000 ft

| | BLUE 1 | BLUE 2 |
|---|---|---|
| Altitude: | -------2500 ft-------- | |
| Heading: | ---------190°--------- | |
| Speed: | ------400-kt TAS------ | |
| Fuel State: | -------Unknown-------- (Centerline tank was empty) | |

Flight Formation: BLUE 2 in 1500-ft trail behind BLUE 1

## 5. INITIAL DETECTION

BLUE 1 had radar contact at 18 mi and lock-on at 13 mi. BLUE 2 also achieved radar contact immediately after BLUE 1 reported the pick up.

## 6. ACTION INITIATED

BLUE flight accelerated to about 500-kt TAS with BLUE 2 increasing his spacing behind BLUE 1 to be in firing position if BLUE 1 identified the bogeys as MIGs. BLUE flight in shallow left interception turn.

## 7. SITUATION DEVELOPMENT

After BLUE 1 made visual ID at about one mile, he made right turn, passed over top of the MIG-17 flight, climbed, observed MIG at his 7:30 position, and then executed descending separation maneuver followed by a hard right turn to reengage.

BLUE 2 fired SPARROW at MIG 2, which detonated in close proximity to and probably downed MIG 2.

BLUE 2 started to position for attack on MIG 3 when he observed MIG 1 closing on BLUE 1 who was in hard right turn. BLUE 2 advised BLUE 1 to unload and BLUE 2 shifted his attack to MIG 1, who disengaged by going to the deck and proceeding to the south into the heavily defended area around Hanoi. MIG 3 had already disengaged to the south.

## 8. ORDNANCE

(No. fired/No. hits)

| | SPARROW AIM-7D | SIDEWINDER AIM-9B | Soviet AAM | Remarks |
|---|---|---|---|---|
| BLUE 1 | 0/0 | 0/0 | | |
| BLUE 2 | 1/0 | 0/0 | | ~3000-ft range, 2 g, detonated within 10 ft behind MIG 2. Probable kill. |
| MIG 1, 2, 3 | ----------No firing observed---------- | | | |

[redacted]

[redacted]



9. EQUIPMENT PROBLEMS

None

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | -------Not interviewed-------- | | | |
| Back | -------Not interviewed-------- (Letter only) | | | |
| BLUE 2 | | | | |
| Front | 3500 | 600 | 105 | All fighter background. |
| Back | -------Not interviewed-------- | | | |

Comments on this Encounter

BLUE 2 (Front) - Turning and acceleration rate of the MIG-17 very impressive. The MIG leader was aggressive and a good fighter pilot.

Comments from Overall Experience

BLUE 1 (Back) - Satisfied with the APQ-72 AI radar. Would like a moving target indicator for low altitude work. A more precise gain control for the radar is desirable. Would also like ground mapping radar capability. Need capability to lock-on one target and search for other targets without losing original lock. Need IFF interrogation capability computer. Requirement exists for short range missile for close in work.

BLUE 2 (Front) - Would like to see fighter with about the gross weight of an F-8. Maximum speed of 1.4 with rapid acceleration capability from 220 knots to Mach 1.1 and better turning capability than the MIGs. Fighter needs guns or short-range missile. Sold on energy maneuvering diagrams. Need a clean airplane with nothing hanging. Does not favor multimission aircraft which degrades pilot capabilities as well as weapon system performance for any given mission.

11. DATA SOURCES

Project Interviews: BLUE 2 (Front), 19 January 1967

Messages, Reports:

CTG 77.5 OPREP-3 070705Z Oct 1966

Letter: BLUE 1 (Back), 15 March 1967

12. NARRATIVE DESCRIPTION

BLUE (1, 2) were northwest of Kep airfield in BARCAP orbit altitude of about 2500 ft underneath a scattered to broken 3000-ft cloud deck with tops to about 4000 ft. BLUE 2 was in about 1500-ft trail behind BLUE 1. There were also F-8s in the area acting as TARCAP for the A-4s hitting the Vu Chua Railroad Bridge north of Kep airfield.

$T_0$ - On a southbound leg, BLUE 1 (Back) detected a suspicious grouping of targets at 18 mi in the karst ground return.

$T_1$ - Subsequent lock-on at 13 mi showed the targets to be airborne with a closing velocity of 600 knots. BLUE 1(back) had a radar with exceptional lock-on sensitivity and maintained lock-on throughout the intercept.

BLUE 2 achieved radar lock-on at about 8 mi. BLUE 2 gained separation of about one mile behind BLUE 1 as BLUE 1 accelerated from 400- to 500-knot TAS. This was the planned maneuver to place BLUE 2 in firing position if the bogeys were identified as MIGs.

$T_2$ - At 10 mi the bogeys were observed to move to the left and closing velocity went to zero as they made a 270° turn rolling out on a heading of about 090°.

$T_3$ - BLUE 1 made visual ID at about one mile and called, "They're MIGs" three times. The MIGs were at 1 o'clock about 500 ft low in a climbing left turn.

$T_5$ - BLUE 2 achieved lock-on and fired a SPARROW which detonated about 10 ft behind MIG 2, probably resulting in a kill.

About this time MIG 1 discovered the attack and made a hard left turn. MIG 3 followed in this turn.

$T_6$ - After having fired the SPARROW at MIG 2, BLUE 2 easily slid into gun range behind MIG 3 (no guns though) and passed close enough to MIG 3 to see the MIG pilot's hand on the stick. BLUE 2 started a high side yo-yo to get to missile firing range on MIG 3.

$T_4$ - After ID and passing over the MIG flight in a right turn, BLUE 1 reversed and climbed in an effort to gain an advantageous position on the MIGs.



[redacted]

[redacted]



$T_7$ - BLUE 1 (back) observed MIG 1 at 7:30 low and about 1/2 mi with a 90° angle off. BLUE 1 (back) advised BLUE 1 (front) and BLUE 1 descended in AB accelerating to separate from the MIG. BLUE 1 at Mach 1.2, thought he had sufficient separation and made a 6-7 g right turn in an effort to reengage the MIG.

$T_8$ - BLUE 2 approaching 8000 ft in his yo-yo observed MIG 1 cutting across BLUE 1's turn and closing to firing range on BLUE 1. BLUE 2 advised BLUE 1 to stop his turn and accelerate. BLUE 2 discontinued his efforts to attack MIG 3 and rolled on around in a barrel roll to position at 6 o'clock on MIG 1 (MIG 3 at this time disengaged to the south).

$T_9$ - BLUE 1 and MIG 1 were at about 500 ft AGL. BLUE 2 attempted to get below MIG 1 to employ his missiles. As BLUE 2 passed through 1000 ft, MIG 1 apparently observed BLUE 2 and feinted into BLUE 2 but continued to chase BLUE 1.

$T_{10}$ - As BLUE 2 passed below 500 ft, MIG 1 broke right to the deck (possibly as low as 25 ft) and disengaged to the south.

BLUE 1 and 2 departed to the east in low fuel state, were able to pick up 1500 lb of fuel from an A-3 tanker (BLUE 1 took 1000 lb and BLUE 2 took 500 lb) and landed back aboard the carrier.

BLUE 1, 2 retained 600-gallon centerline tanks throughout the engagement. By the time they realized the bogeys were MIGs, they were above the published safe release speed for empty tanks, and did not wish to risk possible aircraft damage through a high speed jettison.

A low altitude engagement facilitated by effective employment of radar resulted in probable kill of one MIG-17. No damage to BLUE flight.

[redacted]

EVENT I-9 SUMMARY

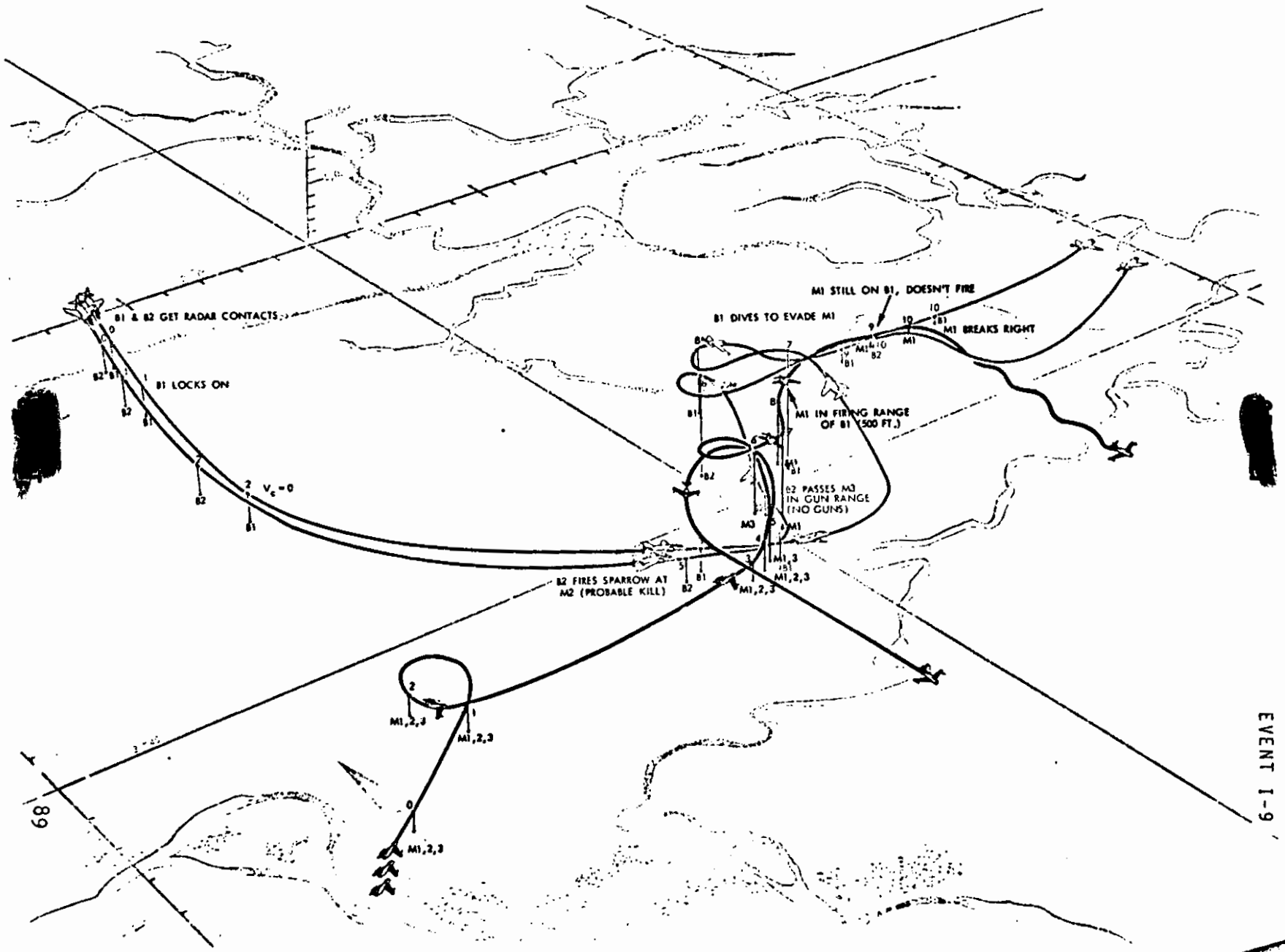
| Time Mark | Action Aircraft (BLUE 1, 2) | | Other Friendly | Communications | Enemy Actions (MIG 1,2,3) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | 2500 ft ≈400-kt TAS | B2 in 1500-ft trail behind B1 | | B1 reported radar contact<br>B2 also had contact<br>B2 indicated target probably F-8 TARCAP | | B2 backseater thought he had targets in the ground return |
| $T_1$ | 2500 ft, 500-kt TAS | B1 has lock-on at 13 mi.<br>B1 accelerating to 500-kt TAS<br>B2 falling back for spacing | | | Bogey closure rate ≈600 kt<br>Bogeys start left 360° turn | |
| $T_2$ | 2500 ft, 500-kt TAS | B1 observes zero closure rate indicating bogeys making turn | | | Bogeys continue rapid left turn | |
| $T_3$ | 2000 ft, 500-kt TAS | B1 sees MIGs at about one o'clock, 1 mi 500 ft low | | B1 calls "They're MIGs" three times | Three MIG-17s in 500-ft trail climbing left turn | |
| $T_4$ | 1500+ft, 500+kt TAS AB | B1 in right turn passed over top MIG flight.<br>B1 made climbing left turn<br>B2 had lock-on | | | | |
| $T_5$ | 1500 ft, 500-kt TAS | B2 fired SPARROW 2 g's ≈3000-ft range just before break X | | | M1 in hard left turn<br>M3 slow to tighten his turn | SPARROW detonated ~10 ft behind M2. Probable kill, not verified at time. A-4 flights later reported what they thought to be burning wreckage in the area. |

EVENT I-9 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2) | | Other Friendly | Communications | Enemy Actions (MIG 1,2,3) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_6$ | 1500 ft, 500+ -kt TAS AB | B2 tailed in behind M3 (within gun range if he had had a gun) passed close enough to M3 to see pilot's hand on the stick. B2 pulled up in high side yo-yo to reposition for attack on M3 | | | M1 pulling around rapidly in his left turn | |
| $T_7$ | B1 8000 ft AB<br><br>B1 500 ft 1.2 Mach | B1 observed M1 closing toward his 6 o'clock with about 90° angle off 1/2-mi range B1 nosed over zero g, and headed for the deck to accelerate away from M1 After what B1 considered adequate separation he started 6-7-g right turn to reengage M1. | | | M1 closing on B1<br><br>M1 cut across B1's turn | |
| $T_8$ | B2 8000 ft out of AB | B2 in his high side yo-yo observed M1 cutting across B1's turn and closing to B1's 6 o'clock. B1 discontinued attack on M3 and completed a left barrel roll descending rapidly to attack M1. B2 slow in leveling his wings allowing M1 more closure advantage | | B2 advised B1 to level his wings and run | M1 continued to close on B1 approaching firing range -- 500-ft altitude | |
| $T_9$ | B2 550-600 kt no AB 1000 ft<br><br>B1 500 ft Mach 1.0+ | B2 attempting to get below M1 to use his missiles | | | M1 observed B2 feinted into him but continued to chase B1. M1 closed to ≈3000 ft on B1. Did not fire. | |

EVENT I-9 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2) | | Other Friendly | Communications | Enemy Actions (MIG 1,2,3) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{10}$ | B2 500 ft | B2 still trying to get into missile firing position | | B2 advised B1 M1 has broken off and told B1 to come out of AB. | M1 broke right and down to about 25-ft altitude jinking around karsts and disengaged to the south. | B1 had been in AB since ID at $T_3$. |


B1 & B2 GET RADAR CONTACTS
B1 LOCKS ON
$V_c = 0$
B2 FIRES SPARROW AT M2 (PROBABLE KILL)
B1 DIVES TO EVADE M1
M1 STILL ON B1, DOESN'T FIRE
M1 BREAKS RIGHT
M1 IN FIRING RANGE OF B1 (500 FT.)
B2 PASSES M3 IN GUN RANGE (NO GUNS)
M1,2,3

EVENT I-9

[redacted]

EVENT I-10

Aircraft Involved: Four F-4Cs and two RB-66s vs two unidentified aircraft

Result: Sighting only

Vicinity of Encounter: 21°34'N/104°18'E Route Package V

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 8 Oct 1965/1530H

Escorts on IRON HAND mission.

II. DATA SOURCES

Messages, Reports

CINCPACFLT Staff Study 3-67

12. NARRATIVE DESCRIPTION

Escorts on IRON HAND mission visually sighted two unidentified aircraft, escorts turned toward unidentified aircraft, when they entered Hanoi area.

[redacted]

Aircraft Involved: Four F-4Cs and two EB-66s vs four bogeys

Result: Sighting only

Vicinity of Encounter: 22°24'N/105°32'E Route Package VI

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 1 Nov 65/1030H

BLUE 1 and 2 (F-4C) were escorting GREEN 1 (EB-66) and BLUE 3 and 4 (F-4C) were escorting GREEN 2 (EB-66).

GREEN 1 and 2 were separated by about 20 mi at time of encounter.

11. DATA SOURCES

Messages: 2d Air Div message 020537Z Nov 65, DIO 00003

12. NARRATIVE DESCRIPTION

BLUE 1 sighted four aircraft, possibly MIGs, at about 25,000-ft altitude, climbing, at 6 o'clock and about 5 mi distance from GREEN 1. BLUE 1 and 2 were weaving at 30,000 ft, GREEN 1 circling at 30,000 ft, at 0.8 Mach. BLUE 3 and 4 and GREEN 1 condition unknown. BLUE 1 turned into the bogeys' path on a heading perpendicular to theirs. As BLUE 1 headed into the bogeys' path, they broke off to the east and disappeared into the clouds. BLUE 3 was able to pick up the bogeys on radar at 18 mi, lock on and hold for about 30 sec but lost contact as the bogeys maneuvered away. BLUE did not pursue the bogeys.

EVENT I-12

Aircraft Involved: Two F-4Cs vs two MIGs

Result: Two MIGs sighted. Intercepted and visually identified an A-3B.

Vicinity of Encounter: 19°40'N/108°20'E Route Package I

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 23 Dec 1965/0730H

Four F-4Cs were on armed reconnaissance in Route Package I. After tanking, BLUE 1 and BLUE 2 were to alternate with BLUE 3 and BLUE 4 to maintain an "on-station" escort in the Gulf of Tonkin. Due to some unstated difficulties, BLUE 1 and BLUE 2 returned to Danang, and BLUE 3 and BLUE 4 arrived on station first.

## 2. MISSION ROUTE

BLUE 3 and 4 departed Danang and, after completing the armed reconnaissance mission in Route Package I, refueled from airborne tankers. The flight then proceeded to Point Bravo (18°00'N/107°00'E) where BLUE 3 and 4 came under the control of BIG EYE. After the second intercept the flight returned to Danang.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 3, 4

4 - SPARROW (AIM-7D)
4 - SIDEWINDER (AIM-9B)
2 - 370-gal external wing tanks
4 - 750-lb bomb
TACAN and IFF

MIG MIG 1, 2

Ordnance load was not observed. Not positively identified, either MIG-15 or 17, high tail, gray color.

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Weather was clear over the gulf, visibility unrestricted. There was an overcast over land, clouds 1500 to 2000 ft.

| | BLUE 3 | BLUE 4 |
|---|---|---|
| Altitude: | 31,000 ft | 31,000 ft |
| Heading: | 040° | 040° |
| Speed: | 0.92 Mach | 0.92 Mach |
| Fuel State: | 14,000 lb | 14,000 lb |
| Flight Formation: | BLUE 3 and 4 were directly abeam with about 8000-ft separation, level in altitude. When BLUE flight was vectored in for the visual ID, BLUE 3 went into a 3-mi trail. | |

## 5. INITIAL DETECTION

BIG EYE detected a bogey in the vicinity of 20°40'N/106°50'E, between Hainan Island and North Vietnam heading toward Haiphong. BLUE 3 and 4 obtained radar contact at approximately 70 mi. Later, BLUE 3 and 4 were vectored to intercept a second bogey and acquired a radar contact at approximately 40 mi.

## 6. ACTION INITIATED

BLUE 3 and 4 were vectored 040° for an identification pass when the first bogeys were at a range of 40 mi. Both engaged afterburner and accelerated to 1.2 Mach. The bogeys were lost in clouds near Haiphong, and BLUE flight turned to resume station.

When vectored to intercept the second bogey, considered a hostile by BIG EYE, BLUE 4 jettisoned the external tanks, engaged afterburner, and accelerated to 1.2 Mach.

All switches were positioned for a SPARROW launch on each ID pass [illegible] given the initial vector.

## 7. SITUATION DEVELOPMENT

On the first visual identification pass BLUE 3 lost radar contact momentarily, BLUE 4 assumed the lead. BLUE 3 took a trail position with a separation of approximately 3 mi. At 20 mi the target initiated a steep dive. BLUE 4 followed by flying the steering dot and deselected afterburner. BLUE 4 attained an in-range position at an altitude of 12,000 ft while descending in a 10° dive but could not see the target. BLUE 4 covered the entire range spectrum of the SPARROW missile but could not see the target. At a range of 1-1/4 mi and 7000-ft altitude the target appeared to execute a split-S maneuver.

BLUE 3 was in trail as BLUE 4 pulled up nose high anticipating an overshoot. BLUE 4 (Front and Back) visually sighted the MIGs at 4 o'clock low. The bogeys were gray colored, high-tail MIG-15 or 17. The MIGs dove into the clouds. BLUE 3 did not see the MIGs.

BLUE 4 climbed for altitude and headed to seaward, southeasterly. BLUE 4 was then vectored 247° to intercept a bogey that was reported to be attacking BIG EYE. At an altitude of approximately 20,000 ft, external wing tanks were jettisoned and afterburners were engaged, as BLUE 4 accelerated to 1.2 Mach. BLUE 3 was still in trail attempting to overtake BLUE 4.

BLUE 4 was cleared to fire without visual identification. BLUE 4 realized the target was still 7 mi from BIG EYE and elected to visually identify the target before firing. At approximately 3 mi BLUE 4 identified the bogey as a Navy A-3B. BLUE 4 returned to base because of BINGO fuel.

8. ORDNANCE

| | SPARROW AIM-7E | SIDEWINDER AIM-9B | 750-lb Bomb | Remarks |
|---|---|---|---|---|
| BLUE 3 | 0/0 | 0/0 | 4 | All bombs were dropped on a road in Package I. |
| BLUE 4 | 0/0 | 0/0 | 4 | |

9. EQUIPMENT PROBLEMS

BLUE 3

Lost radar contact at approximately 40 mi on initial ID pass. Operation of the radar was intermittent.

BLUE 4

None

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 3 - Front | Not interviewed | | | |
| Back | | | | |
| BLUE 4 - Front | 1700 | 200 | 10-15 | Tac background |
| Back | 500 | 150 | 10-12 | |

Comments on this Encounter

BLUE 4 - Front

A gun would have been useful on the first ID pass because the intercept ended in good position for a gun attack, but insufficient time remained to maneuver for a missile launch before the MIGs disappeared into the clouds.

The front attacks are of little use when a visual identification is required. A gun and closer range missile are needed. SPARROW missile is of limited use in SEA because of limitations in the beam area. For air-to-air, a 50-mi radar range satisfies the needs.

BLUE 4 - Back

If the bogey on the first intercept had been classified as hostile, as all warnings indicated, a kill could have resulted.

11. DATA SOURCES

Project Interviews:

BLUE 4 - Front, 9 Jan 1967

BLUE 4 - Back, 16 March 1967

12. NARRATIVE DESCRIPTION

Four F-4Cs were scheduled to fly an armed reconnaissance in Route Package I, refuel from airborne tankers, and then BLUE 1 and 2 were to alternate with BLUE 3 and 4 to maintain an on-station escort in the Gulf of Tonkin. BLUE 1 and 2 returned to Danang for an unstated reason.

BLUE 3 and 4 completed the assigned armed reconnaissance mission. Refueling was completed at 28,000 ft, 310 kt, in the vicinity of 17°10'N/107°30'E. BLUE flight climbed to 31,000 ft maintaining 0.92 Mach and proceeded to Point Bravo. At Point Bravo, BIG EYE control vectored BLUE flight 060° to establish a race-track pattern (headings 060°-240°) approximately 20 mi off the coast of North Vietnam. BLUE 3 and 4 radar scopes were in 100-mi scale, 3-bar scan, with antennas level.

Almost immediately BIG EYE gave a "MIG airborne" warning. Ten to 15 sec after the alert, BLUE 3 and 4 achieved radar contact with two targets at 70 mi. BLUE flight asked BIG EYE if they were to make an ID pass. BIG EYE replied "negative, negative." The contacts were at 31,000 ft, 0.67 Mach, traveling on a course that appeared to take them from Hainan to Haiphong.

BLUE flight queried BIG EYE again about an ID pass and BIG EYE gave a vector of 040° to investigate the target. BLUE 3 lost radar contact with the target and went into a 3-mi trail position as BLUE 4 assumed the lead. BLUE flight engaged afterburners, positioned all switches to launch a SPARROW, and accelerated to 1.2 Mach, while maintaining 31,000-ft altitude. BLUE flight used AI radar to improve the collision bearing. BIG EYE information would have resulted in a long tail chase.

BLUE flight achieved a radar lock-on at 40 mi in the rear hemisphere of the target with an overtake speed of 250 kt. At 20 mi, the target started a dive. BLUE 4, utilizing the steering dot, followed and deselected afterburner. BLUE flight passed through 12,000 ft at 400 kt, in a 10° dive, with 150-kt overtake speed. BLUE 4 was locked on as the in-range light came on at 5 mi. The target was closed through the entire range of the SPARROW missile. BLUE 4 did not visually acquire the bogey. At 1-1/4 mi, while descending through 7000 ft, the target was believed to execute a split-S as evidenced by a rapid downward movement of the elevation strobe, which was followed by the radar breaking lock as the target had exceeded the lock angle of the radar.

BLUE 4 pulled nose high and to the right anticipating an overshoot. BLUE 4 (Front and Back) sighted two MIGs at 4 o'clock, low diving for the clouds. BLUE 3 had been in trail during the entire intercept but did not see the MIGs. BLUE 4 was unable to determine the type of MIG but identified the bogeys as gray in color with a high tail. When the MIGs disappeared into the clouds, BLUE 4 climbed to 20,000 ft and continued the right turn to a southeasterly heading with BLUE 3 still in trail.

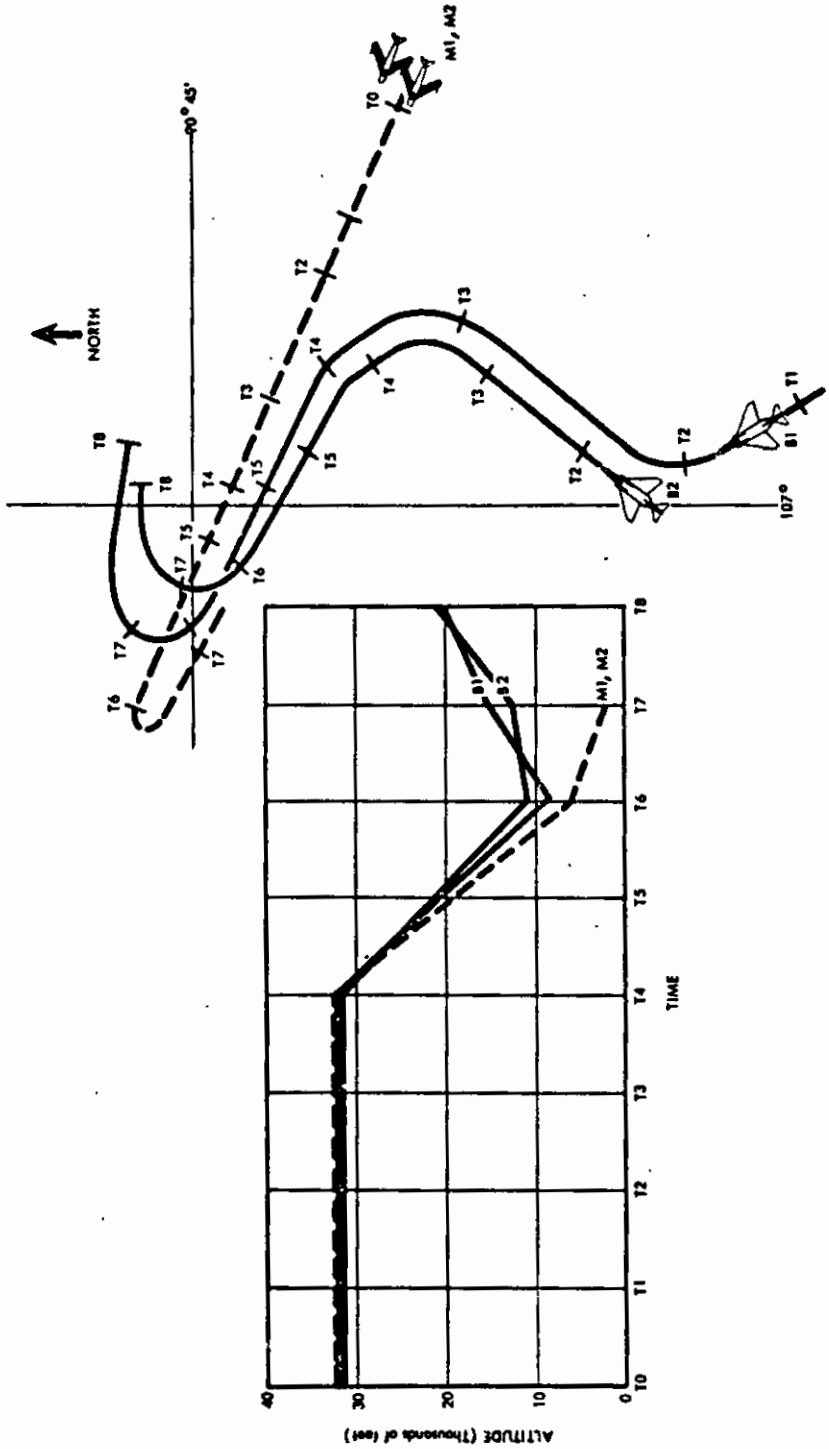
BLUE 4 was vectored 247° to intercept a hostile declared to be attacking BIG EYE. BLUE 4 jettisoned the external wing tanks, selected afterburner and accelerated to 1.2 Mach, and again positioned the switches for a SPARROW launch. BLUE 3 was still in trail attempting to close on BLUE 4.

BLUE 4 was cleared to fire without a visual identification by BIG EYE but BLUE 4 felt this procedure was unusual and therefore requested BIG EYE to authenticate. BIG EYE authenticated properly, but BLUE 4 again asked BIG EYE for clearance to fire. BIG EYE again cleared BLUE 4 to fire without the normal ID. BLUE 4 was locked on with an in-range light but realized the target was still 7 mi from the BIG EYE. BLUE 4 elected to make a visual identification before firing. At 3 mi, BLUE 4 identified the target as a Navy A-3B. BLUE 3 was in trail attempting to overtake BLUE 4 throughout the intercept.

BLUE 4 was at BINGO fuel and returned to Danang. BLUE 3 remained on station for approximately another 5 hr by in-flight fueling.

EVENT I-12 SUMMARY

| Time Mark | Action Aircraft (BLUE 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | BLUE flight 31,000 ft 0.92 Mach under BIG EYE control, heading approximately 060° | | | BIG EYE | Heading approx 285° en route from Hainan to Haiphong, 31,000 ft, 0.62 Mach | BLUE flight asked BIG EYE if ID pass was desired. BIG EYE replied "Negative" |
| $T_1$ | | BLUE flight turns right to 040°. BIG EYE requests ID pass | | BIG EYE. "Vector 040° for ID pass." | | B3 loses radar contact.<br>Target 40 mi |
| $T_2$ | | B4 takes lead, B3 in trail approx 3 mi | | | | |
| $T_3$ | | B4 begins correcting to maintain closure<br>B3 in trail | | | | |
| $T_4$ | | B4 rolls out astern target 250-kt closure. Approx 20 mi behind target, begins dive to keep a centered steering dot. | B3 in trail | | Enemy starts dive | |
| $T_5$ | | B4 passing through 12,000 ft, 10° dive, 400 kt, about 8-mi range of target, 150-kt $V_c$ | B3 in trail | | Diving | |
| $T_6$ | | B4 7000 ft 300 kt, descending.<br>Target 1 1/4 mi ahead | B3 in trail | | Does a split-S | B4 realizes target had split-S, pulls nose up high in a climbing right turn |
| $T_7$ | | B4 sees MIG 4 o'clock low, just prior to MIG going in cloud | B3 follows B4 but did not see MIG | | Just before disappearing into clouds. | |
| $T_8$ | | B4 climbs to 20,000 ft on an easterly heading | B3 still in trail | BIG EYE. Gives vector 247° | | Then makes an ID pass on a Navy A-3B |


NORTH
70° 45'
107°
M1, M2
B1
B2
T0
T1
T2
T3
T4
T5
T6
T7
T8
ALTITUDE (Thousands of feet)
TIME
40
30
20
10
0

EVENT I-13

Aircraft Involved: One EC-121 and F-8Es (unknown number) vs unknown aircraft

Result: Radar contact only

Vicinity of Encounter: 19°40'N/107°15'E Route Package IV

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 9 Jan 1966/0926H

A number of F-8Es were escorting an EC-121 (BIG LOOK) over the Gulf of Tonkin when bogeys were reported by the SAR destroyer.

11. DATA SOURCES

CTG 77.5 OPREP-3 090752Z Jan 66

12. NARRATIVE DESCRIPTION

An unknown number of F-8Es were escorting an EC-121 (BIG LOOK) over the Gulf of Tonkin, position 19°40'N/107°15'E. A bogey was detected on radar by the SAR destroyer as approaching from the north bearing 010°/distance unknown.

The F-8Es were sent to intercept the contact. At 30 mi from the bogey position at 0.9 Mach one F-8 obtained radar contact. The bogey reversed course and the F-8s were recalled by the controller to return to station. No visual sighting was made. The number of aircraft approaching was not determined.

Event I-13A

Aircraft Involved: Two F-4Bs, and one EF-10B vs
(a) two possible MIG-21s and
(b) two possible MIG-17s

Result: No Damage

Vicinity of Encounters: (a) 21°00'N/108°00'E
(b) 19°40'N/106°00'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 11 Jan 1966/0120H

A flight of two USMC F-4Bs (BLUE flight) were escorting an EF-10B (GREEN flight) on a nighttime FIRECRACKER mission over the Gulf of Tonkin.

2. MISSION ROUTE

BLUE flight originated from Danang, rendezvoused for air-to-air refueling over Tiger Island, and rendezvoused with GREEN flight at approximately 19°/106°. The flights then proceeded to Hon Mai, where one orbit was made to 21°/108°. After the single orbit, a return was made to Danang without refueling (See Fig. 3).

3. AIRCRAFT CONFIGURATIONS

F-4B BLUE 1, 2

4 - SPARROW (AIM-7D)
2 or 4 - SIDEWINDER (AIM 9B)
Centerline tank
Grey and white paint

MIGs

Unobserved except for GREEN and RED lights.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear night but no moon. Cloud deck over land in north at about 9000 feet becoming scattered and broken to the south of Thanh Hoa.

| | BLUE 1, 2 | GREEN 1, 2 |
|---|---|---|
| Altitude: | 20-25,000' | 20-25,000' |
| Heading: | B-1 223°/B-2 040° | 223° |
| Speed: | Mach .9 | MACH .7 |
| Fuel State: | Unknown | Unknown |
| Flight Formation: | F-4s orbiting the EF-10B on opposite sides (See Fig. 1) | |

5. INITIAL DETECTION

BLUE 2 called two contacts on radar, three miles from B-1 and closing. BLUE 2 was about 15 miles from B-1 at this time.

6. ACTION INITIATED

BLUE 1 turned hard to the left and B-2 turned 180 degrees to follow GREEN 1.

7. SITUATION DEVELOPMENT

BLUE 1 made radar and visual contact with two different bogeys and followed the radar contact as it descended to the north at supersonic speed. After breaking off this contact due to proximity of land, B-1 rejoined B-2 and G-1 as they neared the end of the mission. BLUE 2 again got a radar contact and B-2 and G-1 departed to the south. B-1 again got a radar and visual contact and pursued the radar contact to the land mass before breaking off.

8. ORDNANCE

None expended.

9. EQUIPMENT PROBLEMS

None reported.

## 10. AIRCREW COMMENTS

Experience

| | Total HOURS | F-4 Hours | Combat Missions[1] | Remarks |
|---|---|---|---|---|
| BLUE 1 Front | 500 | 200 | 20 | Had flown F-8 |
| BLUE 1 Back | 775 | 715 | 30 | Had EF-10B experience |
| BLUE 2 Front | 375 | 150 | 3 | |
| BLUE 2 Back | 200 | 120 | 3 | |

[1]Since USMC was not flying missions over the north which counted for rotation purposes, this is an estimate of the number of such missions flown by each crew. Because of this situation a crew could leave the theatre with much less than 100 missions over NVN at that time.

Comments on this Encounter

BLUE 1 (Back)

It was very difficult for the F-4s to communicate with the EF-10B so that their position and actions could be known.

## 11. DATA SOURCES

Project Interviews:

BLUE 1 - Back, 2 Feb 1968

## 12. NARRATIVE DESCRIPTION

The mission was a nighttime FIRECRACKER mission conducted over the Gulf of Tonkin. A single EF-10B (GREEN flight) was to make one orbit to the north over the Gulf and return. The other scheduled EF-10B aborted. Two F-4Bs (BLUE flight) escorting GREEN were trying a new tactic at this time in order to provide radar coverage for the EF-10Bs. As the EF-10B moved along its track, the two F-4s flew an elliptical orbit around the EF-10B such that, as the F-4B overtaking the EF-10 from the rear lost radar contact, due to the fact that the EF-10 was too far off to the beam, the lead F-4 would then reverse its course approximately 15 miles in front of the EF-10 in order to pick it up on its radar (See Fig. 1). Navigation itself was difficult since the onboard navigation equipment did not function accurately and locations were determined by use of radar contact with the coast line.

A destroyer radar picket was on station near the orbit area. Upon query, the destroyer informed GREEN and BLUE Flights that they were the only friendlies airborne at that time.

In addition to navigation difficulties there were significant communication difficulties between the EF-10B and BLUE flight due to the fact that the EF-10 was constantly listening on its ELINT mission and was not monitoring the F-4s. Also the EF-10 had no radar coverage of its own and, therefore, could not perform station keeping assists to locate the F-4s.

One other situation had a significant impact on this particular mission. At the time of this mission, that is, 11 January 1966, a truce was in effect and the F-4s were under explicit instructions that, under no circumstances, were they to cross the enemy coast line and overfly North Vietnam.

The EF-10B with its F-4 escort proceeded up the orbit track, the EF-10B was cruising at .7 Mach number, approximately 20 to 25,000 ft. As the EF-10 reached the northern terminus of the orbit, at about 21°N/108°E, the EF-10B made a turn to reverse course. Due to the communication difficulties, mentioned previously, the F-4s were caught out of position. In particular, BLUE 1 was caught approximately 15 miles farther north than GREEN flight so that after reversal, BLUE 1 found himself too far in trail of the EF-10B. BLUE 2, however, was in approximately a reversed course to the EF-10B and was painting B-1 on the radar (See Fig. 2).

$T_0$ - At this time BLUE 2 picked up two radar contacts approximately 3 miles behind B-1 and closing. B-2 immediately notified B-1 of this situation, and broke right looking in the direction of the contacts. B-1 at this time was about 21,000 feet. BLUE 2 immediately turned 180° to continue on with GREEN 1.

$T_2$ - After turning through approximately 60°, BLUE 1 saw two lights coming at them. Despite lack of accuracy in observing lights at night, they were estimated to be about

12. NARRATIVE DESCRIPTION (Continued)

2 miles away. Red and green lights were seen, then they banked up and went out. Two more lights were seen about 12 miles away. BLUE 1 continued through a hard turn with speed about Mach .8. B-1 was in full afterburner and it took approximately 30 seconds to complete 60 degrees of the slightly descending turn. After 60 degrees of turn BLUE 1-back went to the scope and BLUE 1 rolled out heading approximately north northeast (010 magnetic) at about Mach 1 and 15,000 feet.

$T_3$ - BLUE 1-backseat got a radar contact at 9 to 10 miles in ground clutter and locked on to the contact. At this time the speed of the F-4 was about Mach 1.2 but the target was opening at 50 knots. BLUE 1 then saw land coming up, but it was not ascertained whether the landfall was Red China or North Vietnam; however, due to the ground rules, mentioned earlier, they could not cross land so BLUE 1 broke off. At this point BLUE 1 asked the PICKET Destroyer if they had any radar contacts behind them. The destroyer said, no, he had no IFF squawks. (Comment: this is what he should have had since the enemy would not have been squawking on the IFF.)

$T_4$ - BLUE 1 after making an inplace turn at the coast, picked up GREEN 1 and BLUE 2 about 50 miles down the track on radar. The radar was on 1.00 mile range scale at the time. BLUE 1 then accelerated to about Mach .95 in order to close on GREEN 1 and BLUE 2, who were proceeding back down the orbit at approximately Mach .7 at this time.

$T_5$ - BLUE 1 caught up with GREEN 1 and BLUE 2 somewhere off the coast near Thanh Hoa. The approximate coordinates were 19°45'N, 105°E. As B-1 caught up with the rest of the flight, BLUE 2 was abreast of GREEN 1 so BLUE 1 started to make a 360° turn behind GREEN 1 in order to reestablish the orbit pattern around GREEN 1.

$T_6$ - After BLUE 1 had gone through about 180° of his 360° (BLUE 1 was now heading back approximately north northeast) BLUE 2 called two radar contacts from 270° (about 10 mile range) BLUE 1 therefore continued to turn. BLUE 1 expected to pick up the EF-10 on the radar, expecting the contact to appear somewhere in the left lower center portion of the scope.

$T_7$ - Upon rolling out of the 360° turn BLUE 1-backseat picked up a contact heading 240°; however, the contact appeared at longer range and more toward the center of the scope (i.e., higher up the scope and more to the center) than expected. To find the EF-10B B-1 backseat then locked up on the contact.

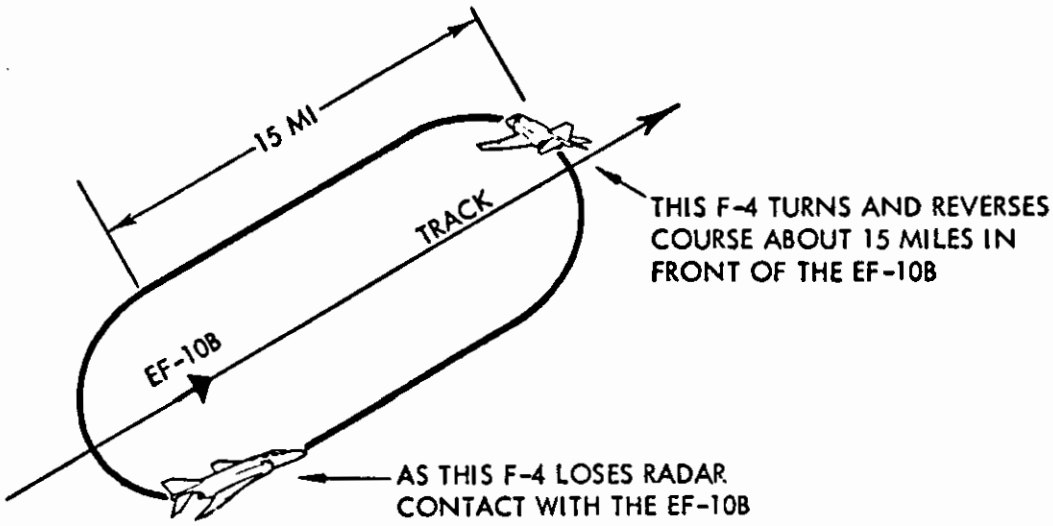
The contact was suspicious however, since the closing velocity at 175 knots was considerably lower than it had been previously despite the track being in the general direction of the orbit. However, it was thought that the EF-10 had accelerated at the call of contacts. In order to establish the position of GREEN 1, BLUE 1-back called for a 10 count ADF check. While attempting to make the check, due to communication problems enumerated earlier, BLUE 1 saw a set of aircraft lights at 20 to 30° off to the right of the nose at what appeared to be 10 to 12 miles. The radar contact at this time was apparently over land at about a range of 6 miles. Since B-1 was close to the land it was anticipated that the EF-10 would then turn south to break off from the land contact and since the contact had not it was suspected by BLUE 1 that this was not the EF-10. After establishing the EF-10 location by an ADF direction finding check B-1-back found that the ADF needle was indicating a location at B-1's 8 o'clock position, so that GREEN 1 was definitely off the scope. The conclusion at that time was that the contact on the scope was hostile. The other light was still seen.

At this point BLUE 1 went to afterburner; however, a position check indicated that they were crossing over the coast. At this time B-1 was about 20,000 feet, Mach .9, and flak was coming up. Due to the overland restrictions BLUE 1 broke off.

The crews on this mission concluded that, due to the speed of the targets acquired at the northern end of the orbit, the contacts were probably MIG-21 aircraft. Of interest was the sighting of lights on enemy aircraft. It was unknown by the crew whether this was an apparent decoy; leaving the lights on to distract the pilots to other targets while a closer one made an attack, or the fact that the aircraft were out on training mission during the truce period and had not turned off their navigation lights after takeoff.

At the point at which BLUE 1 had completed his 360° turn, ($T_7$) and picked up the radar contact, BLUE 2 and GREEN 1 had broken off to the south-southeast heading back toward Danang. After leaving the coast, BLUE 1 then also followed the EF-10 and BLUE 2 back to Danang without further incident.

Due to the simplicity of this event the only drawings are a large scale picture showing the track and the location of the two MIG encounters, and a smaller sketch illustrating the F-4 positions of orbit around the EF-10 during the mission.




10-17-68-6

FIGURE 1. Sketch of F-4 Orbit About EF-10B

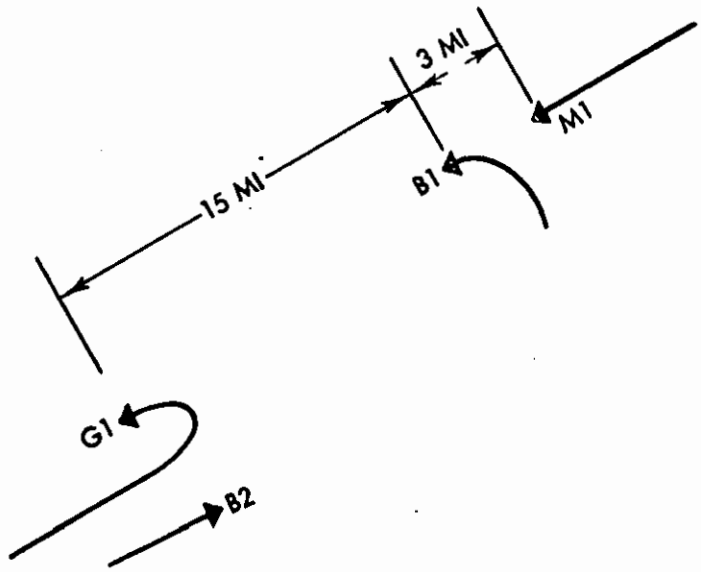



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FIGURE 2. Flight Positions at $T_0$

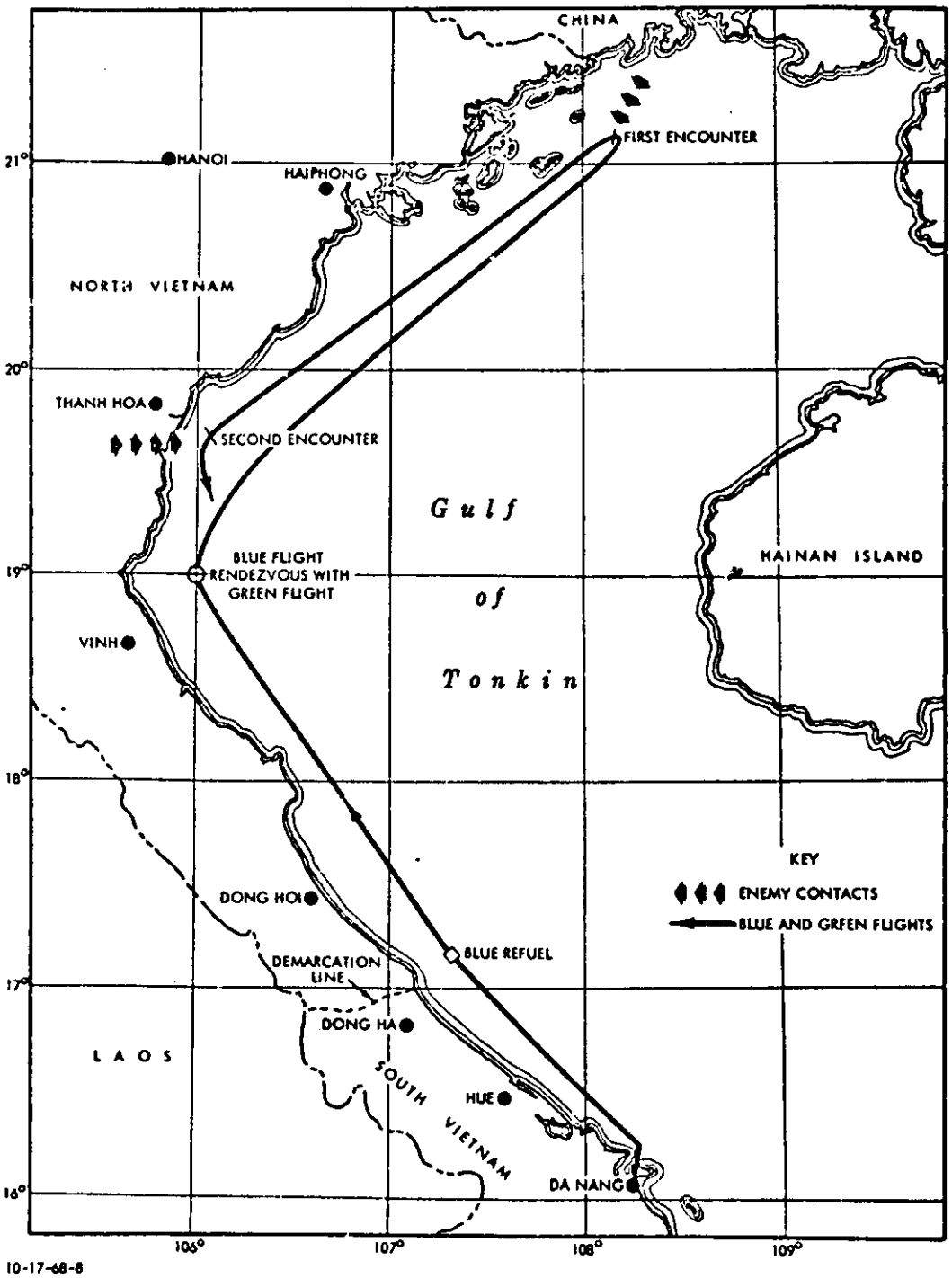



FIGURE 3. Generalized Mission Route

EVENT I-14

Aircraft Involved: Two F-4Cs vs one unidentified aircraft

Result: Sighting only

Vicinity of Encounter: 19°33'N/103°22'E Laos

## I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 Jan 1966/1925H

Two F-4Cs (BLUE 1 and 2) on strike.

## II. DATA SOURCES

Messages, Reports:

2AD 2300422 Jan 66 DOCO-0 12444
CINCPACFLT Staff Study 3-67

## 12. NARRATIVE DESCRIPTION

BLUE flight reported sighting an unidentified jet aircraft at 19°33'N/103°22'E at 1925H local time. It was grey color, swept or delta wing. Sighting was brief, no distinctive markings noted, and the type of aircraft was not identified.

The sighting was made while in a turn following a strike. BLUE flight was heading W turning to S, and the unidentified aircraft was in the same turn, at 9 o'clock position and slightly below BLUE flight. BLUE flight was at 3000 ft. No other U.S. aircraft were operating in the vicinity at the time. No hostile action on part of the unidentified aircraft was taken and it disappeared from view almost immediately.

Event I-15

Aircraft Involved: Four F-4Bs vs unknown number and type of enemy aircraft[1]

Result: No damage

Vicinity of encounter: 20°20'N/105°00'E Route Package V

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 3 Feb 1966/2100H

Four F-4Bs (BLUE flight) escorting two EF-10Bs (GREEN flight) on nighttime ECM/ELINT mission (Code Name FIRECRACKER) in NW/SE racetrack pattern.

2. MISSION ROUTE

From Danang to initial orbit point about 20°n/105°E without refueling, then to orbit.

3. AIRCRAFT CONFIGURATIONS

Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear, bright moonlight.

| | BLUE | | | | GREEN | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 |
| Altitude: | -------25,000-------- | | | | --25,000--- | |
| Heading: | --------180°--------- | | | | ---180°---- | |
| Speed: | ------Unknown-------- | | | | --Unknown-- | |
| Fuel State: | ------Unknown-------- | | | | --Unknown-- | |

Flight Formation:

BLUE 1 and 2 on left and BLUE 3 and 4 on right, trailing GREEN flight 5-10 mi. GREEN 1 and 2 in close formation to maintain visual contact.

5. INITIAL DETECTION

BLUE 2 backseat observed MIG identified with red star on tail pass abeam and close aboard. He could also see the pilot. Approximately 2 min before this there had been a MIG alert from an unknown source with no coordinates given. Subsequent detections were made as a result of cannon fire observed. (See para 7 and 12 below). After being alerted by BLUE 2 back, BLUE 2 front called for BLUE 1 to break.

6. ACTION INITIATED

BLUE 1 turned and gained radar contact, then lost it as the hostile aircraft descended into the radar horizon line and ground return. Other action later initiated in response to other detections. (See para 7 and 12 below). BLUE 3 and BLUE 4, and GREEN 1 and GREEN 2 broke away from BLUE 1 and BLUE 2.

7. SITUATION DEVELOPMENT

Following initial visual detection and maneuvering, BLUE 1 and 2 regrouped and continued escort of GREEN flight. Subsequently, BLUE 1 observed aerial cannon fire nearby and BLUE 2 gave brief chase to the source, abandoning chase due to fuel state and proximity of SAM sites. BLUE 2 observed out-of-range cannon fire from his 7:30 position. BLUE 3 and 4, in response to the initial cannon fire, made a 360° turn and gained radar contact on three bogeys, also observing some distant cannon fire. BLUE 3 and 4 pursued their bogeys to the NE, giving up the chase, as did BLUE 1 and 2, due to low fuel state and proximity of SAM sites.

8. ORDNANCE

Enemy: cannon

9. EQUIPMENT PROBLEMS

None reported

10. AIRCREW COMMENTS

None interviewed

[1] Single AB operation; cannon armament and visual contact indicate aircraft could be MIG-17D.

## 11. DATA SOURCES

Messages, Reports:

CG 1MAW OPREP-3 040753Z Feb 66
USAF Tactical Fighter Weapons School Combat Analysis Division Bulletin #3, 1966
CINCPACFLT Analysis Staff Study 3-67

## 12. NARRATIVE DESCRIPTION

A four-plane F-4B flight was escorting two EF-10Bs on a night ECM/ELINT mission over North Vietnam. They were flying in a NW/SE racetrack pattern in the vicinity of 20°20'N/105°00'E. BLUE 1 and 2 were on the left and BLUE 3 and 4 were on the right, trailing the EF-10Bs at 5-10 mi. At approximately 2045H a MIG alert was received on guard channel from an unknown source with no coordinates given. About 2 min later BLUE 2 observed a MIG, identified by a red star visible on the tail, pass abeam and close aboard and called, "MIG in formation." Visual contact was then lost, BLUE 1 turned and gained radar contact, losing it as his contact descended rapidly into the radar horizon line and ground return. BLUE 1 and 2 regrouped, continuing the escort.

At some later time the EF-10Bs commenced a final left turn to depart the area with the BLUE flight in radar trail. After 90° of the turn BLUE 1 observed cannon fire from his 6:30 position at an estimated 1500-ft distance. BLUE 1 broke sharply into the attack and called, "MIG attack." BLUE 2 subsequently detected a target at 4-mi distanc taking evasive action, heading 060° and intermittently using single burner. BLUE 2 followed but after 1 min abandoned the chase due to proximity of SAM sites and to low fuel state.

Approximately 1 min later when on retirement course, BLUE 2 received cannon fire from his 7 o'clock position. Firing appeared to be out of range and BLUE 2 accelerated and commenced evasive action.

When BLUE 1 observed cannon fire, BLUE 3 and 4 were positioned approximately 1/2 mi behind and 3 mi abeam of BLUE 1. When BLUE 1 broke sharply away, BLUE 3 and 4 made a right 360° turn and upon completion of turn made radar contact with three unidentified targets at approximately 6-8 mi. Upon completion of the turn, BLUE 3 observed cannon fire from his 3 o'clock position, out of range with rounds falling well short of the F-4Bs. BLUE 3 and 4 then made radar lock-on on one of the three targets and pursued the bogey as it turned to about 060°, descending. BLUE 3 and 4 closed to within 4 mi and descended to about 8000 ft. BLUE 4 obtained a radar lock on the target and achieved an in-range light. However BLUE 4 did not get a clearance to fire. At this point they were approaching a confirmed SAM installation. Because of this and low fuel state, they broke off the tail chase and retired from the area without further incident. The low fuel state was a problem since post-strike refuel was not planned and therefore no tanker was available.

[redacted]

Event I-16

Delete Event I-16

[redacted]

[redacted]

EVENT I-17

Aircraft Involved: One U-2 vs one MIG-21

Result: No damage

Vicinity of Encounter: 20 mi NE of Dien Bien Phu, Approx coordinates: 21°35'N/103°20'E Route Package V

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 6 Feb 1966/----

One U-2 aircraft (BLUE 1) on photoreconnaissance mission.

II. DATA SOURCES

USAF Tactical Fighter Weapons Center - Combat Analysis Division Bulletin No. 3
CINCPACFLT Staff Study 3-67

12. NARRATIVE DESCRIPTION

Three minutes after BLUE 1 at 68,000 ft sighted bogey at 60,000 ft, BLUE 1 photographed an aircraft passing directly below on an attempted intercept. Aircraft proved to be a MIG-21 with a probable missile under each wing. Two other visual sightings of very high altitude and high Mach bogies were made in this area on the same date.

[redacted]

EVENT I-18

Aircraft Involved: Two F-4Cs vs three MIG-17s
Four F-4Cs vs three MIG-17s
Four F-5s vs MIGs

Result: No damage

Vicinity of Encounter: 21°50'N/104°15'E
Route Package V

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 Mar 1966/1703H

Three flights of aircraft were on a MIGSCREEN in the area between 21°54'N/104°14'E and 21°20'N/105°06'E. The flights flew the same track stacked in three layers. Four F-4Cs (GREEN flight) were in the top orbit at about 15,000-ft MSL flying a fluid-four. Another flight of four F-4Cs (BLUE flight) was at an intermediate level of 13,000-ft MSL flying two elements in trail. On the bottom orbit was a flight of four F-5s (YELLOW flight)[1] at 10,000 ft on the same track.

The MIGSCREEN was set up to cover the retirement of a 24-plane F-105 strike force (one of which is BROWN flight) which was operating in the area against the Lao Kat rail line. In addition, there were two EB-66s in the area with their own CAP.

## 2. MISSION ROUTE

BLUE flight left Udorn, refueled at either RED or WHITE ANCHOR and proceeded north to enter orbit approximately 21°10'N/104°50'E. GREEN flight refueled in the same area and proceeded to the same orbit.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4 and GREEN 1, 2, 3, 4

4 - SPARROW (AIM-7) (Both D&E were being used at this time. Exact load unknown.)
4 - SIDEWINDER (AIM-9B)
1 - 600-gal centerline tank
2 - 370-gal wing tanks
Camouflage paint
IFF and TACAN off

F-5 YELLOW 1, 2, 3, 4

2 - SIDEWINDER (AIM-9)

F-105 BROWN 1

Unknown

MIG-17 MIG

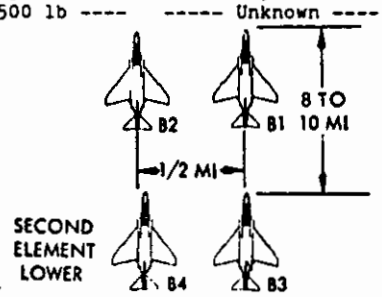
Silver color
No external stores reported
Chinese markings

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear with dense haze and smoke to about 13,000-ft MSL. Air-to-air visibility was 3-4 mi or less, depending on altitude and direction.

| | BLUE 1 2 3 4 | GREEN 1 2 3 4 | YELLOW 1 2 3 4 | BROWN |
|---|---|---|---|---|
| Altitude: | 13,000-ft MSL[2] | 15,000-ft MSL[2] | 10,000-ft MSL | Unknown |
| Heading: | ----- North[2] ----- | -------- NW[2] ----- | ---- Unknown --- | Unknown |
| Speed: | 480- to 520-kt TAS | 480- to 500-kt TAS | ---- Unknown ---- | Unknown |
| Fuel State: | ----- 8500 lb ---- | ----- Unknown ---- | ---- Unknown ---- | Unknown |

Flight Formation:




[1] There was some discrepancy concerning the F-5 orbit altitude. In this case the flight leader and OPREPs have been followed.

[2] The flights were continually jinking, changing altitude and direction.

5. INITIAL DETECTION

BLUE 2 (Back) heard a MIG red warning but no other flight member heard it. Shortly thereafter BLUE 4 (Front) saw a MIG-17 at BLUE 3's 6 o'clock, low in firing position, at [illegible] angle-off, distance less than 1000 ft.

About 2-3 min later GREEN 2 (Front) followed by GREEN 3 (Front) saw three MIG-17s passing under the flight.

6. ACTION INITIATED

Both BLUE 3 and BLUE 4 broke right and jettisoned tanks to evade the MIG immediately following BLUE 4's sighting of MIG on BLUE 4.

GREEN 2 and 3 called GREEN 1 but Lead never saw the MIGs.

7. SITUATION DEVELOPMENT

Immediately after initiation of their break, a MIG was seen at BLUE 4's 6 o'clock and BLUE 3 and 4 split. Due to the action taken, formation spacing, and visibility, BLUE 1 and 2 quickly lost contact with BLUE 3 and 4. Both BLUE 3 and 4 successfully disengaged by unloading and accelerating. On the way out, BLUE 4 was attacked a second time by a MIG-17 and again disengaged by accelerating.

GREEN lead did not acknowledge the communications of the other members of GREEN flight; consequently, the lead was never transferred to a flight member who could direct subsequent action. As a result, the MIGs were lost in the haze before GREEN flight could engage. GREEN flight then continued in their orbit.

8. ORDNANCE

BLUE and GREEN flights - none
MIGs - cannon (incl 37mm) firing on BLUE 3 and 4

9. EQUIPMENT PROBLEMS

BLUE 4 - Periodically fading radio which hampered communications, unreliable inertial navigation, which prevented rendezvousing with BLUE 1 and 2.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | 3300 | 500 | Unknown | Background in tactical fighters, considerable ACT experience. Had fired the SIDEWINDER but no SPARROW. |
| BLUE 2 | | | | |
| Back | 500 | 200 | 5 | No missile-firing experience. |
| BLUE 3 | | | | |
| Front | 1600 | 250 | Unknown | Never fired missile from F-4. |
| GREEN 1 | | | | |
| Front | | 500 | | Combat experience in Korea. Never had fired missile. |
| Back | 500 | 250 | 50 | Never had fired missile. |
| GREEN 3 | | | | |
| Front | 3500 | 300 | | Tactical fighter experience. Completed fighter weapons school. Never fired SPARROW. |
| GREEN 4 | | | | |
| Front | 2600 | 400 | 60 | B-66 and ADC experience. |
| BROWN | -------- Unknown ---------- | | | |

Comments on this Encounter

BLUE 1 (Front) - Roll rate of F-4 is satisfactory. Would like an external gun. Felt heat-seeker missile was better than "guided" for SEA situation partly because of its simplicity. It must have longer range, higher-g limits and more look angle than present missiles. Likes second crew member in aircraft which has complex radar to operate. Also, he represents a second set of eyes. Likes two engines, and wants higher thrust-to-weight ratio. Fatigue due to second mission contributed to poor showing.

BLUE 2 (Back) - Too many friendlies in the area. They would be chasing them all the time if they followed every contact. Back provides another look out. Ground clutter is bad.

BLUE 3 (Front) - Saw MIGs only because they had just completed the turn. Gun would permit improved tactics since minimum range is not a problem. Two reliable guns were wanted. High-g capability in short-range missile needed. Second crew member in F-4 needed to help look outside and is valuable for SAM protection. Better aircraft would be possible if not multipurpose. Better maneuverability needed.

GREEN 1 (Front) - Communications channels very garbled.

GREEN 1 (Back) - Weapons system all right. The stereotyped missions that they had been flying let the enemy know what to expect and so SAMs and then MIGs were sent against them.

Due to the MIGCAP, F-4 and F-5 aircraft did not feel it was necessary to drop ordnance at sight of MIGs.

Feels that CAP aircraft at the strike force function more efficiently since the strike force need not primarily consider enemy aircraft.

Never had to jettison ordnance because of MIGs.

## 11. DATA SOURCES

Project Interviews: BLUE 1 (Front), 25 January 1967; BLUE 2 (Back), 17 March 1967; BLUE 3 (Front), 23 January 1967; GREEN 1 (Front), 13 March 1967; GREEN 1 (Back), 10 January 1967; GREEN 3 (Front), 24 January 1967; GREEN 4 (Back), 25 January 1967; one member of BROWN flight, February 1967.

Messages, Reports:

6252 TFW Danang DOI TELECON 118 4 Mar 66
2AD 041739Z Mar 66 DOCO-O 4520
6252TFW Danang DOI TELECON 238 8 Mar 66
2AD Message 091107Z Mar 66

CINCPACFLT Staff Study 3-67

Letter: GREEN 2 (Back)

## 12. NARRATIVE DESCRIPTION

BLUE, GREEN and YELLOW flights were fragged for a MIGSCREEN orbit just south of the Red River and northwest of Yen Bai. The flights from Danang had performed CAP missions in the same area for several previous days, with the same TOT.

On the morning of 4 March, BLUE and GREEN flights had been in the same area on a mixed screen mission similar in type to the one for the afternoon. During the morning mission they had experienced flak, and on the preceding day's mission had had SAMs fired at them. Due to the flight time of the morning mission, at the time of the encounter they had been flying 5-6 hr.

BLUE flight had not been able to poststrike refuel after the morning mission and had to recover at Udorn. Consequently, in the afternoon they launched out of Udorn for the mission.

The flights were new to the theater and were experimenting with tactics. BLUE flight had decided to split the flight into two separate elements to provide radar coverage of each other's 6 o'clock. This radar coverage was lost in the turns which were made toward the target at each end of the orbit. Due to the visibility limitations in the haze, the cluttered communications channel (large number of aircraft in the area using the same frequency) and the degraded radar coverage because of the terrain, was unable to ascertain position of flight elements of BLUE flight. GREEN flight was in a modified fluid-four with the second element displaced aft.

While in the orbit, the flights were continuously jinking, making up to 045° increments of turn, every 20-30 sec, in an effort to clear their 6 o'clock and confuse the flak. On the afternoon orbit, unlike the morning mission, no flak was seen. Many brush fires burning on the hills contributed to the poor visibility at the lower level in the haze. Visibility was as low as 1 mi at 8000-9000 ft when looking away from the sun.

YELLOW flight was seen only momentarily. At the time of the MIG encounter BLUE and GREEN flights did not know YELLOW flight's position.

Because of the very limited visibility and cluttered radar return, BLUE flight was not monitoring the radar very closely.

### A. BLUE Flight

$T_{0A}$ - BLUE 1 and 2 were making a turn at the NW end of the oribt and BLUE 3 and 4 had just completed a jinking turn and headed north when BLUE 4 saw one MIG-17 coming up behind BLUE 3 from 5 to 6 o'clock low. The silver color of the MIG-17 blended well with haze and when first noticed was less than a mile away. BLUE 4 called for BLUE 3 to break right. The MIG closed rapidly and BLUE 3 observed the 37mm cannon firing.

When BLUE 3 and 4 were attacked, BLUE 4's call alerted BLUE 1 and 2. BLUE 1 was on the outside of a turn and did not see the MIGs attacking BLUE 3 and 4.

$T_{1A}$ - On observing the MIG, BLUE 3 broke hard right, selected afterburner, and jettisoned tanks.

BLUE 2 (Back) did see the second element at 9 o'clock. He saw an F-4 turning right with a MIG on his tail, followed by another F-4 behind the MIG, and another silver aircraft following the second F-4. The latter aircraft overshot the second F-4. BLUE 2 took the lead and headed toward the engagement but lost sight of BLUE 3 and 4 as they dove into the haze.

$T_{2A}$ - BLUE 1 and 2 could not obtain a good fix on BLUE 3 and 4, and therefore continued their orbit. BLUE 1 and 2 heard BLUE 4's call when he was under MIG attack for the second time. BLUE 1 and 2 made radio contact with BLUE 3 but did not rejoin either BLUE 3 or 4 until all returned to Danang.

In the break, the MIG-17 on BLUE 3 overshot underneath and started a high S-roll over the top, but then dropped low and to the inside of BLUE 3. Then the MIG was forced outside and forward of BLUE 3 by about 100 ft. As the MIG was forced outside, BLUE 3 pulled the nose up and executed a rudder reversal back to the left. The result of these maneuvers put BLUE 3 and the MIG into a scissors, each approaching head on.

$T_{3A}$ - BLUE 3 then broke hard right and down to avoid a mid-air collision. The MIG pulled inside of the turn but did not stay in that position. As the MIG fell away, BLUE 3 unloaded and descended to the mountain tops.

$T_{4A}$ - BLUE 4 followed the initial right break during this maneuver; however, BLUE 3 saw a MIG on the tail of BLUE 4 and called it. Almost immediately BLUE 4 (back) also saw the MIG. The MIG appeared to overshoot from 5 to 7 o'clock to BLUE 4 broke left, unloading in afterburner.

$T_{5A-7A}$ - On losing the MIG, BLUE 3 pulled up to 15,000 ft in an Immelmann to search for the MIG. The MIG slid to the outside at 5 o'clock low. BLUE 4 then headed for the deck coming out over a mountain to obtain separation and the MIG fell well behind.

BLUE 3 then stayed on station for a short time until BINGO was reached and then he recovered at Udorn.

$T_{8A}$ - When BLUE 4 lost the MIG, he was heading E-NE toward the Red River; he then turned to the south to avoid the heavy flak and SAM areas which were located to the immediate east of his position. BLUE 4 then exited to the south and started a climb to cruise out. At about 15,000 ft another MIG-17 attacked BLUE 4.

$T_{9A}$ - BLUE 4 broke hard left and the MIG dove downward. BLUE 4 accelerated to 1.3 Mach and initiated a straight-up climb breaking contact with the MIG.

$T_{10A,11A}$ - At this time BLUE 4 was south of the position of BLUE 3, and due to fuel state, headed south to home.

According to the persons involved, the MIGs seemed to be under GCI. The MIGs approached on the deck and were on top of BLUE flight with almost no warning. However, the MIGs overshot the flight possibly due to lack of visual acquisition.

B. <u>GREEN Flight</u>

$T_{0B}$ - GREEN flight heard BLUE flight's initial MIG call but due to excessive radio communications by other aircraft in the area, it was not ascertained if MIGs had attacked or where the encounter occurred. GREEN Lead indicated that there had been other MIG calls earlier which had proven to be F-4s.

$T_{1B}$ - Shortly after hearing the call, GREEN 2 (Back) got a radar contact which appeared on the bottom sweep among the ground clutter at very short range (5 mi). Immediately, GREEN 1 (Front) called out, "MIGs at 11 o'clock low." GREEN 2 (Back) looked up and saw three MIG-17s popping up out of the haze layer, at about 9 o'clock.

The MIGs were on a reciprocal heading crossing from left to right and were below the flight about level with the mountain tops in the area (2000-3000 ft above the ground).

$T_{2B}$ - GREEN 3 and 4 were starting to cross to the southside of the orbit track when the MIGs were called. When GREEN 3 rolled up to the right to check underneath, he saw one MIG at 5 o'clock and on rolling up further saw another MIG.

The MIGs rapidly disappeared into the haze before GREEN flight could alert Lead to the presence of the MIGs. The orbit was then continued without further contact, either radar or visual.

As BROWN flight was heading NW, wingman sighted enemy aircraft at 4 o'clock 4 mi out and level, on the way in toward target. The wingman called out the MIGs on the way into the target; and the flight continued on without jettisoning ordnance. Immediately after this, one of the MIGCAP was heard to call out "bogeys" on his radar. Due to the direction of the bogeys, they were identified as the strike flight. Shortly thereafter, the F-4 was heard to call "bogeys" and engage enemy aircraft. BROWN flight continued on to expend ordnance on the target and return. On return from the target, the enemy aircraft were spotted again.

EVENT I-18 SUMMARY

| Time Mark | Action Aircraft (GREEN 1,2,3,4) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2, 3) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{0B}$ | G1,2,3,4 480-520-kt TAS<br>Altitude about 15,000-ft MSL<br>Heading NW | Continue orbit for 2-3 min | BLUE flight in same general orbit. | Hear B3&4 jumped by MIG<br>Communication channels become very cluttered. | | GREEN flight in modified fluid-four finger-tip formation. Echelon right, echelon level |
| $T_{1B}$ | | G3&4 start crossing from right to left.<br>G2 Back obtains radar contact in ground clutter at 5-mi range slight look-down.<br>Front calls out 3 MIGs at 11 o'clock low and "Lead we've got MIGs going under us."<br>Back looks up and sees 3 MIGs popping up at 9 o'clock.<br>Front never sees MIGs although he hears the call. Back sees 2 MIGs. | | G3&4 acknowledge, but G1 never does. | Three MIG-17s passing in reciprocal heading from left to right, about 2000-3000 ft below the flight | B2 back on 25-mi scope, 3-bar scan, slight down look |
| $T_{2B}$ | | G3 rolls up to right to check underneath. Sees one MIG at 5 o'clock. | | G3 calls MIG passing underneath 5 to 6 o'clock | MIGs proceeding SE. Disappear into haze | |
| NOTE: $T_0$ for GREEN flight is the only corresponding T-mark with other flights. | | | | | | |
| $T_0$ | B1&2 altitude 13,000-ft MSL at NW turn point in left turn speed 480-500-kt TAS | | GREEN flight in same general orbit above BLUE | B1&2 hear the call that B3&4 have been jumped by MIGs. | | B1&2 did not have radar coverage of B3&4 during the turns. |

EVENT I-18 SUMMARY (CONTINUED)

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_1$ | | B2 looks out and sees at 9 o'clock B3&4 with MIGs. B1 with B2 in lead heads toward B3&4. | | B2 takes the lead since he has seen MIGs. | | The scene observed by B2 was: One F-4 (B3) turning down to the right toward the haze with a much smaller aircraft on its tail. Another F-4 (B4) was following behind the MIG and then another small silver aircraft which had overshot the second F-4 (B4). |
| $T_2$ | | B2 loses B3&4 as they descend into the haze. | | | | |
| NOTE: Since B1&2 are separated from B3&4, only $T_0$ and $T_{0A}$ are common to both. $T_1$ and $T_2$ for BLUE flight is not synchronized with $T_{1A}$ and $T_{2A}$. | | | | | | |
| Action aircraft B3 and B4 only. | | | | | | |
| $T_{0A}$ | B3&4 altitude ~13,000-ft MSL. Heading about north. Speed 480-kt TAS. | B4 sees a MIG-17 coming in on B3 at 5 to 6 o'clock low, range inside 1 mi | GREEN flight in same general orbit above | B4 calls B3 to break right | MIG-17 with 75-100-kt overtake | BLUE flight in general heading of 330°. B3&4 had just completed a 30°, 4-g jink to the right to clear their 6 o'clock. |
| $T_{1A}$ | B3 starting 4-5-g right break, speed 500-kt TAS, altitude ~10,000-ft MSL | B3 sees MIG, breaks hard right, into AB, jettisons tanks, 5-6 g. B4 breaks to right with B3. Jettisons tanks, goes to AB. | | | MIG closing and firing on B3 20° angle off, range inside 500 ft | Observed 37mm cannon firing |

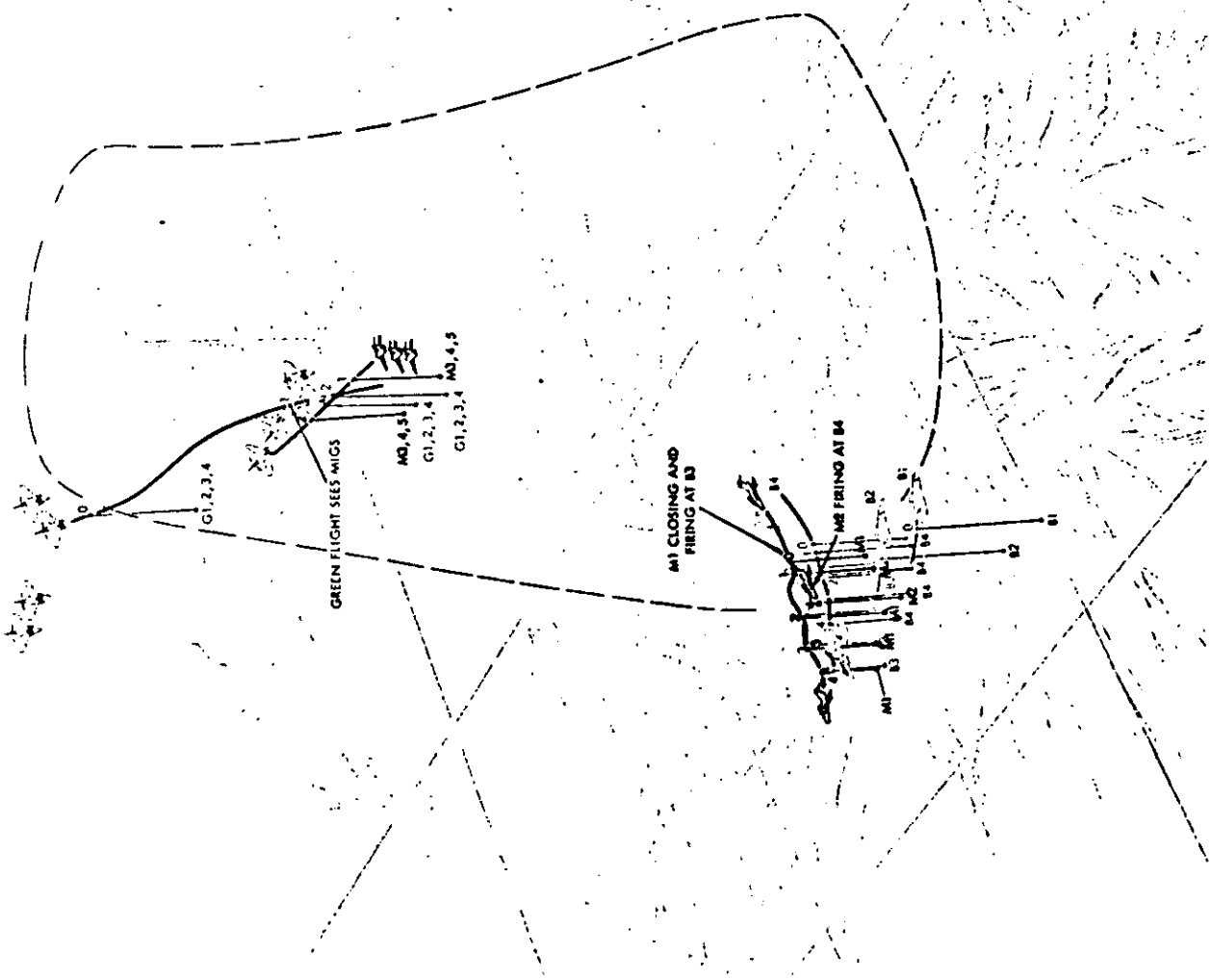
EVENT I-18 SUMMARY (CONTINUED)

| Time Mark | Action Aircraft (BLUE 3, 4) | | Other Friendly | Communications | Enemy Actions | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{2A}$ | B3 in hard right break, altitude 9000 ft | B3 sees MIG overshoot and one second later B3 reversed up and over to the left, by pulling nose 30°-40° up and doing rudder reversal. | | | MIG passed underneath. | |
| $T_{3A}$ | In AB 7000-8000 ft 6-6.5 g's, 500 kt 070°-080° bank | B3 pulled into MIG canopy to canopy, then broke hard right to avoid mid-air collision with MIG. Descended and armed SIDEWINDERS | | B4 calls out warning B3 of possible mid-air between B3 and MIG | MIG passes out in front of B3 and turns back into B3 200-300 ft in front | |
| $T_{4A}$ | Altitude 6000 ft, 500-kt TAS, 090°-110° bank<br><br>B4 in AB in right turn | B3 still sees MIG on his tail so continued to turn into MIG.<br><br>B4 breaks left and down | | B3 sees a MIG on the tail of B4 and tells B4 to break hard right. Called reverse<br><br>B4 Back calls MIG at 6 o'clock | MIG pulls to inside then slips to outside<br><br>M2 firing on B4. MIG overshoots from 5 to 7 o'clock | |
| NOTE: Since B3 and B4 split from this point on, the time marks for B3 and B4 are not synchronized. | | | | | | |
| Action Aircraft BLUE 3 only | | | | | | |
| $T_{5A}$ | B3 one g | B3 unloads, continues dive and passes a mountain. Also loses sight of MIG | | | | |
| $T_{6A}$ | 1.2 Mach, 4000 ft in AB | Pulls straight up and over to the right to heading of NW in a modified Immelman. Tops out at 14,000-15,000 ft | | | | |
| $T_{7A}$ | 14,000-15,000 ft | Comes out of AB. | | | | |

EVENT I-18 SUMMARY (CONTINUED)

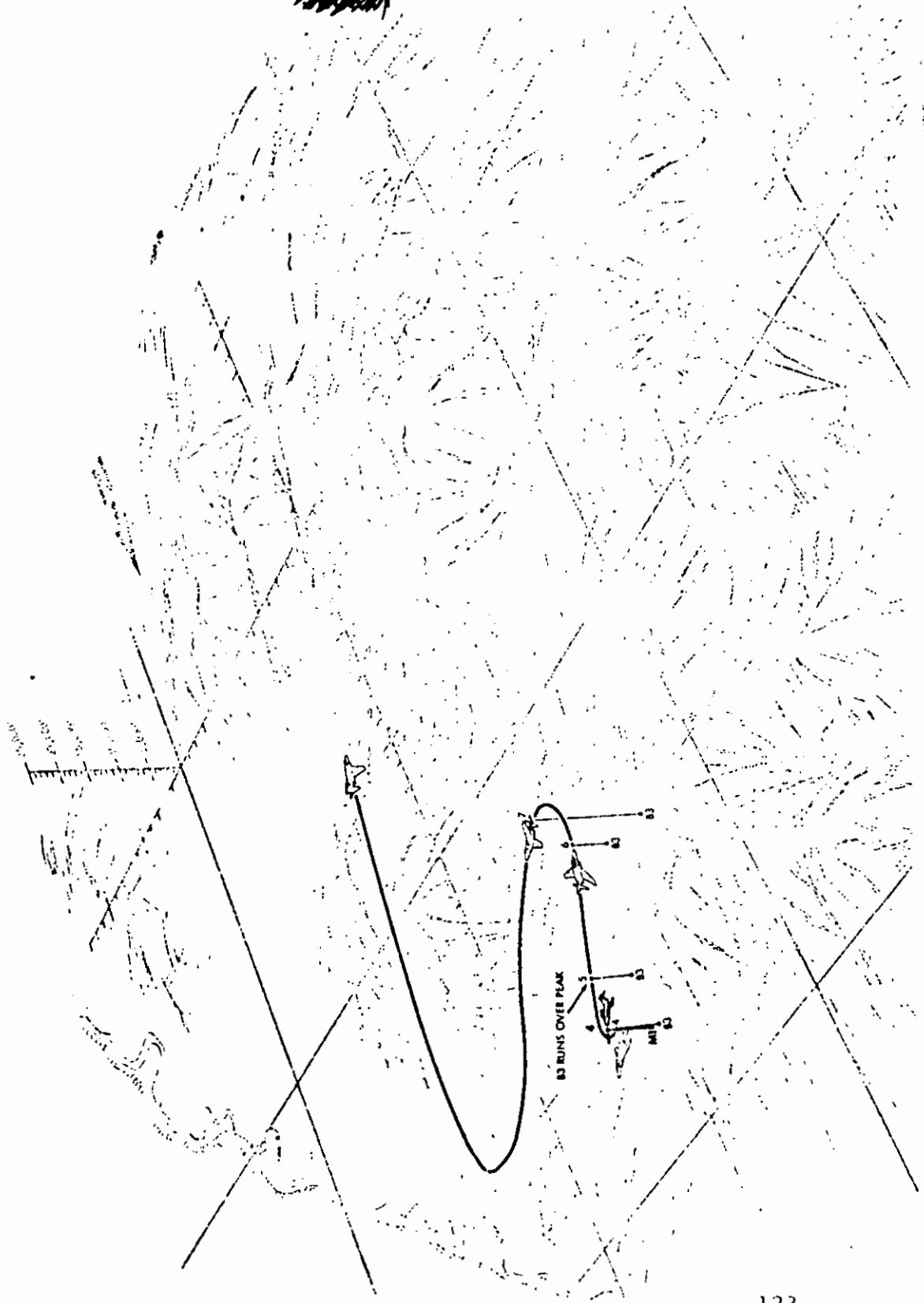
| Time Mark | Action Aircraft (BLUE 4) | | Other Friendly | Communications | Enemy Actions | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| Action Aircraft BLUE 4 only | | | | | | |
| $T_{5A}$ | B4 in left break in AB | Unloads | | | MIG slides outside to 5 o'clock low | |
| $T_{6A}$ | | Heads for deck | | | MIG falls behind | |
| $T_{7A}$ | Heading E-NE | Reverses to right turn, comes out on top of mountain | | | | |
| $T_{8A}$ | | Turns south | | | | |
| $T_{9A}$ | Heading south 15,000 ft, 5000 lb of fuel | Sees MIG at 6 o'clock low, breaks hard left, unloads and accelerates to Mach 1.3 | | | MIG goes down and away | |
| $T_{10A}$ | | Reverses over the top in a climb | | | | |
| $T_{11A}$ | | Turns south and goes home | | | | |

EVENT I-18


G1,2,3,4
GREEN FLIGHT SEES MIGS
M0,4,5
G1,2,3,4
M0,4,5
G1,2,3,4
M1 CLOSING AND FIRING AT B3
M2 FIRING AT B4
B1
B2
B3
B4
M1
M2

[redacted]

EVENT I-18



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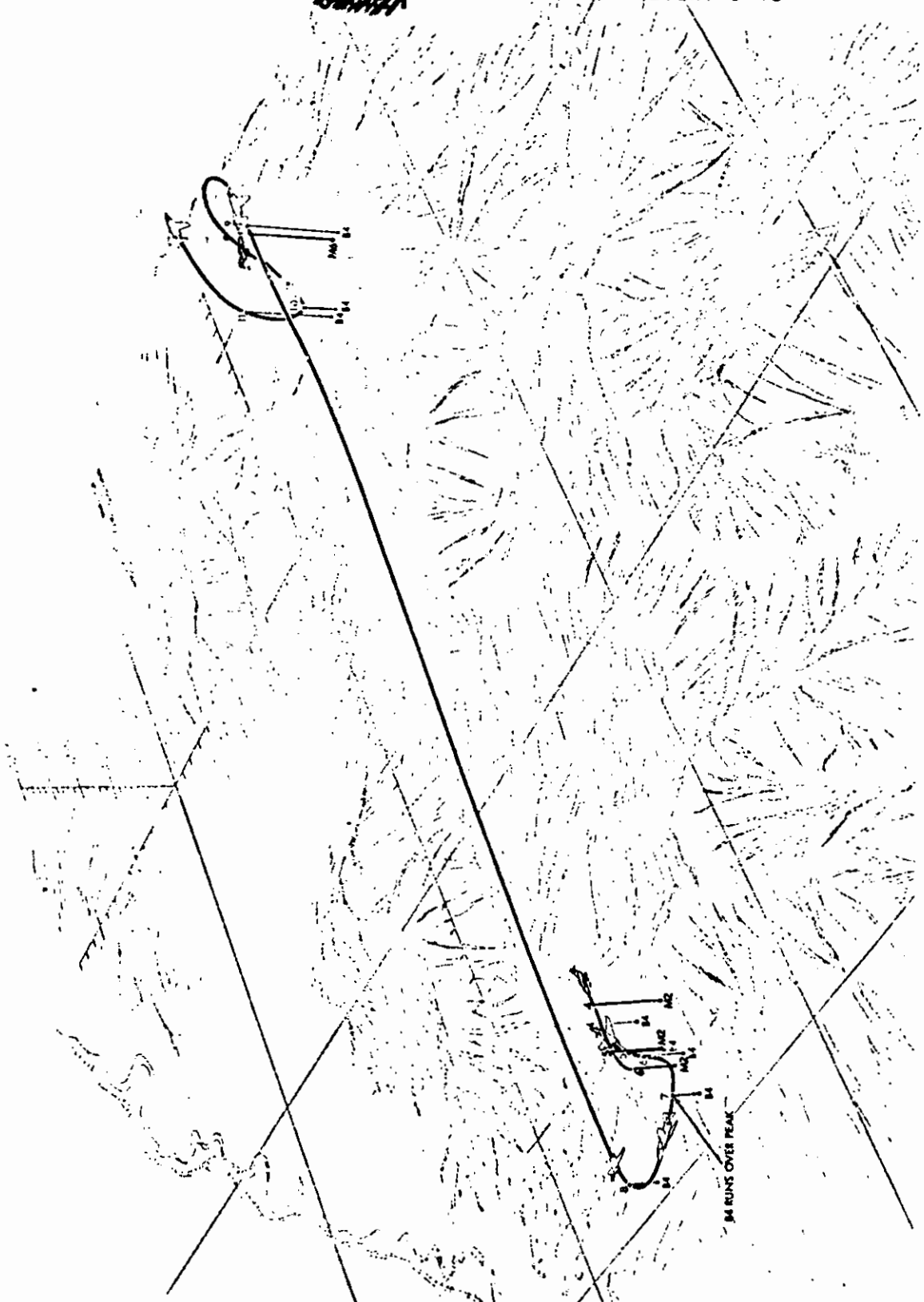
EVENT I-18



EVENT I-19

Aircraft Involved: Four F-4Cs vs one YAK-25 (possible)

Result: Sighting only

Vicinity of Encounter: 14°33'N/107°10'E Laos

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 10 Mar 1966/1025H

A flight of four F-4Cs (BLUE flight) on a TIGER HOUND mission against a target at 15°19'20"N/107°06'19"E.

II. DATA SOURCES

CINCPACFLT Staff Study 3-67
2AD 101405Z Mar 66 DOCO-0 14990
2AD 141425Z Mar 66 DIO 28848

12. NARRATIVE DESCRIPTION

BLUE flight came off the target and turned to a heading for Pleiku. The TACAN was determined inaccurate and the flight obtained a radar vector. Immediately after turning to the vector, heading SSW (approximately 200°) near the tip of Cambodia, BLUE 2 spotted a bogey at approximately 10 mi off to the right. The bogey was closing from the west at 28,000 ft, heading 90°, abeam of the flight.

The bogey closed to 1 or 2 mi of the flight before it turned to a heading behind the flight. The speed of the bogey approximated that of the F-4Cs, 510-kt TAS. The duration of visual observation was approximately 1 to 1-1/2 min.

BLUE 3 had radar lock-on to the bogey at the same time and location but could not spot the bogey when BLUE 2 called it out. The bogey broke lock at approximately 2 mi from the flight and disappeared from the scope on a reciprocal heading from BLUE flight.

The bogey was described as white or bright aluminum in color, no markings were observed. The wings were swept back very long and thin at 60°, "not a delta wing." One pod was located on outer third of each wing. Pods were blunt, resembling engine nacelles rather than fuel tanks. The fuselage nose was blunt and rounded and there was a high tail. Bogey was closer in appearance to a YAK-25 than MIG15/17/19, B66 or A-3D, "except nose was less rounded."

EVENT I-20

Aircraft Involved: Two F-8Es vs one unidentified aircraft

Result: Sighting only

Vicinity of Encounter: 20°10'N/108°10'E Tonkin Gulf

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 Apr 1966/0915H

Two F-8Es (BLUE flight) were on a strike against a target located 17°10'N/107°20'E.

II. DATA SOURCES

Message: CTG 77.3 050627Z Apr 66

12. NARRATIVE DESCRIPTION

At about 0115Z from 20°10'N/108°10'E BLUE flight sighted an unidentified silver colored aircraft. BLUE flight was at 32,000 ft, when the bogey passed directly overhead at an estimated altitude of 50,000 to 60,000 ft on a heading of 120°. BLUE flight turned to follow but lost visual and radar contact. Identification not possible due to distance and altitude. BLUE flight continued and delivered their ordnance on the target.

EVENT I-21

Aircraft Involved: Two F-4Cs and one U-2
Result: Radar contact only
Vicinity of Encounter: 20°45'N/104°05'E
Route Package V

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 Apr 1966/1232 to 1245H

Two F-4C aircraft were on an escort cover mission for TROJAN HORSE (U-2).

11. DATA SOURCES

Message: 7AF OPREP-4 0-2109352; DOCO-0 17970 April 66

12. NARRATIVE DESCRIPTION

A flight of two F-4Cs (BLUE flight) was on an escort cover mission for TROJAN HORSE (GREEN 1) at position 20°45'N/104°05'E. GREEN 1 aborted the mission 4 min after MIG alert for unknown reasons. BLUE flight was heading 021° at 32,000 ft, airspeed 500 kt when it was alerted to the situation of bogeys 60 mi east. They turned right to 060° heading, established a radar contact at 65 mi (direction unknown), started a rapid descent and at 50 mi lost target.

EVENT I-22

Aircraft Involved: Two F-4Cs vs one MIG-21
Result: 1 MIG kill, probable
Vicinity of Encounter: 22°00'N/105°50'E
Route Package VI

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 23 Apr 1966/1615H

Two F-4C airplanes (BLUE flight) escorting one EB-66 (GREEN flight). The EB-66, with escort, was orbiting in the vicinity of 22°00'N/106°00'E in support of strikes being conducted in the general area. The mission of the F-4Cs was to protect the EB-66.

## 2. MISSION ROUTE

Four F-4Cs departed Danang and proceeded into Thailand for aerial refueling. The flight then proceeded northerly and joined two EB-66s. At the Red River, while heading northeasterly, the two EB-66s split and proceeded to assigned orbit areas with escorts.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2

4 - SPARROW (AIM-7E)
4 - SIDEWINDER (AIM-9B)
1 - 600-gal centerline tank
2 - 370-gal wing tanks
No discrepancies with avionics at beginning of flight.
Airplanes camouflaged with white underside and green/brown top surface.

EB-66 GREEN 1

Unknown

MIG-21 MIG 1

Not determined.
Silver color.

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Haze layer began at about 10,000 ft and reduced visibility to 1-1/2 to 2 mi below that altitude. Sky clear with unrestricted visibility above the haze.

| | BLUE 1 | BLUE 2 | GREEN 1 |
|---|---|---|---|
| Altitude: | On direction of GREEN 1 all airplanes were jinking in altitude while evading possible SAM launches. Altitude varied between 20,000 and 30,000 ft. | | |
| Heading: | Completed a 180° left turn, rolled out on a northwesterly heading. | | |
| Speed: | 0.82-0.88 Mach | | |
| Fuel State: | Full internal plus unknown in external. | | Unknown. |
| Flight Formation: | F-4Cs were on each wing of the EB-66 about 1/2 mi wide and 30° aft of the beam. | | |

## 5. INITIAL DETECTION

BLUE 1 sighted four MIG-17s in formation, very low, headed north. Almost immediately BLUE 1 sighted a single airplane at his 6 o'clock, 4-6 mi and closing. This airplane was later identified as a MIG-21. Silver color made it stand out as enemy.

## 6. ACTION INITIATED

BLUE flight jettisoned external tanks. BLUE 1 lit afterburners and broke right into the MIG. BLUE 2 remained with GREEN 1. When the MIG followed BLUE 1, GREEN 1 turned left and departed the area. BLUE 1 turned hard right in pursuit of the MIG.

## 7. SITUATION DEVELOPMENT

After about 180° of turn BLUE 2 sighted two targets at about 6 mi. Back-seat pilot obtained radar lock. Uncertain whether BLUE 1 or MIG. Closed range in afterburner accelerating to about 1.7 Mach. Identified target as MIG-21. BLUE 2 maneuvered to gain separation. Attempted to fire two SPARROW missiles, no launch. Switched to HEAT and fired two SIDEWINDER missiles. No hit. Overran MIG again, so maneuvered for separation. Fired two SIDEWINDER missiles. No hit. Disengaged in a right diving turn and departed the area.



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8. ORDNANCE

(No. fired/No. hits)

| | SPARROW AIM-7E | SIDEWINDER AIM-9B | Remarks |
|---|---|---|---|
| BLUE 1 | | | Did not shoot. |
| BLUE 2 | 2/0 | 4/0 | SPARROWS did not leave the airplane. SIDEWINDERS were not observed by BLUE 2. |
| MIG 1 | | | Did not shoot. |

9. EQUIPMENT PROBLEMS

BLUE 2 had radio (UHF) and intercom difficulties after encounter started. Was unable to communicate with BLUE 1 and back-seat pilot.

BLUE 2 had attempted to launch two SPARROW missiles. Missiles failed to eject due to a maintenance error.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | 3500 | 300 | | T-33, F-84 experience. Had completed fighter weapon school. Had never fired SPARROW. Had fired one SIDEWINDER. |
| Back | Not interviewed | | | |
| BLUE 2 | | | | |
| Front | | 500 | | Very experienced in fighters. Combat experience in Korea and Vietnam. |
| Back | 500 | 250 | 50 | Had never fired a missile, was never in an F-4 when a missile was fired. |
| GREEN 1 | Not interviewed | | | |

Comments on this Encounter

BLUE 1 (Front)

F-4 is a good airplane. Believed MIG-21 pilot was surprised by performance of F-4. Knowledge of the SPARROW weapon system weak, therefore limited confidence in weapon.

BLUE 2 (Front)

Evaluated F-4 as superior to the MIG-21. Pilot visibility from the cockpit of the MIG-21 very limited, structural restrictions to rearward visibility and to the down-looking field of view. Thought MIG pilot was also inferior.

BLUE 2 (Back)

Shortly after breakaway from GREEN 1 communication between cockpits in BLUE 2 was lost. Back-seat pilot was not contributing anything to the engagement and did not know next action planned by front-seat pilot.

Comments from Overall Experience

BLUE 1 (Front)

A gun would be useful for close-in situation. Pilots may midjudge the range to target and launch missile when not within missile envelope.

BLUE 2 (Front)

Did not like "hot mike" intercom in F-4. Used camouflage color pattern to assist in judging distance from other F-4. Did not like location of missile/ordnance control panel in F-4. Improve the performance of the AAM, and gun will not be needed. Two-place airplanes and two pilots a good configuration. Training safety restrictions severely limited air-combat-tactics training prior to deployment to the combat area. Recommended an optical aid for the back-seat for road recon or air to ground. Optical sight in F-4 was poorly located.

11. DATA SOURCES

Project Interviews:

BLUE 1(Lead) - Front, 23 Jan 67

BLUE 2 - Front, 13 Mar 67

- Back, 10 Jan 67

Messages, Reports:

OPREP-3 7AF, 230851Z Apr 66, DOCO-0 18133

7AF, 232223Z Apr 66 DODO-0 18186

DIA Msg. DIAAP-2 9208 Apr 66 Sec 3 250420Z Apr 66

USAF Fighter Weapons School Bulletin-4

12. NARRATIVE DESCRIPTION

Four F-4Cs (BLUE flight) departed Danang to escort an EB-66 (GREEN flight) in support of strike operations in the area north of Hanoi. After flight refueling, the fighters rendezvoused with the EB-66 in the vicinity of 20°00'N/103°30'E. The flight proceeded northeasterly to the Red River where the EB-66s split into two flights and proceeded independently, each with two F-4C escorts. GREEN 1, with BLUE 1 and 2, established an E-W race-track orbit near 22°00'N/106°00'E. While oribting, several SAM evasive maneuvers were executed in response to warnings from GREEN 1.

$T_0$ As the flight was turning through a northerly heading at the eastern end of the orbit at an altitude of about 28,000 ft, BLUE 1 sighted four MIG-17s in formation, very low, heading north. Almost immediately BLUE 1 saw a single airplane at 6 o'clock, climbing, at a range of 3-4 mi. The bogey was identified as a MIG and BLUE 1 called the TALLY HO.

$T_1$ BLUE 1 jettisoned his external tanks, engaged afterburner and broke right into the MIG when the MIG was about 1-1/2 mi astern. BLUE 2 stayed with GREEN 1 to be sure there were no other MIGs in the area. The MIG turned to chase BLUE 1.

$T_2$ BLUE 2 then told GREEN 1 to depart the area. BLUE 2 engaged afterburner, turned hard right and jettisoned his external fuel tanks. The MIG was pursuing BLUE 1 but was unable to stay inside the turn and was slipping to the outside.

$T_3$ BLUE 1 saw this and reversed to the left. BLUE 2 saw two targets ahead at about 6 mi as he was rolling out on a southeasterly heading. Because of the distance he did not know which was the MIG and which was BLUE 1. BLUE 2 chose to chase the airplane that had not turned. This turned out to be the MIG.

$T_4$ BLUE 2 was unable to contact BLUE 1. BLUE 2 accelerated to Mach 1.5-1.7 as he closed on his target.

$T_5$ His back-seat pilot had a radar lock-on but because of uncertainty of identification, BLUE 2 continued to close the target.

$T_6$ BLUE 2 joined with the target at close range. The target was identified as a MIG-21. BLUE 2 executed a high-g barrel roll to gain separation.

$T_7$ From a position between 1/2 mi and 1 mi BLUE 2 tried to launch two SPARROWs. The missiles did not leave the airplane due to a maintenance error. The missile ejector mechanism was not properly connected. Communication between cockpits was lost.

$T_8$ BLUE 2 switched to HEAT and launched two SIDEWINDERs. Neither pilot saw the missiles in the air but the back-seat pilot felt them leave the airplane. BLUE 2 executed another barrel roll to keep from overrunning the MIG. Again in a position astern of the MIG two more SIDEWINDERs were launched. Again neither pilot saw the missiles in the air but the back-seat pilot felt them launch.

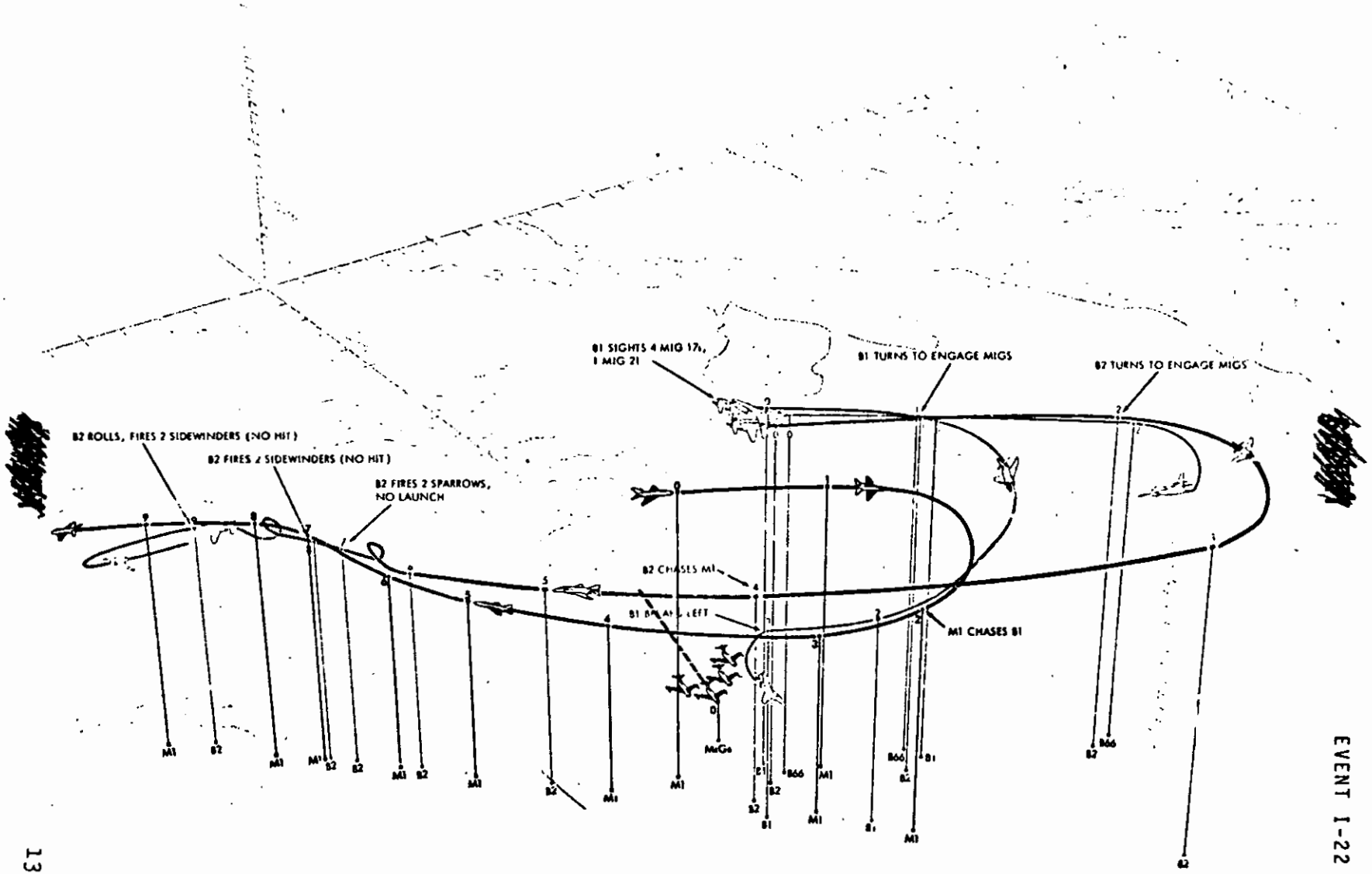
$T_9$ BLUE 2 was below BINGO fuel so he disengaged and departed the area. In exiting the area he accelerated to supersonic speed for about 15 mi and landed at Udon instead of Danang due to low fuel, 600 lb. BLUE 1 landed at Udon about 15 min later.

## EVENT I-22 SUMMARY

| Time Mark | Action Aircraft (BLUE 1,2) | | Other Friendlies (GREEN 1) | Communications | Enemy Actions (MIG 1) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | B1 and B2 4SIDEWINDER 4SPARROW<br>28,000 ft<br>Mach 0.82-0.88<br>Full internal fuel | B1 sighted four MIG-17s low on the deck headed N.<br>B1 sighted MIG-21.<br>B1 jettisoned external fuel tanks. | G1 heading NW. | B1 alerted flight of presence of MIGs. | M1 commencing attack on G1, B1&2. | B1&2 escorting G1. |
| $T_1$ | | B1 into hard right turn and engaged AB. | B2 continued with G1. | B1 called "Break." B2 stated he was staying with G1. | M1 chasing B1. | |
| $T_2$ | B2 accelerating. | B2 engaged AB, turned hard right, jettisoned external fuel tanks. G1 into diving left turn to clear the area | B1 attempting to disengage from M1. | | M1 chasing B1, unable to stay inside the turn. | B2 advised G1 to clear the area. |
| $T_3$ | | B2 sighted two airplanes out in front. B1 broke left as M1 slipped to 6 o'clock. | | | M1 did not attempt to follow B1 in left break. | |
| $T_4$ | B2 accelerated to Mach 1.5-1.7 | B2 chasing M1. | | B2 unable to contact B1 | M1 heading SE at high speed | B2 accelerated to $V_{max}$ out of turn. |
| $T_5$ | | B2 gaining rapidly on M1. Obtained radar lock-on. | | No contact with B1. | M1 departing area at high speed. | |

EVENT I-22 SUMMARY (Continued)

| Mark Time | Action Aircraft (BLUE 1,2) | | Other Friendlies (GREEN 1) | Communications | Enemy Actions (MIG 1) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_6$ | | B2 joined M1 at close range. B2 executed high-g barrel roll for separation. | | | No evasive action | B2 identified target as MIG-21. |
| $T_7$ | | B2 in position to launch missiles. Attempted to launch two SPARROW missiles. No launch | | Lost communication with pilot in rear cockpit. | Engaged AB and attempted to get away. | Back-seat pilot had radar lock-on and called "Shoot" before ICS failed. |
| $T_8$ | | B2 launched two SIDEWINDER missiles. Did not see missiles in flight. Executed another high-g barrel roll to keep from overrunning M1. Launched two more SIDEWINDER missiles. Did not see missiles. | | | | |
| $T_9$ | | B2 disengaged in diving right turn in AB. | | Regained communication with back-seat pilot. | Departed area. | B2 landed at emergency divert field -- very low fuel state -- 600 lb. |


B1 SIGHTS 4 MIG 17s, 1 MIG 21
B1 TURNS TO ENGAGE MIGS
B2 TURNS TO ENGAGE MIGS
B2 ROLLS, FIRES 2 SIDEWINDERS (NO HIT)
B2 FIRES 2 SIDEWINDERS (NO HIT)
B2 FIRES 2 SPARROWS, NO LAUNCH
B2 CHASES M1
M1 CHASES B1
MiGs

EVENT I-22

EVENT I-23

Aircraft Involved: Four F-4Cs vs four MIG-17s
Result: Two MIG-17s destroyed
Vicinity of Encounter: 22°N/106°E
Route Package VI

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 23 Apr 1966/1421H

MIG screen for support F-105 strikes on JCS target 18.23 (Bac Giang Hwy/RR Bridge). Planned to orbit east-west between altitudes 12,000-18,000 ft in vicinity 22°N/106°E. RB-66 with F-4C escort on station north of MIG screen orbit point.

## 2. MISSION ROUTE

Flew generally direct route from Udorn to west of planned orbit area. Refueled from KC-135 on RED TRACK at 28,000-ft altitude.

## 3. AIRCRAFT CONFIGURATION

F-4C BLUE 1, 2, 3, 4

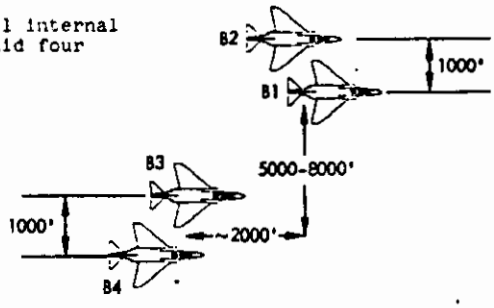
4 - SPARROW (AIM-7D)
4 - SIDEWINDER (AIM-9B)
2 - 370-gal external fuel tanks
(1 - 600-gal centerline tank was dropped when empty prior to reaching orbit point)

MIG-17 MIG 1, 2, 3, 4

External tanks

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Thin scattered clouds, visibility 10 to 15 mi
Altitude: Flight lead descending through about 15,000 ft
Heading: 090°
Speed: 480-kt TAS
Fuel State: Full internal
Flight Formation: Fluid four




## 5. INITIAL DETECTION

One of the F-4Cs picked up and reported radar contact about 15 mi, 45° left of flight. Other three F-4Cs then made almost simultaneous radar contact, 1421 local time. (Not known which aircraft made original radar contact.) BLUE 1 (Front) made visual contact at 8 mi, and ID at 6 to 7 mi.

## 6. ACTION INITIATED

BLUE 1 (L) made interception turn to left for identification pass and directed BLUE 3 to take up spacing to fire missiles after ID made. BLUE 3 and 4 dropped external tanks.

## 7. SITUATION DEVELOPMENT

BLUE flight met MIG flight in near head-on pass. BLUE 1 and 2 each fired one SPARROW and BLUE 3 fired a SIDEWINDER on this initial head-on contact.

Left turning engagement (Lufbery type) between altitudes 10,000 and 18,000 ft developed. Three MIGs gained position on tail of BLUE 2. MIG 1 fired at BLUE 2 but did not hit.

BLUE 3 and 4 maneuvered to attack three MIGs on BLUE 2's tail. MIG 3 broke into BLUE 3. BLUE 3 destroyed MIG 2 with one SIDEWINDER. MIG 1 disengaged by going to the deck.

MIG 3 approaching firing position on BLUE 3 and 4, shortly after MIG 2 was hit, could not follow the F-4 climbing separation maneuver and rolled down to the right. BLUE 4 followed MIG 3 and fired three SPARROW missiles, one of which hit and downed MIG 3.

Engagement lasted for approximately 10 min (1421-1431 local time).

8. ORDNANCE

| | (No. fired/No. hits) SPARROW AIM-7D | SIDEWINDER AIM-9B | Remarks |
|---|---|---|---|
| BLUE 1 | 1/0 | 0/0 | Fired inside min range. Aim dot outside circle. |
| BLUE 2 | 1/0 | 0/0 | No motor ignition. |
| BLUE 3 | 0/0 | 2/1 | One forward hemisphere shot, no hit. Second hit and downed MIG 2. |
| BLUE 4 | 3/1 | 0/0 | One guided but missed. One no motor ignition. One hit and downed MIG 3. |
| Total | 5/1 | 2/1 | |

MIG 1 fired 37mm cannon. No hits.

9. EQUIPMENT PROBLEMS

BLUE 4 (Front) was unable to unlock his shoulder restraint to reach the HEAT switch when he desired to switch from SPARROW to SIDEWINDER while on MIG 3's tail.

10. AIRCREW COMMENTS[1]

Comments on this Encounter

The flight had preBriefed to fire missiles on the identification pass even though there was little probability of aircraft making the identification getting a hit. Past history had been that MIGs were always on the offensive, and any action that could be taken to put them on the defensive would be beneficial to the F-4C flight.

MIG pilots were extremely aggressive and capable in their handling of the MIG-17.

MIG-17 could easily out turn the F-4C, but the power and speed of the F-4C more than made up for this disadvantage.

BLUE 4 (Front) is quoted as follows: "When the MIG aircraft selected afterburner after my first missile firing, I attempted to select HEAT on my missile panel to fire an AIM-9B SIDEWINDER. My inertial reel was locked and I had difficulty releasing the inertial lock so I could reach the panel and change the switch. Since the MIG was starting to evade, I elected to remain in the radar position and fire another AIM-7D SPARROW."

Engagement took place in a manner very similar to that for which they had planned and briefed. None of the tactics utilized or required were of an extreme or unusual nature.

Comments from Overall Experience

BLUE 1 (Front) The need for F-4 gun is overstated, although it would be of value if it could be obtained without hurting current radar and other systems performance. If you are in a position to fire gun, you have made some mistake. Why, after a mistake, would a gun solve all problems: Also having a gun would require proficiency at firing, extra training, etc. Have enough problems staying proficient in current systems. If the F-4 had guns, we would have lost a lot more, since once a gun duel starts the F-4 is at a disadvantage against the MIG.

Need an identification system that will eliminate visual identification requirement.

BLUE 2 (Front) felt that he had very poor air-combat-tactics background. Prior background was bomber and other multi-engine. Transition to F-4 oriented toward upgrading a qualified fighter pilot rather than training a pilot with no fighter background.

11. DATA SOURCES

7th AF OPREP-3 240024Z April 1966 DOCO 18171

Interview, BLUE 1, Front, 13 Dec 66
Interview, BLUE 2, Front, 12 Dec 66
Interview, BLUE 2, Back, 14 Mar 67
Interview, BLUE 4, Front, 9 Mar 67
Letter, BLUE 3, Front, 31 Jan 67
Interview, BLUE 3, Back, 14 Mar 67
Letter, BLUE 4, Front, undated

[1] Only aircrew experience data obtained was for BLUE 1 (Front): 2500 total flight hours, 650 F-4 hours, 30 combat missions.

## 12. NARRATIVE DESCRIPTION

EVENT I-23

BLUE flight of four F-4Cs was approaching MIG screen orbit point approximately 22°N/106°E. Mission was to cover F-105s striking JCS Target 18.23 (Bac Giang Hwy/RR Bridge). Flight was descending through 14,000-18,000 ft, heading 90°, speed 480-500-kt TAS, formation fluid four with second element (BLUE 3 and 4) flying 2000-3000 ft high, to the right 5000-8000 ft and about 2000 ft behind the lead element (BLUE 1(L) and 2). Centerline external fuel tanks had been dropped when empty, prior to this time.

$T_0$ At 1421 local time a member of the flight reported radar contact 45° left 15 mi. All aircraft in the flight picked up the radar contact almost simultaneously. BLUE 1(L) commenced turn to left to make positive identification of the bogeys and advised BLUE 3 to pick up spacing to get into firing position. BLUE 3 and 4 dropped wing external fuel tanks (two 370-gal tanks per aircraft). The flight accelerated and SPARROW missiles were retuned.

$T_1$ At approximately 8 mi, BLUE 1 reported visual contact but still did not have positive identification.

$T_2$ At 6 to 7 mi BLUE 1 had positive identification of the bogeys as MIGs, by their silver wings and the shape of the vertical stabilizers. BLUE 1 and 2 jettisoned wing tanks. MIGs jettisoned wing tanks at about this time revealing to the F-4 flight that they were not carrying air-to-air missiles.

$T_3$ BLUE 1 had radar lock-on and fired SPARROW missile at 4 mi, just after getting minimum-range indication. The aiming dot was outside the ASE circle. The SPARROW did not appear to guide and passed 2000 to 3000 ft behind the MIG flight. BLUE 1(Front) knew the SPARROW would not hit but fired in hopes the action would put the MIGs on the defensive, which was the planned tactic.

$T_4$ BLUE 2 fired SPARROW in boresight mode at about 3-mi range. The missile motor did not ignite. Shot was made from 90° beam and parameters were not met.

$T_5$ BLUE 3, about 2 mi behind the lead element, could not hold radar lock-on for SPARROW shot so selected and fired a SIDEWINDER almost head-on to the MIGs, knowing there was little or no chance for a hit. BLUE 4 was maintaining a fighting wing position on BLUE 3.

By this time the MIG flight had broken left into the F-4 flight and the engagement was developing as a left-hand Lufbery-type dogfight (i.e., two or more aircraft follow one another in circle or spiral).

BLUE 1 and 2, after each had fired one SPARROW, descended slightly to accelerate and pulled up into a sharp climbing left turn.

The second element (BLUE 3 and 4) pulled up and entered into the left-hand Lufbery circle. BLUE 3 spotted a MIG getting into firing position on his element and immediately went to afterburner and started a steep left climbing turn to separate from the MIG. The MIG was unable to follow and broke down to the left.

During this time BLUE 4 observed four more MIGs (RED flight) approaching the area. They did not engage and departed to the south.

Several 360° turns were made during the engagement. The exact number of turns could not be determined.

BLUE 2 apparently dropped farther behind BLUE 1 than the normal fighting wing position during this period as he was scanning the cockpit in an effort to determine the reason for the missile motor ignition failure on his SPARROW firing. However, BLUE 2 still had BLUE 1 in sight.

$T_6$ BLUE 1(L) switched to HEAT (SIDEWINDER) mode and maneuvered to 6 o'clock on a MIG in a hard left turn. BLUE 1 was unable to fire due to high-g forces (approximately 5 g's). In this high-g turn, BLUE 1 observed his Mach was falling off and he was losing altitude; therefore, he eased the g loading to about 2 g's and slid to the outside of the MIG.

$T_7$ BLUE 3 observed and transmitted that BLUE 2 (in BLUE 3's 8 o'clock position) had three MIGs on his tail with MIG 1 in firing position. BLUE 3 accelerated and maneuvered his element to get in firing position on the three MIGs on BLUE 2's tail. (BLUE 1 observed BLUE 2 way back and turning to the inside of BLUE 1.)

$T_8$ BLUE 3 transmitted that MIG 1 was firing on BLUE 2. BLUE 2 on debrief reported that the MIGs were actually in his 8 o'clock position 1500 to 2000 ft behind and 200 ft lower, not closing. BLUE 2 could see the tops of the MIGs wings and felt they were not getting required lead. BLUE 2 saw MIG firing.

BLUE 1 directed BLUE 2 to unload and depart to the west. BLUE 2 went to AB, felt a jolt and reported he was hit. As BLUE 2 accelerated, the three MIGs continued to follow, but gradually lost ground. BLUE 1 after the "have been hit" transmission was concentrating on locating BLUE 2 and providing assistance.

$T_9$ As BLUE 3 and 4 approached firing position on the three MIGs, MIG 3 saw them and broke left, passing about 1500 ft in front of BLUE 3, and then maneuvered to get 6 o'clock on BLUE 3 and 4.

$T_{10}$ MIGs 1 and 2 apparently did not see the two F-4s closing on them and continued the losing chase after BLUE 2. BLUE 3 fired a SIDEWINDER and hit MIG 2. The missile was fired at approximately 4000-ft range, 450-kt TAS, 30° bank and 2 g's. Both BLUE 3 and 4 observed MIG 2 smoke and pieces fall off as it rolled, to right, apparently out of control, into a nearly vertical dive. MIG 1 broke to the left and down to depart the area.

$T_{11}$ After firing the SIDEWINDER, BLUE 3 rolled to the left to clear his tail and observed MIG 3, which had earlier broken in front of him, coming into firing position. BLUE 4 back seat had been watching MIG 3 maneuver into firing position and had alerted his front seater. BLUE 3 and 4 engaged afterburner and commenced steep left climbing separation maneuver. MIG 3 was unable to follow and rolled off to the right.

$T_{12}$ BLUE 4 (3000 to 4000 ft behind and to the right of BLUE 3) observed MIG 3 roll off to the right and transmitted to BLUE 3 that he was in position to attack. BLUE 3 continued his roll in the direction of MIG 3; had pipper on the MIG and told back seat to lock on. After getting good lock-on and proper missile indications, BLUE 4 fired a SPARROW as he passed through 16,000 to 17,000 ft rolling into a downward maneuver. The SPARROW appeared to guide properly, but there was a great amount of side-slip in the launch aircraft's flight path and the SPARROW passed by the left wing of MIG 3.

$T_{13}$ MIG 3 selected afterburner and BLUE 4 attempted to switch to SIDEWINDER mode, but was unable to unlock his shoulder restraint to reach the switch. BLUE 4 fired second and third SPARROW while passing through 13,000-ft altitude in a near vertical dive. One SPARROW hit MIG 3, and BLUE 4 observed thick grey and white smoke trailing the MIG as it continued its near vertical dive. The other SPARROW was not seen. Apparently no motor ignition. BLUE 4 leveled at 8000 ft, rejoining BLUE 3 and departed the area.

In the meantime, BLUE 1 had rejoined on BLUE 2 and after a look at the aircraft reported unable to locate any damage. BLUE 1 directed BLUE 2 to commence climb for return to base.

BLUE 2(Front) later, on the ground, reported that he had found his stability augmentation disengaged shortly after reporting he had been hit. Upon resetting stability augmentation, the system functioned properly. He felt that the jolt, which made him think the aircraft had been hit, was caused by disengagement of the stability augmentation system at the time he went to afterburner to separate from the MIGs on his tail.

Both elements of the flight were joined up shortly after crossing the Red River. All four aircraft were at or above BINGO fuel. The flight returned to base without further encounter. Two MIG-17s had been shot down with no damage to the F-4C flight. Total engagement time approximately 10 min.

The engagement took place between altitudes of 10,000 to 20,000 ft with speeds ranging from 400-kt TAS to 1.2 Mach. Maximum g reported was 5 pulled by BLUE 1. BLUE 4 reported never pulling more than 3 g's.

EVENT 1-2? SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) Status | Action | Other Friendlies | Communications | Enemy Actions (MIG 1,2,3,4) | Remarks |
|---|---|---|---|---|---|---|
| $T_0$ | 480 to 500-kt TAS descending 14,000-18,000 ft | Commenced left turn for ID pass, accelerated slightly. B3&4 jettisoned wing tanks and widened turn for spacing | | Radar contact called out. B1 stated his element would make ID pass. B1 directed B3&4 to get spacing to be in firing position. | On course about 245°. Continued this heading. | One of the F-4s reported radar contact 45° left about 15 mi. Other aircraft had almost simultaneous reading of radar contact rapid overtake. |
| $T_1$ | 500-kt TAS 15,000 ft | All F-4s working for radar lock-on; SPARROW missiles retuned; B3&4 behind 3000-4000 ft above lead element. | | B1(L) called "visual 12 o'clock" then "shiny wings 11 o'clock." | Bogeys remain on steady course. | |
| $T_2$ | 15,000 ft | B1&2 jettisoned external tanks, armed missiles | | B1 called positive ID. B1 rear seater had radar lock-on, advised front seater to fire. | MIGs apparently did not see BLUE flight until after tanks were jettisoned. Still straight and level to that time. | Positive ID as MIG-17s by shape of vertical stabilizer |
| $T_3$ | 500+ -kt TAS 15,000 ft | B1 fired SPARROW, locked on from 45° stern in full system, overtake 150 kt. As missile left, break X appeared on scope. | | B1 reported he was firing. | MIGs jettisoned tanks and broke left into BLUE flight. | SPARROW fired about 4-mi range. Had just passed min range and aiming dot was not in the ASE circle. Knew he would miss. Missile went 2000-3000 ft behind MIGs. Gave no indication of guiding. |
| $T_4$ | 500+ -kt TAS 15,000 ft | B2 fired SPARROW 3-mi range in boresight mode. B1&2 went AB, descended slightly to accelerate and then made a hard climbing left turn. B3&4 about 2 mi behind B1. | | | MIGs in hard left turn, making gun attack. | SPARROW motor did not ignite although missile left the aircraft. Estimated four MIG-17s in flight. No lock on was achieved. |

EVENT I-23 SUMMARY (Continued)

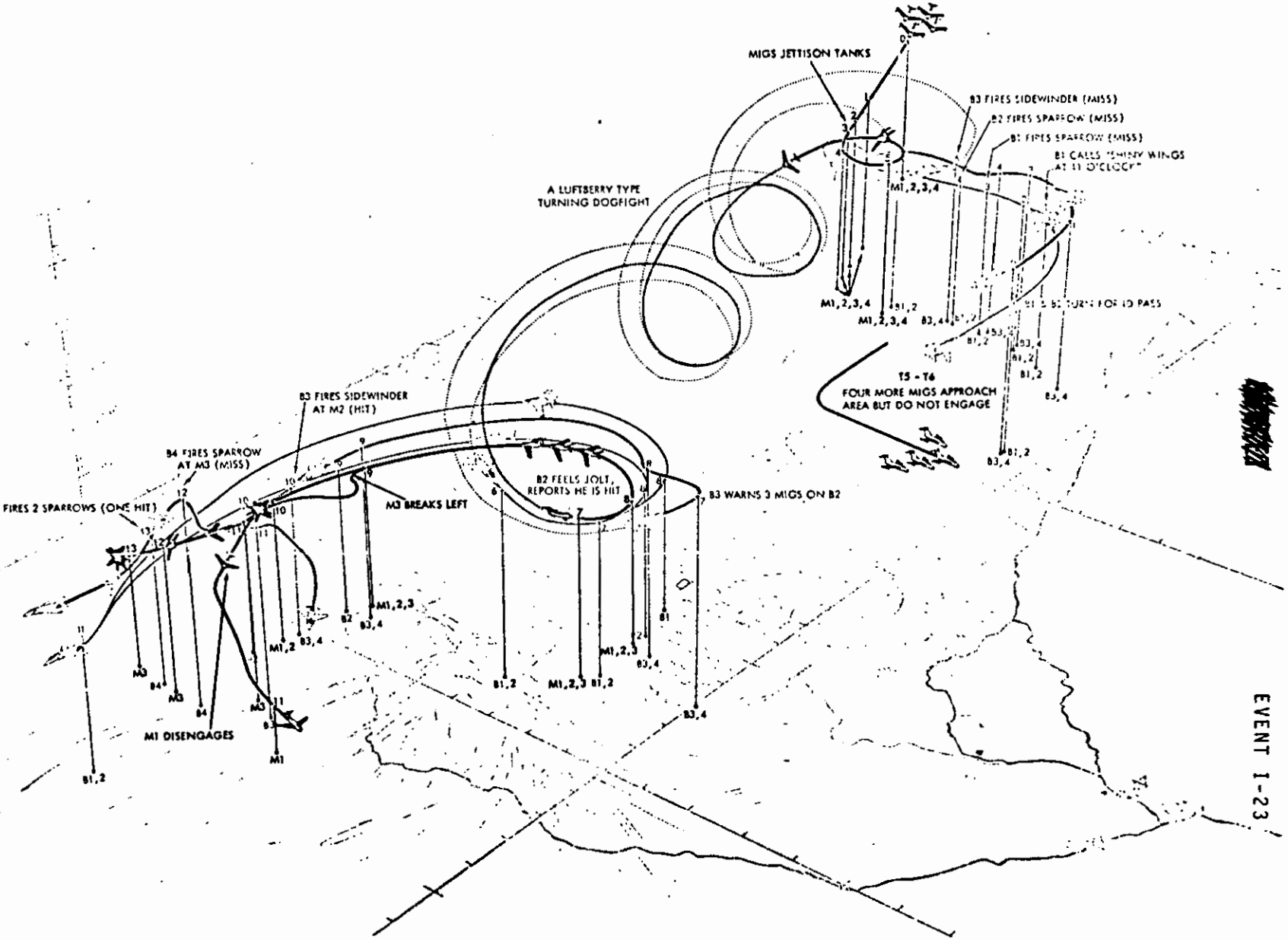
| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) Status | Action | Other Friendlies | Communications | Enemy Actions MIG 1,2,3,4) | Remarks |
|---|---|---|---|---|---|---|
| $T_5$ | 500+ -kt TAS 15,000 ft in slight dive | B3 fired SIDEWINDER almost head-on, then made hard left turn in attempt to get into firing position on the MIGs. B4 in fighting wing position. | | | MIGs aggressively maneuvering to get in firing position on BLUE flight. | B3 could not get radar lock-on. Switched to HEAT. Knew he had little chance of getting a hit. SIDEWINDER did not hit. |
| | The engagement developed into a left Lufbery dogfight. It was not possible to reconstruct the actual number of turns made. Between $T_5$ and $T_6$. | | | | | |
| | | Sometime during this period B3&4 evaded a MIG approaching firing position by going AB and making climbing left turn. | | B4 reported four additional MIGs approached and departed the area. | MIG at 6 o'clock on B3&4 could not follow separation maneuver and broke off to the left | |
| $T_6$ | Mach 0.92 17,000 ft 5 g's | B1 6 o'clock on a MIG attempted to fire a SIDEWINDER. Range 1-1/2 mi. Could not fire due to high g's. Had to unload to 2 g's and reduce angle of attack to avoid losing Mach and altitude. B1 slides to the outside. B2 had his head in the cockpit attempting to locate reason for no motor fire on his missile ($T_4$). In process fell behind B1 but still has B1 in sight. | | | | |
| $T_7$ | | B1 observed B2 some distance behind coming to the side.<br>B3&4 2000-3000 ft above both B2 and the MIGs. B3&4 accelerated and maneuvered to engage the MIGs on B2's tail. | | B3 transmits that 3 MIGs are approaching firing position on B2. | Three MIGs in trail on B2's tail. | B2 later reported closest MIG 1500-2000 ft back, 200 ft low at 8 o'clock. B2 could see tops of wings and knew the MIGs were not pulling lead. |

EVENT I-23 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) Status | Action | Other Friendlies | Communications | Enemy Actions (MIG 1,2,3,4) | Results |
|---|---|---|---|---|---|---|
| $T_8$ | | B3&4 closing gap to get in firing position on the MIGs.<br>B2 went to AB, felt jolt, thought he was hit. B2 continued turn to west. | | B3 reported lead MIG was firing on B2.<br>B1 directed B2 to unload and depart to the west.<br>B2 reported he was hit. | | B2 could still see tops of wings and, although MIG was firing, felt he could not be hit. |
| $T_9$ | | B2 accelerated and started to pull away from MIGs.<br>B1 to the outside of the other F-4s was concentrating on getting together with B2 since his "I've been hit" report.<br>B3&4 approaching firing position on the MIGs. | | | M3 behind M2 saw B3&4 closing and broke left, passing 1500 ft in front of B3. M3 then maneuvered to get 6 o'clock on B3&4.<br>M1&2 continued to chase B2, gradually losing ground. | |
| $T_{10}$ | 450-kt TAS<br>14,000 ft<br>2 g's | B3 fired SIDEWINDER at M2. B3 observed M3 moving into firing position on his element.<br>B3&4 went AB, made steep climbing left separation maneuver. | | B3 reported M3 positioned at 6 o'clock. | M1 broke left and down to disengage. Not seen again.<br>M2 smoked, pieces fell off and rolled down out of control (kill).<br>M3 moved into firing position on B3&4 | SIDEWINDER fired at about 4000-ft range 450-kt TAS, 30° left bank, 2 g's (hit). |
| $T_{11}$ | 18,000-20,000 ft | B4 rolled to the right in a downward maneuver to follow M3. Got pipper on MIG and had radar lock-on. | B1 joined up with B2 at 12,000 ft. Could not find any damage. Directed B2 to climb and head for home. | B3 reported M3 rolling off and that he could make attack on M3. | M3 attempted to follow B3&4 in the separation maneuver. Could not follow and rolled off to the right and down. | Made lock on after acquisition in boresight. |

EVENT I-23 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) Status | Action | Other Friendlies | Communications | Enemy Actions (MIG 1,2,3,4) | Remarks |
|---|---|---|---|---|---|---|
| $T_{12}$ | 500-kt TAS<br>16,000-17,000 ft<br>AB<br>40° dive | B3 fired SPARROW at M3.<br>B4 front seater attempted to go HEAT (SIDEWINDER) but could not reach switch due to inability to unlock shoulder restraint. Elected to fire another SPARROW. | | | M3 went AB and started evasive maneuvering.<br>M3 in near vertical dive. | SPARROW fired while B4 was in sideslip, passed by left side of M3. Appeared to be guiding. |
| $T_{13}$ | Mach 1+<br>13,000 ft<br>8,000 ft | B4 repositioned and fired two more SPARROWS at M3. One SPARROW hit M3.<br>B4 pulled out of dive by 8000 ft and rejoined B3. | | | After being hit by SPARROW M3 started to smoke and continued to dive. | One SPARROW hit M3. Other SPARROW not seen. Apparently no motor ignition. Apparent long preparation time on second SPARROW fired. |
| | BLUE flight four F-4s joined up shortly after Red River. All aircraft had BINGO fuel or better. | | | | | |


MIGS JETTISON TANKS
B3 FIRES SIDEWINDER (MISS)
B2 FIRES SPARROW (MISS)
B1 FIRES SPARROW (MISS)
B1 CALLS "SHINY WINGS AT 11 O'CLOCK"
A LUFTBERRY TYPE TURNING DOGFIGHT
M1,2,3,4
B1,2
B3,4
T5 - T6
FOUR MORE MIGS APPROACH AREA BUT DO NOT ENGAGE
B3 FIRES SIDEWINDER AT M2 (HIT)
B4 FIRES SPARROW AT M3 (MISS)
B4 FIRES 2 SPARROWS (ONE HIT)
M3 BREAKS LEFT
B2 FEELS JOLT, REPORTS HE IS HIT
B3 WARNS 3 MIGS ON B2
M1,2,3
M1,2
M3
B4
M1
M1 DISENGAGES

EVENT I-23

Aircraft Involved: Two F-4Cs vs two MIG-21s

Result: No damage

Vicinity of Encounter: 22°26'N/104°50'E
Route Package V

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 25 Apr 1966/1137H

Two F-4Cs (BLUE flight) were escorting a U-2 (GREEN flight) on a TROJAN HORSE mission. Attacks were authorized on any bogeys above 35,000 ft, without positive identification.

## 2. MISSION ROUTE

BLUE flight departed Udorn to fly a triangular pattern, arriving at the vertices at a prescribed time. The track was to be at approximately 20°00'N/103°40'E at $T_0$+30 minutes; 22°20'N/105°00'E at $T_0$+50 minutes; and 22°20'N/103°10'E at $T_0$+60 minutes. There was no air refueling.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2

4 - SPARROW (AIM-7D)
4 - SIDEWINDER (AIM-9B)
2 - 370-gal wing tanks
1 - 600-gal centerline tank
Camouflage paint

MIG-21 MIG 1

Silver color
Presumably missile armed, no positive identification of ordnance

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear; contrail level started approximately 32,000 ft.

| | BLUE 1 | BLUE 2 | GREEN 1 |
|---|---|---|---|
| Altitude: | 30,000 ft | | 70,000 ft |
| Heading: | In turn, Hdg SW | | W |
| Speed: | Mach 0.82 | | - |
| Fuel State: | Full internal, and some in external tanks | | |
| Flight Formation: | BLUE 1 and 2 in loose formation with BLUE 2 separated about 1/2 mi | | |

## 5. INITIAL DETECTION

Visual detection of a contrail by BLUE 1 (Back) at 7 o'clock and about 20-mi range. The contrail was heading 270°. While a silver speck was seen ahead of the contrail, positive identification was not made until B-2 first attacked the MIGs.

## 6. ACTION INITIATED

BLUE flight dropped tanks, accelerated and turned to intercept the bogey.

## 7. SITUATION DEVELOPMENT

After instructing the U-2 to withdraw, BLUE 1 made a beam SPARROW attack, then pulled in trail for a SIDEWINDER attack, neither of which was successful. BLUE 2 made three attacks, the first was head on as the MIG attempted a snapup attack on the U-2. After the MIG made a 180° turn back towards Hanoi, BLUE 2 made a SPARROW attack and a SIDEWINDER attack on the MIG. None of BLUE 2's attacks were successful and BLUE flight retired at the detection of a second MIG, because of fuel limitations.

## 8. ORDNANCE

| | No. Fired/No. Hits | | |
|---|---|---|---|
| | SPARROW AIM-7D | SIDEWINDER AIM-9B | Remarks |
| BLUE 1 | 0/0 | | A SPARROW firing was attempted but no missiles left the aircraft; one gas generator ignited and burned |
| | | 2/0 | Fired out of range |
| BLUE 2 | 1/0 | | Pipper off target during boresight firing |
| | 3/0 | | Two went ballistic, one appeared to guide through a portion of the flight |
| | | 2/0 | Both fired out of range |
| MIG 1 | No ordnance expended | | |



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9. EQUIPMENT PROBLEMS

Exact source of B1's misfire unknown.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 (Front) | 7000 | 600 | ≈ 70 | |
| BLUE 2 (Back) | 700 | 500 | ≈ 70 | Some ADC time, fired only 1 SPARROW and no SIDEWINDER. Little ACT. |
| BLUE 2 (Front) | | | | Extensive ADC experience in F-101. |

Comments on this Encounter

BLUE 1 (Front)

Felt the tactical situation was such that the flight was on the defensive and could not use radar adequately, and was unprepared to execute any attack on the MIGs. A better tactic would be to fly opposite the U-2 track so the threat is faced.

- Since BLUE flight was operating in a location where the MIGs were under GCI, two more escort aircraft would increase effectiveness.
- Did not realize how fast things can move when both target and attacker are flying at supersonic speeds.
- Felt that the MIG aircraft knew that there were F-4 escorts and were foolish to attempt an attack.

BLUE 2 (Back)

- Impressed with the heat seeker missile due to its simplicity.
- Disappointed in the performance of the SPARROW since its lack of performance under ideal intercept was not explained.
- All crew members felt initial expenditure of ordnance was an acceptable tactic to protect the U-2 even though missile parameters were not met.

Comments from Overall Experience

BLUE 2 (Back)

- Gun is not particularly desirable, if the performance of the aircraft is degraded by an external installation. Also, one might make the mistake of getting into a turning battle if a gun was available.
- Would like a fighter that could turn better. However, other performance features should not be overly compromised to achieve this, such as acceleration.
- Would like the acceleration of the F-105 at sea level.

11. DATA SOURCES

Project Interviews: BLUE 1 (Front) 13 Dec 1966; BLUE 2 (Back) 14 Mar 1967.

Messages, Reports:

Letter from BLUE 1 (Back)
BLUE 2 (Front)

USAF Fighter Weapons School CAD Bulletin #4, 18 May 1966.

USAF Fighter Weapons School CAD Bulletin #10, 7 Feb 1967.

7AF msg 250613Z Apr 66 DOCO-0 18303
7AF OPREP-3 250933Z Apr 66 DOCO-0 18322
7AF OPREP-4 251112Z Apr 66 DOCO-0 18327

12. NARRATIVE DESCRIPTION

The mission was planned as a U-2 escort, with the requirement to be at a given location at a specified time. The U-2 aircraft had been attacked previously at the turn point of its orbit (see events 17 and 21 for two other recorded events). The documentation establishing the frequency of attacks (5 times) mentioned by BLUE 1 (front) was not found.

Because of the limits imposed by the time-distance points, nonavailability of refueling (which made fuel conservation necessary), and the existence of a contrail layer above 32,000 ft which would disclose its presence, BLUE flight flew at Mach 0.82 and 30,000 ft. Even at these flight conditions a constant weave and orbiting was necessary to stay with the U-2. This flight pattern and speed was felt by BLUE 1 (front) to put the F-4s at a decided disadvantage at the start of any hostilities.

BLUE 1

$T_0$ During a turn to the south, as part of the orbit pattern, BLUE 1 (Back) spotted a contrail at 7 o'clock coming from Hanoi area. Since the air space was sterile above 35,000 ft, attacks were authorized on any target above this altitude without the necessity of positive identification.

The BLUE crews had studied the flight profiles of MIG-21 aircraft making GCI attacks on a high-altitude target and had a knowledge of the expected speed and altitude of the bogey. After advising the U-2 to withdraw, BLUE 1 and BLUE 2 dropped tanks and with the bogey now to the rear, BLUE 1 and BLUE 2 entered a diving turn to position and, gained airspeed for an attack. In diving to gain airspeed, BLUE 1 bottomed out at 13,000 ft, necessitating a long climb back to attack altitude. A beam attack resulted in which a SPARROW firing was attempted in boresight mode, pipper on the target and the aircraft in a 100° bank. It had proved impossible to maintain radar lock-on during the turning maneuver. None of the SPARROW missiles left the aircraft although all were triggered. The gas generator on one missile did ignite.

$T_3$ Due to the altitude and low speed BLUE 1 fell off with the afterburner out. At this time he saw the first missile fired by BLUE 2 pass the MIG.

$T_5$ BLUE 1 lit his afterburner and rolled out in trail of the MIG and, in desperation, fired two SIDEWINDERS out of range. BLUE 1 had a good tone and low-g load on the airplane. The missiles were observed to track; however, the range was too great and the missiles self destructed behind the MIG.

$T_6$ Shortly thereafter BLUE 1 came out of afterburner as fuel approached minimum for return; however, he stayed in trail of the MIG and instructed BLUE 2 to make another attack on the MIG. BLUE 1 finished the engagement with 3200 lb of fuel, and with home base 315 mi away he started a climb to best cruise conditions. While going out BLUE 1 saw BLUE 2 about 30 mi to the east making his attack and also saw a contrail making an intercept run on BLUE 2. BLUE 1 informed BLUE 2 of the attack and BLUE 2 broke off the attack and exited.

BLUE 2

$T_1$-$T_2$ At the initiation of the action, BLUE 2 accelerated out and turned to position himself for a head-on ID attack. In the dive and turn BLUE 2 went to 25,000 ft, so insufficient airspeed was achieved and since he could not get a radar lock-on he initiated a snap-up attack from 29,000 ft, in boresight.

$T_3$&$T_4$ At this time the MIG began a rotation and climb to start a snap-up attack on the U-2. The combination of this and insufficient airspeed precluded keeping the pipper on the target and a SPARROW was launched with the pipper slightly to the rear of the target. The missile, which was observed by BLUE 1 at this time since BLUE 1 was slightly behind BLUE 2, missed the MIG, passing about 100 ft behind.

$T_6$ The MIG pilot probably observed the missile since he broke off his attack, leveled out and continued on a westerly heading. BLUE 2 rolled out in trail of the MIG and got a radar lock-on. However, the overtake was negative and BLUE 2 decided to descend below contrail level and stay in trail.

$T_7$ The MIG finally turned 180° through south to east and BLUE 2 turned to set up a front quarter intercept. A descent was made to pick up speed and the afterburner ignited. After accelerating BLUE 2 remained below the contrail level until 11 mi-range was reached, at which time a snap-up attack was made. The radar was locked on to the MIG and the three remaining SPARROWS were set to be fired automatically, interlocks in.

$T_{10}$ All switch positions were rechecked, including polarization. The first missile was fired immediately as the in-range light came on at 5 mi with an overtake of 1000 knots. After this missile fired, BLUE 2 resqueezed the trigger and fired the remaining two SPARROWS. On each of the firings the steering dot was within the ASE circle. The missiles appeared to go ballistic, and did not track the target. The last missile appeared to make some corrections but it also missed. All switch settings in BLUE 2 aircraft were in the proper positions.

$T_{11}$ BLUE 2 then rolled out at 3-4 mi in trail with the MIG and fired two SIDEWINDERS. These both appeared to track but the firing was made out of range.

$T_{12}$ During this attack the MIG proceeded at the same speed and altitude. At this time BLUE 1 called minimum fuel and the attack was terminated. BLUE 2 had about 4000 lb of fuel at this time. After minimum fuel was called a contrail on an intercept course was sighted. BLUE 2 decided to remain in the contrail layer momentarily to draw the MIG, then dove to 10,000 ft in afterburner to obtain separation. At the end BLUE 2 had 3200 lb of fuel. BLUE 2 climbed to best cruise altitude for the return. On landing BLUE 2 had 1200 lb of fuel.

EVENT I-24 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2) Status | Action | Other Friendlies (GREEN 1) | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| $T_0$ | B1 Alt - 30,000 ft, Mach 0.82<br>B2 same status Radar on 50-mi scale | In left turn to south as part of an orbit in support of G1.. B1 sights high-speed contrail coming from Hanoi area at 7 o'clock, range about 20 mi.<br>In left turn to south as part of orbit | G1 has just turned to the west, altitude about 70,000 ft | B1 calls G1 warning of approaching bogey. Received no reply. B1 calls B2 and advised him to accelerate out and attempt a head-on attack.<br>B2 calls that he is going in for the ID | Alt 46,000 ft, speed Mach 1.6, Heading 270° making a contrail which continued through encounter | Clear air space above 35,000 ft. B1 and B2 at 30,000 ft to stay below con layer |
| $T_1$ | B1 same status as at $T_0$<br>B2 same status | Lights AB, jettisons tanks and dives to accelerate. In bottom of dive goes to 13,000 ft and starts pull-up.<br>Lights AB, accelerates straight out, jettisons 3 tanks and descends slightly to 25,000 ft in right turn. | | | Same | |
| $T_2$ | B1 Mach 0.9-1.0 Alt - 38,000 ft 50-60° nose-up 100° bank, range to target 6 mi, target 10 o'clock high<br>B2 Mach supersonic, Alt - 29,000 ft level Radar on 25-mi scale | Back cannot get lock-on so goes boresight, trying to follow target with pipper. Attempts to fire 4 SPARROWS. SPARROWS do not fire. Max of 2 g<br>B2 Back cannot get lock-on; starts snap-up maneuver in boresight. | | B1 called to Back to look at 10 o'clock then go boresight | Same | B1 sees silver MIG. The parameters were not met for B1's missile firing, however, it was thought necessary to scare off the MIG. The gas generator ignites on one missile of B1's aircraft but it does not eject. Trigger held down 5-7 sec. |
| $T_3$ | B1 AB off, 10° nose down | B1 falling off | | | MIG starts snap-up attack on G1 | Has good view out the side |

EVENT I-24 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2) | | Other Friendly (GREEN 1) | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_4$ | B2 Alt 39,000 ft<br>Speed 150-kt CAS<br>Range - 7 mi<br>30° nose up, no bank<br>B1 10° nose-down<br>AB off | Fires a SPARROW in bore-sight. Due to insuffi-cient speed, pipper is slightly to rear of target<br>Falling off, lights AB, continues down to 25,000 ft and starts to climb | B1 sees missile pass 100 ft behind MIG | B2 Front calls bogey as MIG-21 | Upon seeing missile MIG breaks attack and returns to Mach 1.6 and 46,000 ft, heading 270° | No lock-on<br>Speed judged from reactive velocity and knowledge of MIG's best speed for attack |
| $T_5$ | B1 Alt 35,000 ft<br>Mach 1.25, Nose up, climbing 10° locked on in full system<br>10° angle off from MIG | Fires 2 SIDEWINDERS out of range. Good tone, SIDEWINDERS do track. Continues to follow MIG in AB, heading 270° | | Little talk between B1 and B2 | Alt: 46,000 ft<br>Mach: 1.6<br>Heading: 270° | SIDEWINDERS self-destruct 3 mi be-hind MIG fired at 5-7 mi range |
| $T_6$ | B2 Alt 30,000 ft<br>Mach 0.88<br>Radar on 25-mi scale<br>B1 fuel 3200 lb | Rolls out 15 mi behind MIG. Negative overtake<br>Comes out of AB and starts home | | | | Decision to follow MIG below con layer to see which way he will go. |
| $T_7$ | B2 same<br>Radar on 50-mi scale | Turn after MIG to set up intercept, and dive to accelerate. Goes to 20,000 ft and heading 220°. Lights AB. | | | MIG starts turn to south. | Judgment is that MIG will turn 180° and head home. |
| $T_8$ | B2 Mach 1.4 ind.<br>Alt 30,000 ft in AB<br>Heading 220°<br>Radar on 25-mi scale | MIG at 25° to left on intercept course. Range 30 mi. Dot coming down the scope. | | | Coming out of turn heading 090°<br>Alt: 46,000<br>Mach: 1.6 | |
| $T_9$ | B2 Mach 1.4 ind.<br>Alt 30,000 ft<br>in AB | Range to MIG 12 n mi. Starts snap-up SPARROW attack, interlocks in. | | | Alt: 46,000 ft<br>Mach: 1.6<br>Heading: 90° | |

EVENT I-24 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2) | | Other Friendly (GREEN 1) | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{10}$ | B2 Mach 1.3<br>34,000 ft<br><br>B1 out of AB at 30,000 ft | Computer fires first missile at 5 mi $V_c$ = 1000. Remaining missiles fired at 4.5 and 4 mi. Steering dot in ASE circle.<br>Sees SPARROW missiles miss | | | | First missile fails to guide. Second missile fails to guide. Third missile tries to guide but cannot make the intercept. |
| $T_{11}$ | B2 Alt 46,000 ft<br>Mach 1.2 indicated<br>In AB | Rolls out in trail of MIG at 3-4 mi and fires 2 SIDEWINDERS out of range. 10-15° stern aspect. | | | | SIDEWINDERS explode 1 mi behind MIG |
| $T_{12}$ | B1 best cruise conditions<br>B2 Mach 1.2<br>Alt 45,000 ft<br>Fuel 4000 lb | B1 exiting<br>Descends to pick up speed and separation, then climbs to best cruise altitude and exits | | B1 calls B2 that there is a contrail on an intercept course on B2 | MIG continues. Second MIG contrail seen on intercept to B2. | |

EVENT I-25

Aircraft Involved: Four F-4Cs vs two MIG-21s

Result: No damage

Vicinity of Encounter: 21°50'N/104°40'E
Route Package V

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 25 Apr 1966/mid-afternoon

Four F-4C (BLUE flight) escort for EB-66 (GREEN flight) ECM mission northwest of Hanoi in the vicinity of Yen Bai. Mission was to protect EB-66 and to attack MIGs only if the EB-66 was threatened. EB-66 was providing ECM support for F-105 strikes in vicinity of Yen Bai.

2. MISSION ROUTE

Udorn to RED ANCHOR for refueling to 21°45'N/104°30'E to enter NE-SW orbit north of Yen Bai.

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

4 - SPARROW (AIM-7D)
4 - SIDEWINDER (AIM-9B)
1 - 600-gal external tank (centerline)
2 - 370-gal external tanks
Radar on, TACAN off
Camouflage paint

EB-66 GREEN 1

Not given

MIG-21 MIG 1, 2

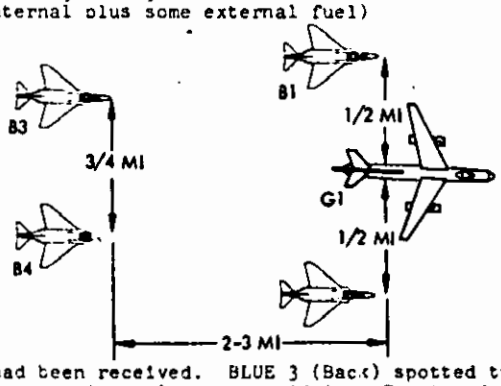
Not known
Silver color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Thunderstorm buildups to about 40,000 ft over mountains to the west. Some lower clouds with tops about 15,000 ft. Visibility 10-15 mi, no clouds in the area and altitudes of the engagement.

| | BLUE 1 | BLUE 2 | BLUE 3 | BLUE 4 | GREEN 1 |
|---|---|---|---|---|---|
| Altitude: | 30,000 ft | 30,000 ft | 32,000 ft | 32,000 ft | 30,000 ft |
| Heading: | 045° | | | | 045° |
| Speed: | Mach 0.82 (S-turning to stay with GREEN 1) | | | | Mach 0.76 |
| Fuel State: | 15,000-18,000 lb (full internal plus some external fuel) | | | | Unknown |

Flight Formation:




5. INITIAL DETECTION

No MIG warnings had been received. BLUE 3 (Back) spotted two silver glints 3 o'clock high, 6-7 mi on reciprocal course. Advised Front and observed one of bogeys enter contrail level at about 5 o'clock position and start right turn toward 6 o'clock on BLUE flight.

6. ACTION INITIATED

BLUE 3 called bogeys, jettisoned external fuel tanks and made hard right descending 135° bank turn to identify the bogeys. BLUE 4 jettisoned tanks and followed to be in firing position after ID. BLUE 1 and 2 remained with GREEN 1 who broke left and down.

7. SITUATION DEVELOPMENT

GREEN 1 escorted by BLUE 1 and 2 descended to about 7000 ft heading 220°. Bogeys were not seen by any of these aircraft after the left break.

BLUE 3 made head-on pass with first bogey, passed about 50 ft below and identified as a MIG-21. MIG 1 was in 70° banked left turn. BLUE 3 attempted to reengage but could not relocate MIG 1.

MIG 2 made right turn. BLUE 4 fired four SPARROW missiles at MIG 2 from aspects varying from head-on to 45° tail-on. No hits. MIG 2 in about 20° descent and BLUE 4 in 15-20° climb.

8. ORDNANCE

| | (No. fired/No. hits) SPARROW AIM-7D | SIDEWINDER AIM-9B | Remarks |
|---|---|---|---|
| BLUE 1, 2, 3 | 0/0 | 0/0 | |
| BLUE 4 | 4/0 | | (1) No motor ignition. (2) Fired boresight 6 to 8 mi, 45° head-on aspect. Did not appear to guide, passed behind MIG 2. (3) No motor ignition; (4) Fired with lock on aiming dot in circle. Had in-range light 4-mi range 45° tail-on aspect. Did not appear to guide, passed behind MIG 2. (May not have had sufficient overtake and may have broken lock during the run.) |
| MIG 1, 2 | No firing observed | | |

9. EQUIPMENT PROBLEMS

BLUE 1, 2, 3 - None reported

BLUE 4 Back

Reported that, while trying to find the tanker in the scope the radar went out. It did not go out completely but "there was something wrong with the tracking. The dot was not functioning properly. There was no problem with the scope as such, but there was a malfunction of some of its properties." After completion of refueling the radar set was turned to "standby" for a few minutes. When turned back, on the Back was able to lock on to some F-105s coming back from a strike and the radar worked perfectly, getting lock-ons with the lock-ons coming down the scope properly and with the dot in its proper position. It seemed to have corrected itself after the short period in "standby". Radar worked satisfactorily when checked during the return flight to the base.

See BLUE 4 Front and Back comments on the SPARROW missiles in Paragraph 10 (below).

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 - Front | 1900 | 450 | -- | All TAC fighter background and two 8 month TDY tours in air defense assignments. |
| Back | Not obtained | | | |
| BLUE 2 - Front | Not obtained | | | |
| Back | | 300 | | |
| BLUE 3 - Front | 2200 | 600-650 | 40-50 | Fighter background, no formal ACT training. Fired one SPARROW and one SIDEWINDER in training. |
| Back | 350 | 175-200 | ~50 | |
| BLUE 4 - Front | 800 | 650 | ~30 | Fired one SPARROW in training |
| Back | 450 | 300 | 40-50 | |

Comments on this Encounter

BLUE 3 - Front

Had studied Russian training manuals published by DOD concerning MIG tactics. Recognized MIG tactics of this encounter as those he had read about.

Was certain the bogeys were MIG-21s but hesitated to fire because he had previously been jumped by F-105s.

MIGs appeared to be under GCI control. (All the contacts he had heard of, except one, had appeared to be under GCI control.)

BLUE 3 - Back

Felt bogeys had indicated sufficient hostile intent to identify themselves as MIGs, and therefore should have been fired upon during the ID pass.

BLUE 4 - Front

Relative to possible causes of missile malfunctions, it was found that the squadron did not have the particular test equipment that was needed to check out the rails on the airplane. At first, it was assumed that it was bad missiles, and then other considerations it was thought that it might be the radar or inputs to the missiles. [There was another one that morning on a U-2 escort where a guy fired four missiles (SPARROW). The first one fired boresight looked good, but it fell out of the air before it impacted. He fired three more on a head-on 35° snap-up and everything was just beautiful, school solution, interlocks in, just beautiful and none of them guided. They looked at this one also and seemed to think that it was possibly a stuck polarization switch, but the thing had been changed by the time they got the test equipment there to check this airplane. See Event I-24.] Never did get any results on his missile.

BLUE 4 - Back

The SPARROW (AIM-7D) missiles used in this mission were deployed with the squadron from Okinawa and were some of the oldest missiles which had been received from the Navy. These same missiles had been heat and cold soaked many times by being flown to altitude three or four times a week for over a year. The reliability of these missiles was considered very low.

Comments from Overall Experience

BLUE 1 - Front

Need short-range missile with high-g capability.

Felt that reliability of SPARROW missiles was questionable due to the fact that they had been flown frequently over the previous year.

Back seat pilot is a valuable assist, particularly to the flight leader. Pilot is much more effective than an RO (radar observer). Pilot knows what you are looking for in the front seat. Front and back seater need time together for most effective team work.

BLUE 3 - Front

There is a definite advantage to having crew of two whether back seater is a pilot or RO, particularly for night intercepts or ground attacks.

Would like to be able to pull g's at altitude comparable to F-104 or better.

SPARROW is an excellent missile for use in non-visual ID environment, but is difficult to employ when visual ID is required.

MIG-21 can whip F-4 at altitude. Need to get MIG-21 at lower altitude where F-4 can utilize its excess thrust to better advantage.

Having to fight with two missile envelopes (SIDEWINDER and SPARROW) complicates the fighter pilot's problems. A good fighter pilot thinks in terms of available envelopes. The addition of guns, a third envelope, without sacrificing other capabilities could be advantageous. However, the gun is not so important that radar and missile capability should be compromised. A well-piloted F-4 with the current missile systems could beat an F-4 with guns.

Need forward hemisphere ID capability. Transponder triggered by radar beam or other system to identify friendlies.

BLUE 3 - Back

In many air-to-air engagements and in the normal air defense role as an interceptor, an RO (radar observer) could do the job a lot better than a pilot because of his training. The little taste of ECM in Okinawa showed that a good RO can practically turn an inexperienced guy every way he wants to. Training in the ECM environment is sadly lacking. I never ran into an ECM environment in Vietnam except for the time the 66's were dropping chaff.

BLUE 4 - Front

Capability of the F-4 is being wasted by having a pilot in the back seat. The pilot is not adequately trained as a radar observer. Need a radar expert in the back seat. The pilot back seater's primary goal is to be up graded to the front seat (aircraft commander) rather than master the radar.

F-4 is an outstanding aircraft even with multimission requirements. However, would prefer air superiority and ground attack roles be accomplished by airplanes optimally designed for each mission rather than having a single multimission airplane which compromises each capability.

Need a simple air superiority weapon system utilizing a visually fired all aspect weapon with no lock-on or tail chase requirement.

Need more maneuverability and smaller turn radius than the F-4.

## 11. DATA SOURCES

Project Interviews:

BLUE 1 - Front, 29 Dec 1966; Back - 13 Mar 1967
BLUE 2 - Front, 13 Dec 1966; Back - 13 Mar 1967
BLUE 3 - Front, 27 Jan 1967; Back - 19 Mar 1967
BLUE 4 - Front, 27 Jan 1967; Back - 17 Mar 1967

Messages, Reports:

7AF OPREP-3 251332Z April 1966 DOCO-0 18334

USAF Tactical Fighter Weapons School Combat Analysis Division Bulletin #4, 1966.

## 12. NARRATIVE DESCRIPTION

$T_0$ On the afternoon 25 April 1966 four F-4Cs (BLUE 1, 2, 3, 4) were escorting an EB-66 (GREEN 1) at an altitude of 30,000 ft in a NE-SW orbit generally north of Yen Bai. GREEN 1 was providing ECM support for F-105 strikes in the vicinity of Yen Bai. On a heading of 045°, in the third or fourth orbit, BLUE 3 Back observed two bogeys at 3 o'clock high, 6 to 7 mi. BLUE 3 Back advised that there might be something at 3 o'clock on opposite course. As he continued to observe, BLUE 3 Back detected silver glints and then as the bogeys approached the 5 o'clock position, still on opposite course, one of them entered the contrail level and started a right turn toward 6 o'clock on BLUE flight.

$T_1$ BLUE 3 front advised BLUE 1(L) of bogeys approaching 6 o'clock and that his element (BLUE 3,4) would make an ID pass. BLUE 1 stated that he and BLUE 2 would stay with GREEN 1 and requested GREEN 1 to break left and down to clear the area.

Just before GREEN 1 broke left, BLUE 3 jettisoned external tanks and made hard right descending turn with an initial bank of about 135°. BLUE 3 stated he would make ID and directed BLUE 4 to take spacing to fire if bogeys turned out to be MIGs. BLUE 4 also jettisoned external tanks and made hard right descending turn into the bogeys. BLUE 4 lost BLUE 3 when BLUE 3 made hard turn into him.

$T_2$, $T_3$, $T_4$ BLUE 3 in afterburner armed SPARROW missiles and had four select lights. As he accelerated through Mach 1 at about 25,000 ft, he spotted bogey approaching head-on and descending from higher altitude. BLUE 3 could not get radar lock on, switched to boresight mode, pulled up head on to the bogey, and got lock on at eight miles. BLUE 3 Front lost visual contact upon checking his scope for lock on and did not regain visual until about two miles, but still did not have positive ID. The bogey was difficult to see against the thunderstorms in the background. BLUE 3, in 15° left bank, identified and Front called "MIG" as MIG 1 passed about fifty feet above him in a 70° left bank turn. BLUE 3 observed MIG 2 turning out to the right. BLUE 3 made a descending hard right turn to clear area so that BLUE 4 could fire, after which he attempted to relocate MIG 1. A three to four minute visual and radar search was unsuccessful.

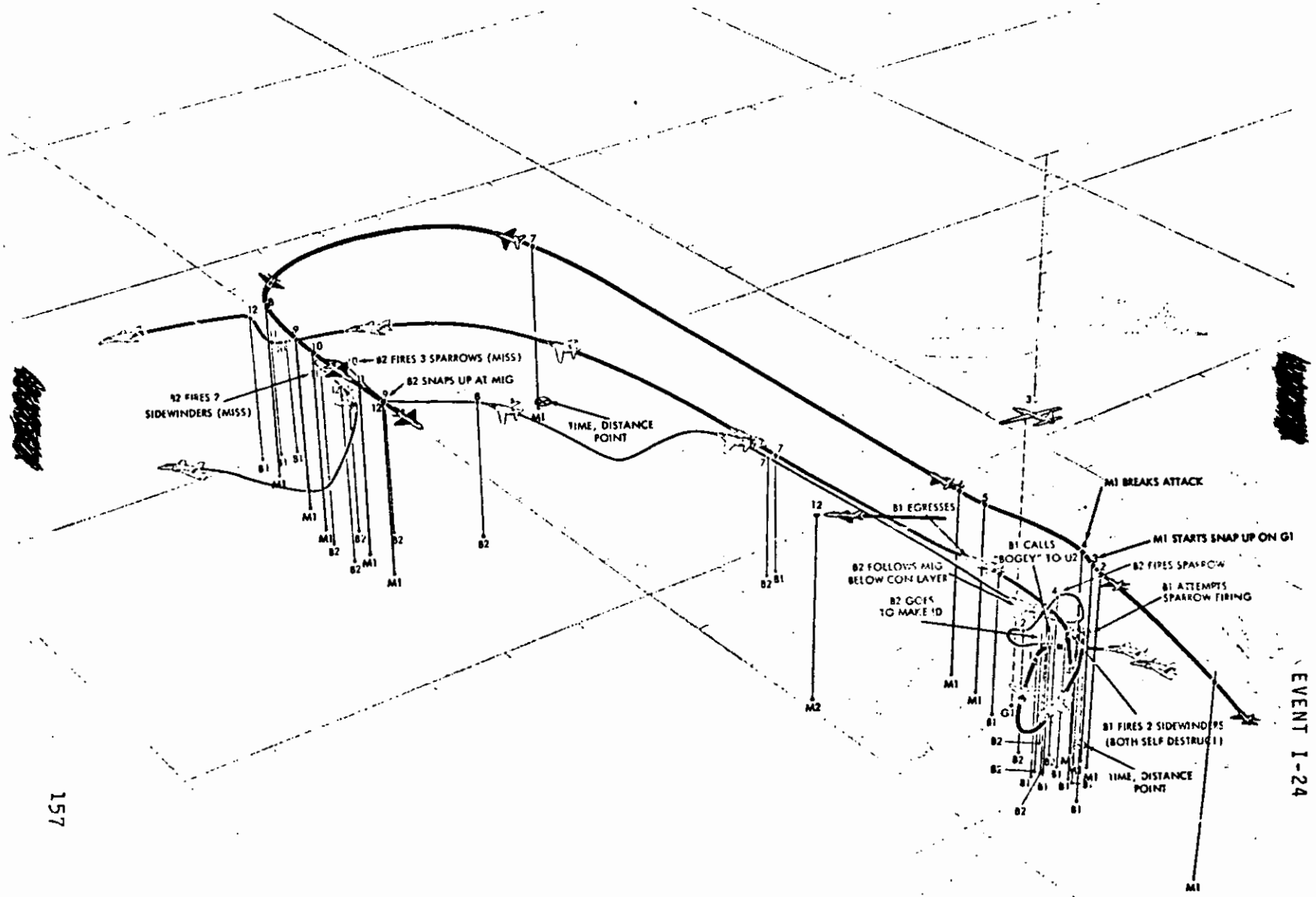
BLUE 4 after jettisoning external tanks, made hard right 135° banked descending turn to follow BLUE 3 who was making the ID pass. SPARROW missiles were armed and four select lights obtained. BLUE 4 did not have BLUE 3 in sight. After about 160-170° of turn BLUE 4 observed bogey at 12 o'clock high descending at about a 20° angle. BLUE 4, in afterburner since the initial turn, pulled up to a 15-20° climb head-on toward the bogey, speed slightly less than Mach 1.0. Initial visual contact was between 10-15 mi.

$T_5$, $T_6$, $T_7$, $T_8$, BLUE 4 unable to get radar lock on, went boresight and fired the first SPARROW at a range of 8-9 mi. The missile motor did not ignite. At this time MIG 2 started a right turn which BLUE 4 was able to follow with an easy left turn. BLUE 4 fired second SPARROW in boresight at about 45° head-on aspect to MIG 2 at 6-7 mi-range. The missile did not appear to guide and passed behind MIG 2. BLUE 4 continued to follow in his easy left turn and fired a third SPARROW in boresight. The missile motor did not ignite. BLUE 4 Back called "locked on" and the front seater after observing aim dot in the ASE circle with an "in range" light fired his fourth SPARROW at 45° tail-on aspect 3-4-mi range. The missile did not appear to guide and passed behind MIG 2. BLUE 4 Front was not certain that he had sufficient overtake for this aspect. Back later reported that he thought the radar had broken lock during the run.

After firing the fourth SPARROW, BLUE 4 was in about a three mile trail behind MIG 2. However, MIG 2 had an estimated 0.5 Mach speed advantage and separated rapidly. BLUE 4 had been climbing 15-20° angle and was still below Mach 1 and MIG 2 was estimated to be at about Mach 1.5. BLUE 4 did not attempt to fire a SIDEWINDER because of the separation speed and did not follow MIG 2 which was entering the SAM defended area northwest of Hanoi.

BLUE 3 and 4 ended up within one mile of each other and quickly located and rejoined GREEN 1 and BLUE 1 and 2. The flight departed the area after determining that the last F-105 strike had left the target.

Neither MIG-21 was observed to fire cannon or missiles. No hits were scored on the MIGs by the four SPARROW missiles fired. No damage to either side; however, the MIGs had disrupted the ECM coverage by causing GREEN 1 to leave his station to evade.


B2 FIRES 3 SPARROWS (MISS)
B2 SNAPS UP AT MIG
B2 FIRES 7 SIDEWINDERS (MISS)
TIME, DISTANCE POINT
M1 BREAKS ATTACK
B1 EGRESSES
M1 STARTS SNAP UP ON G1
B1 CALLS "BOGEY" TO U2
B2 FIRES SPARROW
B2 FOLLOWS MIG BELOW CON LAYER
B1 ATTEMPTS SPARROW FIRING
B2 GOES TO MAKE 1D
B1 FIRES 2 SIDEWINDERS (BOTH SELF DESTRUCT)
TIME, DISTANCE POINT

EVENT I-24

EVENT I-25 SUMMARY

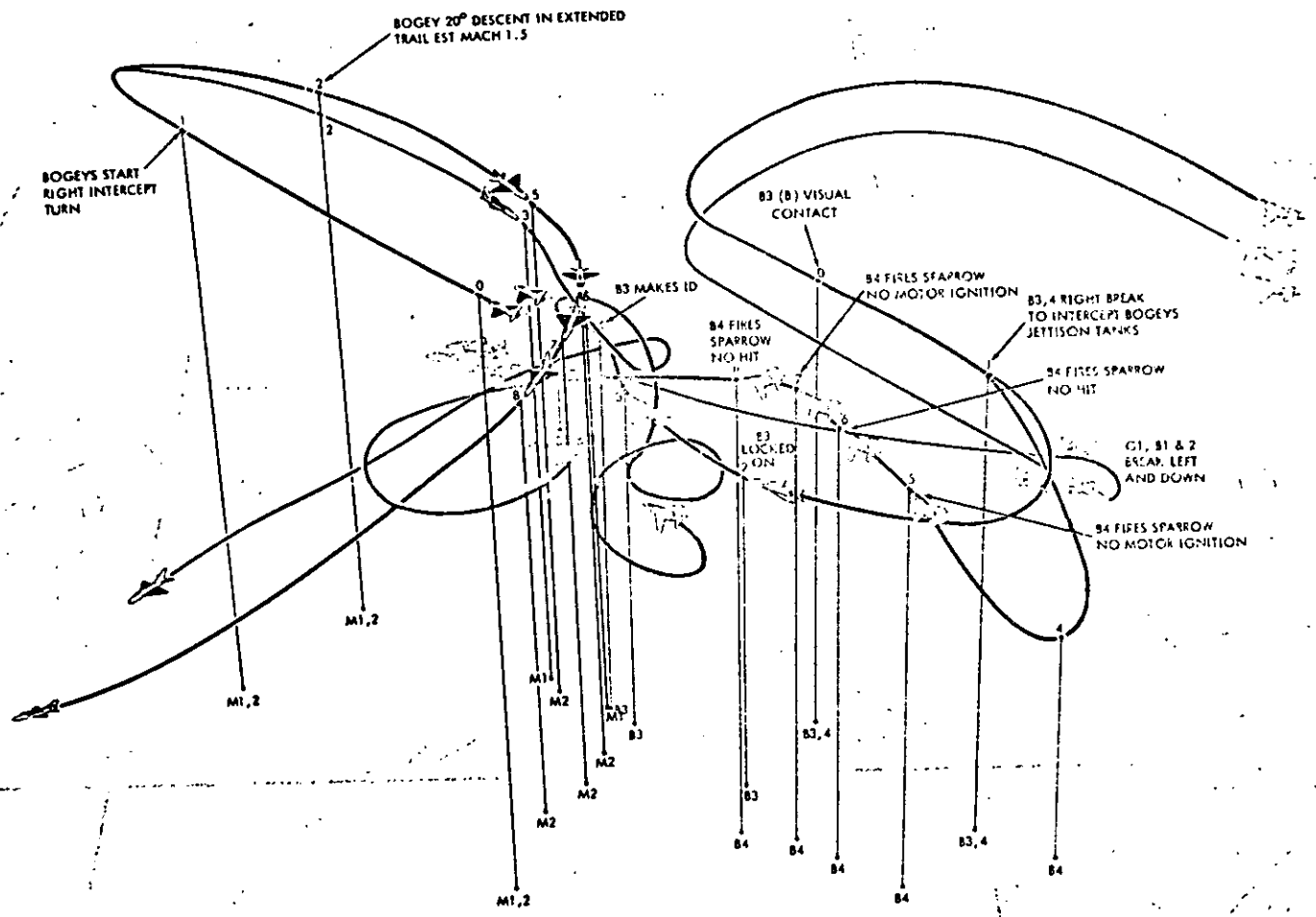
| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly (GREEN 1) | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | G1, 30,000 ft Mach 0.76<br>B1 and 2, 30,000 ft Mach 0.80<br>B3 and 4, 32,000 ft Mach 0.82 | Individual members of BLUE flight S-turning to maintain Mach and stay with GREEN 1 (EB-66) | | B3 Back advised his Front he thought there was something at 3 o'clock 6-7 miles | Two bogeys on reciprocal heading High-40,000-45,000 ft | |
| $T_1$ | B3 in AB | B3 hard right descending turn into B4. Initially 135° bank, armed SPARROW missiles<br>B4 jettisoned tanks followed in AB | | B3 Back advised Front one of bogeys starting right interception turn<br>B3 Front advised B1(L) had two bogeys high turning to 6 o'clock on BLUE flight<br>B3 called right turn to ID, directed B4 to take up spacing to fire if bogeys IDed as MIGs<br>B1 indicated he and B2 would stay with G1 break left and down | Bogeys continue turn to 6 o'clock on BLUE flight | B4 lost sight B3 when B3 turned into him |
| $T_2$ | B3, 24,000-25,000 ft ~1.1 Mach | B3 got lock on at about 8 mi as he pulled up in head on with bogey. Had visual but still no ID. Lost visual when he looked down at radar scope to check for lock on | | | Bogeys descending about 20° in head on pass. | |

EVENT I-25 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly (GREEN 1) | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_3$ | B3, 24,000-25,000 ft, Mach 1.2 | B3 regained visual contact at 2 mi in slight left turn 10-15°. Still no ID | | | Bogey in left turn | |
| $T_4$ | 30,000 ft<br>1.+ Mach | B3 passed beneath M1 who was in 70° bank left turn. B3 broke right and down to clear area so B4 could fire. Observed M2 start right turn<br><br>B4 descended to about 26,000 ft after hard right turn. Pulled up 10-15° climb to head on with M2 in 20° descent. Could not get radar lock on, went boresight | | | M1 apparently departed the area to southeast<br><br>M2 70° descent head-on toward B4. | B3 searched toward G1 in attempt to relocate M1. 3-4 min visual and radar search unsuccessful |
| $T_5$ | B4 30,000 ft<br>0.92 Mach<br>10-15° climb | B4 fired first SPARROW in boresight 8-9 mi, no missile motor ignition. | | | M2 started easy right turn. Mach 1.0, still descending | Had partial lock-on. Missile fell off aircraft |
| $T_6$ | B3, 31,000 ft<br>0.95 Mach<br>< 1 g | B4 fired second SPARROW 6-7 mi range, 45° head on aspect angle while in easy left turn to follow M2 | | | M2 still in easy right turn | SPARROW did not appear to guide passed behind MIG 2 |
| $T_7$ | B4, 32,000 | B4 fired third SPARROW 4 mi, no missile motor ignition. | | B4 Back reported he had radar lock on | Continuing right turn | Missile fell off the aircraft |

EVENT I-25 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly (GREEN 1) | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_8$ | B4, 32,000 ft < Mach 1.0 | B4 fired fourth SPARROW about 4-mi range. Had interlocks full system. 45° tail-on aspect angle. Missile passed behind M2, did not appear to guide.<br><br>B4 turned left to avoid getting into the SAM defended area, rejoined B3 who ended up within one mile of B4 at end of engagement. B3 and 4 rejoined G1, B1 and 2 and returned to home base. | | | M2 headed south-east over Yen Bai, approx Mach 1.5 rapidly separating with his 0.5 Mach advantage | B4 front was not certain he had enough closure rate. B4 back reported radar broke lock during the run |


BOGEY 20° DESCENT IN EXTENDED TRAIL EST MACH 1.5
BOGEYS START RIGHT INTERCEPT TURN
B3 MAKES ID
B4 FIRES SPARROW NO HIT
B3 (B) VISUAL CONTACT
B4 FIRES SPARROW NO MOTOR IGNITION
B3,4 RIGHT BREAK TO INTERCEPT BOGEYS JETTISON TANKS
B4 FIRES SPARROW NO HIT
B3 LOCKED ON
G1, B1 & 2 ESCAP. LEFT AND DOWN
B4 FIRES SPARROW NO MOTOR IGNITION
M1,2
M1,2
M1,2
M1
M2
M2
M2
M3
M1
B3
B3
B4
B3,4
B4
B4
B4
B3,4
B4

EVENT I-25

Aircraft Involved: Two F-4Cs and one RB-66 vs two or three MIG-21s

Result: One MIG destroyed

Vicinity of Encounter: 21°55'N/106°15'E Route Package VI

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 26 Apr 1966/1520H

Three of four scheduled F-4Cs were available for escort of two RB-66s. The RB-66s separated over North Vietnam. The lead F-4C accompanied one, the second and third F-4C (BLUE flight) accompanied the other. The RB-66 escorted by BLUE flight established a racetrack east-west orbit at approximately 22°N/106°E.

## 2. MISSION ROUTE

Three F-4Cs launched from Danang, rendezvoused with two RB-66s and proceeded north to the Red River. BLUE flight of two F-4Cs then departed with one RB-66 (GREEN flight) to proceed to its orbit northeast of Hanoi while one F-4C remained with the other RB-66 in its orbit northwest of Hanoi.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2

4 - SPARROW (AIM-7E)
4 - SIDEWINDER (AIM-9B)
2 - 370-gal wing tanks
1 - 600-gal centerline tank
IFF and TACAN operating, camouflage paint.

RB-66 GREEN 1

Unknown

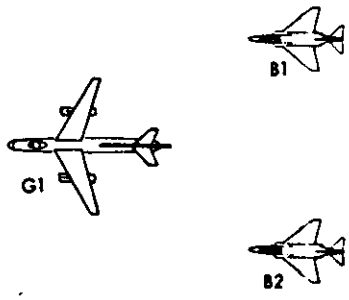
MIG-21 MIG 1, 2 (3)

2 - AAM
Silver color, very bright

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered, very low layer; clear, visibility unlimited elsewhere.

| | BLUE 1 | BLUE 2 | GREEN 1 |
|---|---|---|---|
| Altitude: | 31,000 ft | 31,000 ft | 30,000 ft |
| Heading: | 270° | 270° | 270° |
| Speed: | ----------approximately 0.8 Mach---------- | | |
| Fuel State: | Full internal, empty external tanks | | Unknown |
| Flight Formation: | | | |




## 5. INITIAL DETECTION

MIG warnings were received on Guard Channel, 10-15 min prior to BLUE flight reaching the orbit point. Flight was level, heading 270°, after completing a 180° right turn. BLUE 1 (Back) sighted two MIG-21s at 2 o'clock, high, descending, closing rapidly (estimated high supersonic).

## 6. ACTION INITIATED

BLUE 1 and 2 jettisoned external tanks, lit afterburners, and broke into a hard left descending turn. GREEN 1 was told to depart the area.

7. SITUATION DEVELOPMENT

The MIGs reversed their heading in a hard left turn and climbed out to the northwest. BLUE 1 and 2 pulled up behind them, lost sight of one, and closed rapidly on the other. BLUE 1 fired three SIDEWINDERS at very close range. Unknown to BLUE 1, his first missile passed the MIG without detonation and the pilot ejected. The third missile exploded in the tail pipe of the MIG which fell straight down. While following the debris down, BLUE 2 was attacked at his 6 o'clock by another MIG-21. BLUE 1 and 2 split, the MIG climbed away, and from 500 ft BLUE 1 fired his last SIDEWINDER at him. The missile missed. BLUE 1 and 2 departed the area. No firings of any kind were seen from any of the MIGs.

8. ORDNANCE

(No. Fired/No. Hit)

| | SIDEWINDER AIM-9B | Remarks |
|---|---|---|
| BLUE 1 | 4/1 | MIG pilot ejected after first missile, second ballistic, third a direct hit, and fourth passed close but did not explode. |
| BLUE 2 | 0/0 | |
| MIG 1, 2 (3) | No firing | |

9. EQUIPMENT PROBLEMS

BLUE 1 - None
BLUE 2 - Mike cord disconnected after first missile fired.
GREEN 1 - Unknown

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Back | ~450 | ~300 | ~30 | Had never fired a missile, only minimal ACT. |

Comments on this Encounter

BLUE 1

Front - Believes MIGs were being vectored into stern attack and did not detect the 180° turn just completed by GREEN and BLUE flights. Would like to have had internal guns.

Back - Would like to have had a gun. Would like better performance at high altitude. Didn't think he had proper ACT in training. Thought MIG 2 may have flamed out in his original hard turn.

BLUE 2 - Not interviewed.

Comments from Overall Experience

None

11. DATA SOURCES

Project Interviews: BLUE 1-Back 10 Jan 67; back seat of single F-4 which escorted other B-66, 16 Mar 67

Messages, Reports:

Letter from BLUE 1-Front
7AF MSG 021443Z May 1966 DI029444
35TFW MSG 261050Z Apr 1966 PASTEL 572
CINCPACAF MSG 052258Z May 1966
7AF OPREP-3 261348Z Apr 1966 DOCO-0 18430

[redacted]



12. NARRATIVE DESCRIPTION

Two RB-66s and three F-4Cs (from Danang) proceeded north to the Red River near Yen Bay. One RB-66 and one F-4C remained in the area while the other three aircraft (BLUE 1 and 2 and GREEN 1) continued on to an orbit point about 60 mi NE of Hanoi. BLUE 1 and 2 were flying slightly above and 3 mi in trail of GREEN 1 at 30,000 ft. GREEN 1 had just completed a 180° turn and was heading 270° at 0.8 Mach. BLUE 1 Back was dividing his time 25 percent on radar and 75 percent on visual outside scanning.

BLUE 1, on the right side of GREEN 1, sighted two MIG-21s descending on them at 2 o'clock high, at high supersonic speed. BLUE 1 (Back) called them out to the Front and to BLUE 2. The MIGs were in a gentle right bank as they crossed over the flight and then they reversed hard to the left, level with BLUE flight. BLUE 1 called GREEN 1 to depart and simultaneously with BLUE 2 jettisoned tanks, went into afterburner, and made a hard left diving turn into the MIGs. BLUE 1 pulled out of his vertical reversal at approximately 12,000 ft, Mach 1.6 and 5-6 g's, with BLUE 2 flying a tight wing position. He pulled up after the MIGs who were in afterburner heading NW at about 30,000 ft. MIG 2 was then seen to be going very slowly, descending, trailing white vapor toward the east. BLUE 1 and 2 lost sight of MIG 2 and continued to close rapidly on MIG 1, who was making gentle clearing turns as he climbed away. BLUE 1 achieved several boresight lock-ons but closed inside range for a SPARROW shot. At approximately 3000-ft range, nose high, BLUE 1 fired one SIDEWINDER with a good tone. BLUE 1 then did a high-g roll to the left to gain more separation and did not observe the missile track. BLUE 2 still on BLUE 1's wing, observed the missile hit or almost hit (no explosion) the MIG and the pilot eject; however, BLUE 2 had radio difficulties and could not inform BLUE 1 of his kill. BLUE 1 then pulled up behind MIG 1 again, at 800 ft, and fired another SIDEWINDER with no discernible tone that went ballistic. He again rolled to the left, pulled up and fired another SIDEWINDER at 3000 ft, good tone, which guided right up the tail pipe of the MIG which was now descending through 20,000 ft. The MIG exploded into many pieces and fell straight down.

BLUE 1 and 2 then descended around the debris to watch it impact in the ground. At 10,000 ft, as BLUE 1 commenced his pull-up, he looked back at his wingman and saw another MIG-21 tracking him. (It is not known if this was the original MIG 1 or another one) BLUE 1 called for a defensive split and broke down to the left, BLUE 2 breaking up and right. As BLUE 1 came out of his roll to the left he sighted the MIG ahead in afterburner climbing away, making gentle clearing turns. He rolled in behind him and climbed in afterburner. He continued a very steep climb and ended up directly behind the MIG at 500 ft, 200 knots, very nose high at approximately 22,000 ft. He then fired his last SIDEWINDER which passed directly over the left wing of the MIG who then broke right. BLUE 1 broke left, dived for the deck and egressed due to low fuel state (4500 lb).

BLUE 1 and 2 became separated on the defensive split and BLUE 2 did not chase the last MIG that BLUE 1 fired on. No firings of any kind were observed from the MIGs although all MIGs carried 2 missiles. The downed MIG was believed to be a MIG-21C. All MIGs had distinct Chinese Communist markings.

The time from initial MIG sighting to MIG explosion was 1 min 29 sec (from tape carried in the flight).

[redacted]

EVENT 1-23 SUMMARY

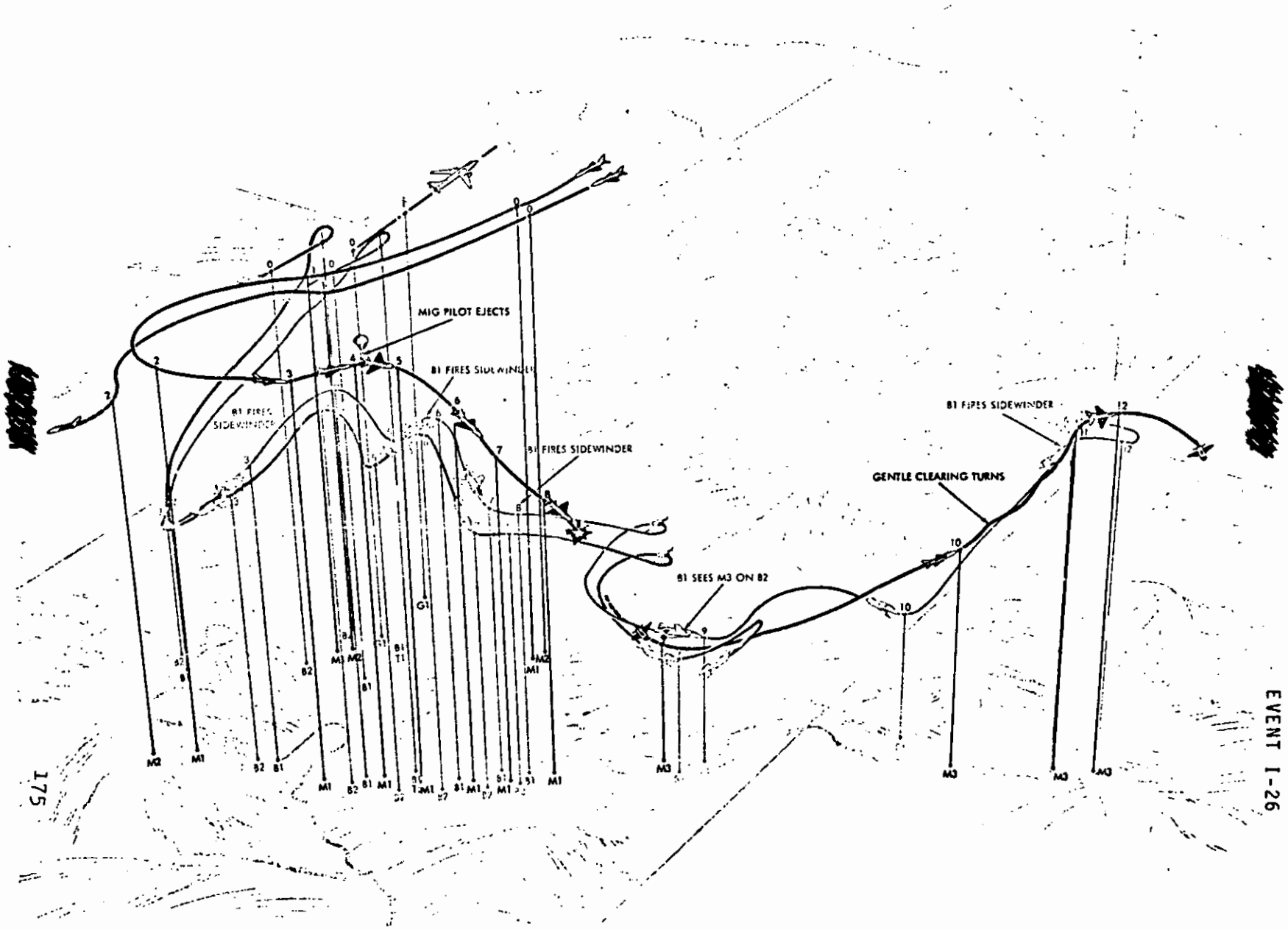
| Time Mark | Action Aircraft (BLUE 1, 2) | | Other Friendly GREEN 1 | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | Heading 270° 31,000 ft, Mach 0.8 fuel internal | B1 Back sights 2 MIG-21's at 2 o'clock, high | Heading 270°, 30,000 ft, Mach 0.8 | B1 Back calls out MIGs | 2 MIG-21's (M1,2) closing rapidly at high supersonic speed, in very easy right turn | |
| $T_1$ | | B1 and 2 jettison tanks, go afterburner breakdown hard to the left | G1 departs the area when told by B1 | B1 tells G1 to depart | M1 and M2 reverse their turn hard left, make level turn at 30,000 ft | |
| $T_2$ | Steep dive 12,000 kt, Mach 1.6 5-6 g's | B1 and 2 pulling out of vertical reversal, | G1 no longer in the area | B1 calls out position of MIGs | M1 climbing away NW in afterburner. M2 descending slightly trailing white vapor, heading east | It is unknown what happend to M2. White vapor could be fuel from a flame during high g turn, or contrails, although contrail level not at MIG's altitude this day. |
| $T_3$ | 325 kt B2 on B1's wing | B1 pulling up right behind MIG, closing. M2 is lost from visual sight. B1 obtains boresight lock on but too close for SPARROW shot. | | B2 calls out to B1 that his tail is clear. B2 loses radio about here. | M1 is climbing away making gentle clearing turns all the while, about 20° of bank | |
| $T_4$ | 325 kt about 30,000 ft | B1 fires 1 SIDEWINDER at 3,000 ft aft, good tone. B1 then does an immediate roll to the left to gain separation | | B2 unable to communicate to B1 | M1 pilot ejects | B2 observes missile hit or almost hit M1 (no explosion), and pilot eject. B1 does not observe missile track. |

EVENT 1-26 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2) | | Other Friendly GREEN 1 | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_5$ | 400 kt 4 g's, 25,000 ft | B1 pulls up from roll, closes M1 again | | | M1 levels off, starts gentle descent | |
| $T_6$ | 300 kt | B1 fires another SIDEWINDER at 800 ft aft, no discernible tone. Missile goes ballistic. B1 starts roll to the left again. | | | | |
| $T_7$ | 375 kt, 20,000 ft | B1 pulls up from roll, closes M1 again | | | M1 still descending | |
| $T_8$ | 325 kt, 20,000 ft | B1 fires third SIDEWINDER at 3,000 ft aft. Missile flies up tailpipe of M1. Good tone | | B1 calls out "We got him." | M1 explodes into many pieces, falls down | B1 has to dive to escape the debris |
| $T_9$ | 10,000 ft nose low | B1 following M1 down sees MIG-21 behind B2, B1 does tight outside roll | | B1 calls out MIG, calls for defensive split | MIG-21 tracking B2 | It is unknown if this is M2 or new MIG |
| $T_{10}$ | | B1 pulls out behind MIG who is very high, pulls up in steep climb. Has boresight lock-on | | | MIG is in afterburner climbing away, making gentle clearing turns about 20° of bank | MIG does not press attack, simply flys away. Sun about 20° of MIG to right of sun |
| $T_{11}$ | 25,000 ft 200 kt nose high | B1 fires last SIDEWINDER at MIG at less than 1,000 ft aft. Missile passes over left wing of MIG | | | MIG still making gentle clearing turn | Good tone |
| | | | | | | |

EVENT 1-26 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2) | | Other Friendly GREEN 1 | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{12}$ | 25 [illegible] ft, fuel st[illegible] 4500# | B1 breaks left and dives for the deck heading SW. Departs the area. | | | MIG breaks right | B1 had trapped wing fuel, thought he was about to flame out since he had very little fuel in the fuselage. Fuel gauge indicated 4000 lb less fuel than actual |
| | | | | | | |


MIG PILOT EJECTS
B1 FIRES SIDEWINDER
B1 FIRES SIDEWINDER
B1 FIRES SIDEWINDER
B1 FIRES SIDEWINDER
GENTLE CLEARING TURNS
B1 SEES M3 ON B2

EVENT I-26

[redacted]

EVENT I-27

Aircraft Involved: Four F-4Cs vs one MIG-21 and four or more MIG-17s

Result: One F-4C damaged, ground fire

Vicinity of Encounter: 22°45'N/106°00'E Route Package VI

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 26 Apr 1966/1425H

Four F-4C airplanes (BLUE flight) were performing a MIGCAP for three flights of strike airplanes. BLUE flight had briefed to fly a fluid-four formation and to have one section make the ID pass while the other maneuvered into position to launch missiles.

2. MISSION ROUTE

Departed Udorn on a northerly heading to the Red River at a point about 30 mi southeast of Lao Cai. Then headed easterly and southeasterly into the CAP area. Proceeded in at an altitude of about 20,000 ft. Descended into the orbit area and maintained an altitude of 10,000 to 15,000 ft. Airborne refueling was conducted en route prior to reaching the NVN border. The centerline tanks were jettisoned at the Red River.

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

4 - SPARROW (AIM-7D)
4 - SIDEWINDER (AIM-9B)
2 - 370-gal external wing tanks
1 - 600-gal external centerline tank
IFF, TACAN and UHF normal and operating. Camouflage paint, green and brown.

MIG-21 MIG 1

Object sighted under the wing. Not identified as AAM or external tank. Silver.

MIG-17 MIG 2, 3, 4, 5

2 - 23mm guns
1 - 37mm gun
At least one olive drab color, others were silver.

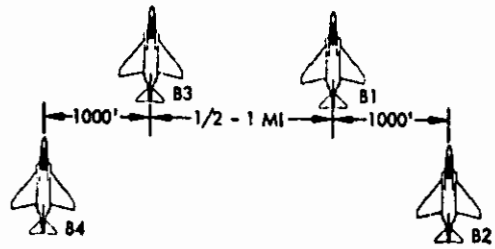
4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Generally good visibility with haze below 3,000 to 10,000 ft which reduced visibility to 5 mi. Scattered, small cumulus clouds.

| | BLUE 1 2 3 4 |
|---|---|
| Altitude: | ------12,000 ft---- |
| Heading: | --------100°------- |
| Speed: | Approximately 500-kt TAS |
| Fuel State: | Full internal plus some fuel in external wing tanks. Centerline external tank had been jettisoned at Red River. |

Flight Formation:

Fluid-four




Section 2000-3000 ft above Lead

5. INITIAL DETECTION

MIG warning had been received. BLUE 3 first detected MIG 1 as a radar contact at 12 o'clock, 35 mi, high (estimated above 30,000 ft), closing rapidly. MIGs 2, 3, 4 and 5 were later detected visually while making an attack on BLUE 1 and BLUE 2.

6. ACTION INITIATED

BLUE 1 passed tactical lead to Blue 3. Blue 1 and 4 jettisoned wing tanks as the flight lit afterburners and commenced an intercept. BLUE 3 took the lead and started a climbing right turn. BLUE 1 obtained a radar lock-on and called he was taking back the lead.

[redacted]

[redacted]

7. SITUATION DEVELOPMENT

EVENT 1-27

BLUE 3 and 4 lost sight of BLUE 1 and 2 as BLUE 1 resumed the tactical lead of the flight. The intercept of MIG 1 was discontinued as the MIG approached the SAM ring around Hanoi. BLUE flight returned to the orbit area with each element at opposite ends of the race-track pattern and not within visual range of each other. BLUE 2 was hit by ground fire. BLUE 1 and 2 began jinking. Both sighted two MIG-17s closing from the rear and firing. BLUE 2 broke hard left in a diving turn and disengaged from MIG 2 using afterburner and accelerating. BLUE 1 engaged afterburner and took MIG 3 into a high yo-yo and disengaged as the MIG ran out of airspeed. BLUE 1 observed MIG 4 chasing BLUE 2 and launched two SIDEWINDER missiles out of range. While maneuvering to prevent overrunning MIG 4, BLUE 1 saw two more MIG-17s making a run on him from the left rear quarter. BLUE 1 continued in a split-S-type maneuver and disengaged. BLUE 3 and 4 remained in the race-track orbit until reaching BINGO fuel and then returned to base.

8. ORDNANCE

(No. fired/No. hits)

| | SPARROW AIM-7D | SIDEWINDER AIM-9B | Remarks |
|---|---|---|---|
| BLUE 1 | 0/0 | 2/0 | Missiles launched out of range. |
| BLUE 2, 3, 4 | 0/0 | 0/0 | |
| MIGS | | | Fired guns. No hits. |

9. EQUIPMENT PROBLEMS

BLUE 2 was unable to jettison external wing tanks after being hit by flak. BLUE 3 had two SPARROW missiles detune en route to the orbit area. Remaining two missiles detuned during intercept of MIG 1. Was unable to jettison external wing tanks.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | Not in the data available. | | | |
| Back | | 500 | 23 | Participated in one SPARROW and one SIDEWINDER launch during training. |
| BLUE 2 | | | | |
| Front | 2700 | 800 | 6 | Has been F-4 instructor pilot. |
| Back | Not interviewed. | | | |
| BLUE 3 | | | | |
| Front | 2000 | 500 | 30 | Participated in one SPARROW launch during training. Launched one SPARROW and one SIDEWINDER in training as aircraft commander. Very little ACT in training. |
| Back | 500 | 300 | 30 | |
| BLUE 4 | | | | |
| Front | Not interviewed. | | | |
| Back | Not with data obtained by letter. | | | |

Comments on This Encounter

BLUE 1 (Front) As a result of BLUE 1 resuming the lead after BLUE 3 had started the intercept, the two elements became separated. Just before breaking off the intercept, BLUE 1 may have been within range to launch an AIM-7E, but he had only AIM-7D missiles. Later, BLUE 1 knowingly launched two SIDEWINDER missiles out of range.

BLUE 1 (Back) The two-man crew in tandem was good. The back seat pilot provided lookout to the rear. He considered minimum range of the SPARROW to be excessive. The F-4 had acceleration and thrust advantage over MIG-17. He had never observed aircraft make a gun type attack against him.

BLUE 2 (Front) Confusion developed on egress from numerous search and rescue facilities transmitting simultaneously on guard frequency and rescue frequency while attempting to expedite rendezvous with a tanker.

BLUE 3 (Front) Radio voice channels very cluttered. During the first intercept, he would have been in range in another 30 sec but broke off because they were approaching a SAM defense ring. The requirement to make an ID pass altered the intercept to a rear quarter attack.

BLUE 3 (Back) The target was sighted visually because of contrails.



[redacted]

Comments on this Encounter (Continued) EVENT I-27

BLUE 4 (Back) It appeared that MIG 1 was trying to lure BLUE flight into the SAM area.

Comments from Overall Experience

BLUE 1 (Back) Stated he did not trust the SPARROW missile. Would prefer to be able to disengage and reattack rather than fight a close-in turning encounter. Improved visibility to the rear was needed. Combination of no close-in weapon and restraint of a positive ID imposed undesirable tactics.

BLUE 3 (Front) Restraint of the visual ID was the biggest problem. Feels a good airplane should have a crew of two in tandem, twin engine, backup flight control system, emergency electrical power to touch down, airborne interrogation of IFF/SIF and improved radio and ICS. Against an airplane such as the MIG-17/19 not sure a gun would be useful because of the difficulty of attaining a gun-firing position — if the MIG maneuvered to evade. Would have liked a longer range missile. Very important to maintain flight integrity.

BLUE 3 (Back) Could not rely entirely on radar to detect targets, visual search was very important. Important for flight crews to fly as a team. Inertial navigation system very important.

## 11. DATA SOURCES

Project Interviews:

| | |
|---|---|
| BLUE 1 (Lead) (Front) | 14 Dec 1966 |
| BLUE 1 (Back) | 15 Mar 1967 |
| BLUE 2 (Front) | 9 Mar 1967 |
| BLUE 3 (Front) | 25 Jan 1967 |
| BLUE 3 (Back) | 8 Mar 1967 |
| BLUE 4 (Back) | Letter of 28 Mar 1967 |

Message Reports:

7AF OPREP-3 261348Z Apr 66, DOCO-0 18429

35 TAC FTR WG OPREP-3 261030Z April 66, DOI FASTEL 571,

USAF Fighter Weapons School Bulletin-4

## 12. NARRATIVE DESCRIPTION

$T_0$ As BLUE flight approached the area where they were to establish a MIGCAP, a MIG alert was received. The flight was on an easterly heading. BLUE 3 detected several radar targets and obtained a lock-on. The radar indicated a very high $V_c$ (approx 1800 kt) which showed the target to be approaching almost head-on. When BLUE 3 reported the contact BLUE 1(L) passed the tactical lead to BLUE 3. BLUE 3 attempted to jettison his wing tanks. BLUE 1 and BLUE 4 jettisoned wing tanks. BLUE 2 retained his tanks. BLUE flight engaged afterburner and commenced an intercept for an ID pass.

$T_1$ BLUE 1 acquired the target and resumed the lead. The two elements of BLUE flight lost visual contact with each other. The target was sighted visually and identified as a MIG-21. BLUE flight saw the smoke puffs as the MIG lit afterburner.

$T_2$ BLUE flight commenced a snap-up attack. The SPARROW missiles on BLUE 3 detuned. As BLUE flight decelerated, the $V_c$ changed to a negative value indicating the range to the target was increasing.

$T_3$ The intercept was discontinued because the intercept had developed into a tail chase and the MIG was leading the flight into the SAM ring to the south.

BLUE flight returned to the orbit area with BLUE 1 and 2 in the southern portion while BLUE 3 and 4 proceeded to the northern end of the area.

$T_4$ As BLUE 1 and 2 rolled out on a ESE heading to recheck their position, BLUE 2 was hit by flak which was later evaluated to be 57mm. BLUE 1 and 2 commenced an immediate jink to the left.

$T_5$ As they rolled left into a diving turn BLUE 1 observed a burst of tracers pass close aboard and saw a MIG at 3 o'clock as well as one at 7:30 o'clock. BLUE 2 rolled out on a heading of 100° and accelerated in afterburner going to the deck. BLUE 1 observed MIG 3 starting to slide to the outside so reversed his turn, engaged afterburner, and pulled up into a steep high yo-yo.

$T_6$ MIG 3 followed BLUE 1 and opened fire near the top of the yo-yo as he ran out of airspeed and fell off into a dive.

$T_7$ BLUE 1 checked the area for more MIGs and saw BLUE 2 low at 10 o'clock with a MIG in trail. BLUE 1 rolled into a dive, selected HEAT and launched two SIDEWINDER missiles out of range hoping to scare off MIG 4. BLUE 1 did not launch SPARROWS at the MIG because he felt BLUE 2 might also be in range. He knew the MIG was out of range for the SIDEWINDER. BLUE 1 accelerated rapidly in afterburner diving toward MIG 4.

$T_8$ BLUE 1 commenced a high-g barrel roll to prevent overrunning MIG 4. As he started up into the maneuver the Back looked out at 7 o'clock and saw one or more MIGs in a run on them. Back told the Front to keep the turn in. They continued around in a rolling

[redacted]



split-S maneuver. When they came out of the maneuver, no MIGs were in sight and BLUE 2 was gone also.

To BLUE 1 headed for the coast and commenced a gentle climb to conserve fuel. When he reached 20,000 ft he saw a contrail high at 6 o'clock, 10 mi, and assumed this was a MIG-21; therefore, he dove to the deck and continued outbound. The wing pylons and remaining SIDEWINDERS were jettisoned to reduce drag. BLUE 1 landed at Danang with 250 lb of fuel remaining. An attempt was made to rendezvous him with a Navy tanker, but he could not use the drogue type refueler.

BLUE 2 secured the damaged right engine when over the water. He was unable to jettison the wing tanks. After rendezvousing with an airborne tanker, he refueled with only 50 lb of fuel indicated remaining in his tanks.

All pilots stated there was confusion in radio transmissions and in instructions given to effect rendezvous with the tankers.



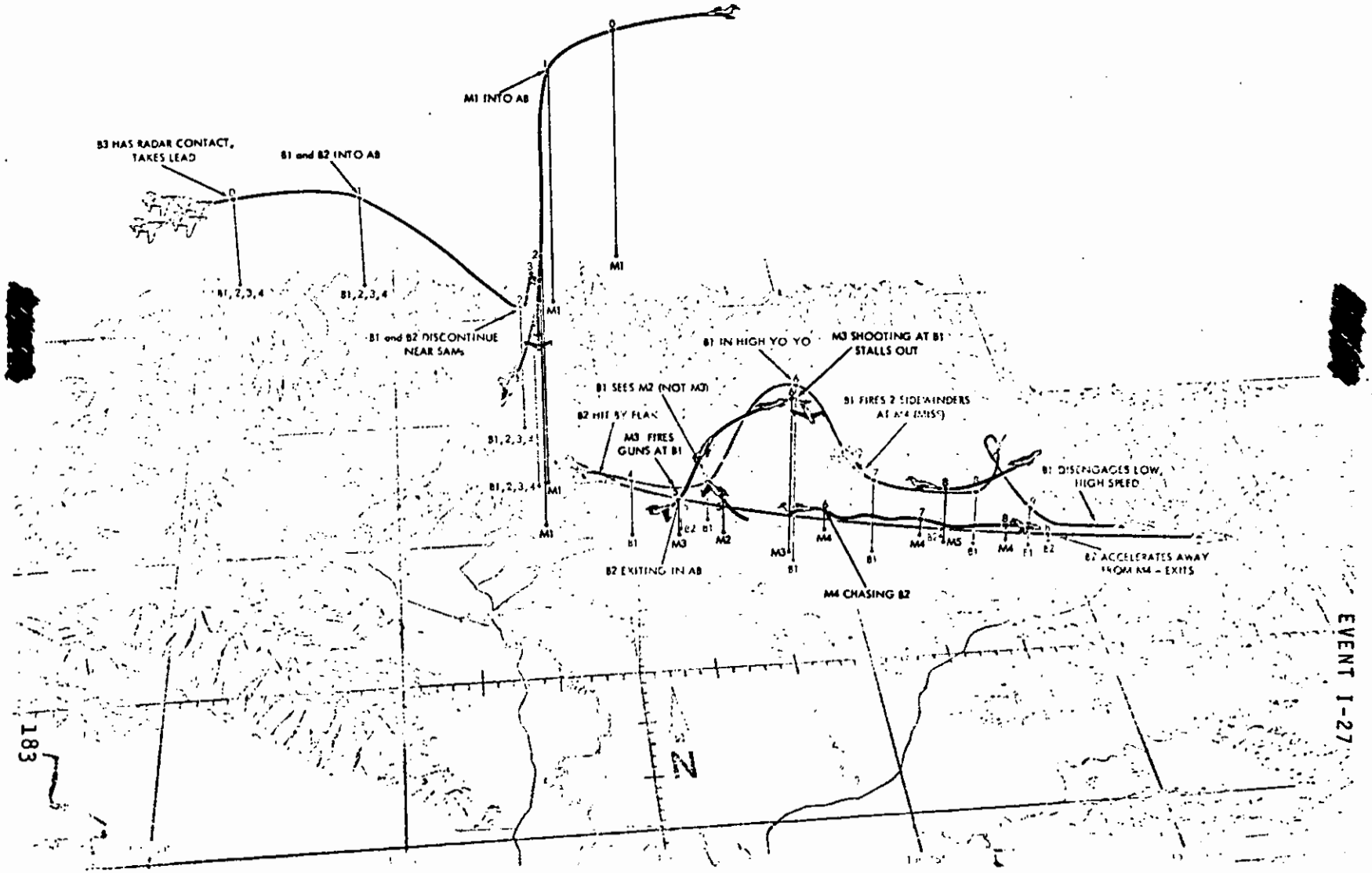
[redacted]

EVENT I-27 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2,3,4,5) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | BLUE flight<br>12,000 ft<br>450-500-kt CAS<br>4 - SPARROWS AIM-7D<br>4 - SIDEWINDERS AIM-9B<br>2 - Wing tanks | B3 has radar contact on M1. B1(L) gives lead to B3. B3 attempts to jettison tanks. B1 and B4 jettisons tanks. B3 and B4 into AB and commence intercept for ID. | | B1(L) passes tactical lead to B3. | M1 high heading westerly, commencing a turn to the S. | BLUE flight en route to orbit area NW of Kep to provide a MIGCAP. Fluid-four formation. |
| $T_1$ | | B1 acquires radar contact, B1 and B2 into AB. | | B1 calls he is taking back the lead. | M1 into AB. | B3 and B4 do not have B1 and B2 in sight. M1 sighted visually and identified as MIG-21. |
| $T_2$ | 18,000 ft<br>Mach 1.2 | B1 and B2 commence snap-up. | B3 and B4 do not have B1 and B2 in sight. | | M1 continuing S. | |
| $T_3$ | | B1 and B2 decelerated in climb. M1 starts to pull away. | | | | BLUE flight discontinued intercept because M1 was proceeding into area heavily defended by SAMs. MIG heading S at very high speed. |
| BLUE flight returned to the orbit area with B1 and B2 in the southern portion while B3 and B4 proceeded to the northern portion of the area. They orbited in the area for one or more counter-clockwise turns. | | | | | | |
| $T_4$ | 8000 ft<br>Hdg 100°<br>350 kt CAS | B1 and B2 in southern end of orbit area. B2 hit by flak. B1 and B2 jink left. | B3 and B4 in northern end of orbit area. No longer in the action. | Unable to contact B3 and B4. Excessive chatter on radio. | | |
| $T_5$ | | B1 and B2 in left turn. B1 saw M2 at 3 o'clock. B2 into AB exiting. B1 saw tracer pass close aboard. B1 lit AB and reversed turn to the right. | | | M2 sighted.<br>M3 fired at B1. | |

EVENT I-27 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2,3,4,5) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_6$ | | B2 exiting area, low, high speed. M4 chasing B2. B1 took M3 into high yo-yo. M3 stalled out. | | | M3 shooting at B1 just before he stalled. | |
| $T_7$ | 30° Dive Mach .8 | B1 fired two SIDEWINDERS to scare off M4. B1 pursuing M4. Firing geometry 10-15 off the stern. Range 2-3 mi. Fired for scare only. | | | M4 is 1000 ft in trail of B2. Breaks off attack on missile firing. | B1 launched SIDEWINDER rather than SPARROW because of possibility of SPARROW guiding on B2 instead of M4. M4 was beyond SIDEWINDER range. |
| $T_8$ | | B1 into high-g barrel roll to reduce overtake. Saw one or two MIGs on tail. Continued climbing left turn into modified split-S. Disengaged at low altitude, very high speed. | B2 accelerated away from M4 and exited over water. | | | |
| $T_9$ | | B1 heading out of area. | | | | |


B3 HAS RADAR CONTACT, TAKES LEAD
B1 and B2 INTO AB
M1 INTO AB
B1,2,3,4
B1,2,3,4
M1
B1 and B2 DISCONTINUE NEAR SAMs
B1,2,3,4
B1,2,3,4
M1
M1
B1 IN HIGH YO YO
M3 SHOOTING AT B1 STALLS OUT
B1 SEES M2 (NOT M3)
B2 HIT BY FLAK
M3 FIRES GUNS AT B1
B1 FIRES 2 SIDEWINDERS AT M4 (MISS)
B1 DISENGAGES LOW, HIGH SPEED
B1
M3
B2
B1
M2
M3
B1
M4
B1
M4
B2
M5
B1
M4
F1
B2
B2 ACCELERATES AWAY FROM M4 – EXITS
B2 EXITING IN AB
M4 CHASING B2
N

EVENT I-27

[redacted]

EVENT I-28

Aircraft Involved: Four F-4Cs vs four MIG-17s

Result: Two MIGs destroyed

Vicinity of Encounter: 21°50'N/106°07'E
Route Package VI

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 29 Apr 1966/midafternoon

A flight of four F-4Cs (BLUE fleet) encountered a flight of four MIG-17s while flying MIGCAP for a 12-plane F-105 strike against the Bac Giang bridge, some 25 mi NE of Hanoi. Orbit areas for the F-4 flight was north of the strike area. It is believed that another flight of F-4Cs was simultaneously orbiting as MIGCAP east of the target area, that two EB-66s were airborne north of the target to give SAM warnings, and that BIG EYE was over the Tonkin Gulf. Other F-4Cs were some 20 min behind this mission, also covering F-105s on what was believed to have been a different target.

## 2. MISSION ROUTE

BLUE flight departed from Udorn. They refueled on Red track, leaving the tanker about latitude 19°30'N, then proceeding NNE, at about 21,000 ft and 350-kt IAS to a turning point approximately on the Red River, out of the SAM area. They turned east and commenced descent to about 10,000 ft, dropping empty centerline tanks at about the turning point, later turning SE toward the target area. Enroute, the F-4s flew generally above and behind the F-105s, maintaining radar and visual contact with them, breaking off and going into their orbit area well before reaching the target.

## 3. AIRCRAFT CONFIGURATION

F-4C BLUE 1, 2, 3, 4

- 4 - SPARROW (AIM-7D), fuselage
- 4 - SIDEWINDER (AIM-9B), inboard wing stations
- 2 - 370-gal wing tanks, outboard stations
- 1 - 600-gal centerline tank (jettisoned enroute to mission area)
- Avionics - Normally TACAN utilized early in the flight and then turned to standby; radar always on; IFF was optional at this time and was frequently left off over NVN.
- Camouflaged

MIG-17 MIG 1,2,3,4

- Silver color
- Wing tanks

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered cumulus, about 2/10 coverage, visibility good except somewhat reduced in haze below about 10,000 ft.

| | BLUE 1 | BLUE 2 | BLUE 3 | BLUE 4 |
|---|---|---|---|---|
| Altitude: | 8000 ft | 8000 ft | 12,000 ft | 12,000 ft |
| Heading: | -------- generally SE ---------- | | | |
| Speed: | ---------- 400-kt IAS ---------- | | | |

Flight Formation: Elements operating separately, generally on opposite sides of orbit; one element high, one low; weaving and varying altitude.

## 5. INITIAL DETECTION

Various MIG warnings were heard while enroute to orbit area, including report from EB-66: "MIGs airborne at Phuc Yen." Initially BLUE 2 aircraft commander detected and called a MIG at 9 o'clock low. Immediately thereafter, various members of the flight observed a total of four aircraft below, quickly identified as MIGs -- primarily by their silver color. Flight members recalled no warning which alerted them to this specific group of MIGs. Initial detection distance probably less than 2 mi.

## 6. ACTION INITIATED

All jettisoned tanks; BLUE 1 turned left to engage, observed three other MIGs below in staggered trail and told flight to go after the group of three; BLUE 3 pulled nose up then rolled to right, going into AB to maintain speed; wingmen maintained position on their element leaders.

## 7. SITUATION DEVELOPMENT

BLUE 3 made a single quick pass at the MIGs from above, fired one SIDEWINDER, which downed a MIG, and pulled off. BLUE 1, during his initial turn, observed BLUE 3 and 4 rolling into the MIGs and had to break off in the opposite direction. He observed a MIG getting into an attack position on BLUE 3 and quickly fired a SIDEWINDER to attract the

[redacted]



[redacted]

MIGs attention. This MIG then went into extreme evasive maneuvers with BLUE 1 pursuing, which culminated in the MIG's colliding with the ground. The F-4s then departed the area due to low fuel state, BLUE 3 making a quick pass and rapidly firing two SIDEWINDERs (out of parameter) at two more MIGs which passed nearby during his egress.

The MIGs initially encountered were flying straight and level, not very fast, at low altitude when encountered. They apparently were not aware of the F-4s or else had no intention of engaging them. They jettisoned tanks and commenced maneuvers only after the F-4s made hostile maneuvers.

8. ORDNANCE

| | (No. fired/No. hits) SPARROW AIM-7D | SIDEWINDER AIM-9B | Remarks |
|---|---|---|---|
| BLUE 1 | 0/0 | 1/0 | Fired hurriedly without tone to attract attention of MIG on BLUE 3's tail. Missile attempted to track but could not follow. |
| BLUE 2 and 4 | 0/0 | 0/0 | |
| BLUE 3 | 0/0 | 3/1 | First missile fired with tone in parameters, went up tail of MIG, exploded, pilot ejected with aircraft on fire and corkscrewing. Other two missiles fired hurriedly with tone but high g and long range -- no hit observed. |

9. EQUIPMENT PROBLEMS

None reported.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 Front | 2600 | ? | 45 total, 10 "counters" | Had little or no air-air maneuvering training; this was only air-air encounter experienced. Noted that all members of flight had about same combat experience level at this time. |
| Back | --- Not interviewed --- | | | |
| BLUE 2 Front | 1500 | 500 | ? | Had no ACM training; this was first ACM practice and first and only air-air combat encounter. |
| Back | 700+ basic pilot training | 700 all back seat | ? | Had gone from pilot training to F-4 CCTS, to a squadron -- all time after pilot training was in F-4. Had experienced one SIDEWINDER and one SPARROW practice firing -- both against nonmaneuvering target. |
| BLUE 3 Front | ? | 500+ | ? | Had flown heavy bombers, then into F-84s and F-4s. Had fired 2 SIDEWINDERS in training. |
| Back | --- | Unknown | --- | Was 1st Lt at time of this encounter. |
| BLUE 4 Front | --- | Unknown | --- | Was Captain at time of this encounter. |
| Back | --- | Unknown | --- | Was 1st Lt at time of this encounter. |

Comments on this Encounter

BLUE 1 Front

At one point in the encounter he could have fired a SPARROW and probably gotten a MIG if his state of training had been higher.

BLUE 2 Front

Had flown with Lead and knew his characteristics so well that he could respond almost automatically.

He was completely disoriented during the various maneuvers and concentrated on staying on Lead's wing.

BLUE 2 Back

Unsure of what occurred during parts of the engagement -- much of the time was spent looking out for the rest of the flight to make sure they didn't get a MIG at 6 o'clock.

MIGs did not seem to react in a very capable manner.

While on MIGCAP he spent about 90 percent of his time looking outside and 10 percent of time looking at radar. Reason for this was that MIGs probably were going to come in low and you wouldn't detect them on radar. In this situation where they were low, could never have been caught on radar.

Didn't think SPARROW could ever have been used in this encounter because all attacks were diving at the ground and were never in the proper range band. SIDEWINDER was quite a bit more convenient in this encounter.

Experienced light buffeting at times during the encounter.

A gun would have been useful -- could have gotten into gun range.

BLUE 3 Front

At this period there seemed to be no SAMs fired when the MIGs were airborne.

BLUE 3 Back

After the initial attack BLUE 3 was never able to achieve the necessary conditions for an ideal missile attack. The nearness to the ground negated much of the missile effectiveness.

An internal gun could have been used very effectively in this environment.

The radio calls during the encounter were minimal. The only other call after the initial sighting was: "We got one."

BLUE 4 Back

BLUE 4 did not initiate any attacks during the engagement because of the need for element integrity. BLUE 4 could have successfully engaged a MIG on the first pass.

Comments from Overall Experience

BLUE 2 Back

It was not necessary to have a pilot in the back seat of the F-4 except during night air-ground missions when a pilot may more capably advise the aircraft commander. Actually, a radar officer would be more interested in the back seat operations than a pilot would be.

BLUE 3 Front

It would be undesirable and possibly fatal for an F-4 to use a gun in fighting with a MIG because the MIG is built to fight with guns and the F-4 is not.

As a last resort to kill a MIG's tracking solution on you, you can go into a nose high rudder roll.

We need a capability to fire missiles at higher g.

It is best to fight the MIG in the vertical.

BLUE 4 Back

The Back is very limited in helping the aircraft commander during a close-in engagement. His responsibility in such case should be to look for enemy aircraft in the 6 o'clock area.

## 11. DATA SOURCES

Project Interviews: BLUE 1 Front (12/1/66), BLUE 2 Front (12/13/66), and Back (12/13/66), BLUE 3 Front (12/13/66), BLUE 4 Front (12/13/66).
Letter Accounts from: BLUE 3 Back, BLUE 4 Back.
Messages:

7AF OPREP-3 291110Z Apr 66, DOCO-0 18638
7AF OPREP-3 292155Z Apr 66, DOCO-0 18650

Other:

USAF Tactical Fighter Weapons School Combat Analysis Division (CAD) Bulletin 4, 1966.

## 12. NARRATIVE DESCRIPTION

BLUE flight had been on MIGCAP station for about 15 to 20 min when they encountered four MIG-17s. (BLUE 2 and BLUE 4 flew a close combat wing on Lead and BLUE 3 throughout

the engagement. Two aircraft employed in this manner are tactically treated as one unit and in the following discussion will be referred to as BLUE Lead (1 and 2) and BLUE Wing (3 and 4)).

$T_0$ Initially, BLUE 2 sighted and reported, "MIG 9 o'clock low." All aircraft in BLUE flight jettisoned their tanks. BLUE Lead turned hard left to engage and saw three other MIGs in loose trail with a single MIG at Lead's 11 o'clock headed in a different direction. As BLUE Lead attacked, the single MIG was observed to jettison his tanks. BLUE Wing sighted the three MIGs in trail low and passing left to right. Wing maneuvered nose high, rolling right, using afterburner, and initiated a diving attack on the flight of three.

$T_1$ BLUE Lead sighted his Wing attacking the MIG formation of three and broke off his attack with a hard reverse and high-g barrel roll to the right, using afterburner to maintain air speed. The single MIG was not observed by any member of the flight after BLUE Lead broke right. The MIGs jettisoned tanks and went into an easy right turn. At least one MIG went into afterburner.

$T_2$ BLUE Wing continued his attack and downed one of the lead MIGs with a single SIDEWINDER. To prevent an overshoot due to closure rate BLUE Wing had performed a high-speed yo-yo in his attack. Following missile release he pulled up hard, in AB, to a 50-60° climb. BLUE Lead's barrel roll to the outside permitted him to observe BLUE Wing's kill. AS BLUE Wing pulled up BLUE Lead observed the MIG 3 trying to position himself for an attack on BLUE Wing. BLUE Lead continued the roll, going into a descending turn.

$T_3$ BLUE Lead fired a SIDEWINDER without a tone and out of the missile's envelope. MIG 3 apparently observed the SIDEWINDER leave BLUE Lead's aircraft and went into a maximum performance turn to the left and into Lead, forcing the missile to miss.

$T_4$ BLUE Lead then passed "canopy-to-canopy" with MIG 3 and BLUE Lead pulled up hard and started over the top in a barrel-roll-type maneuver while the MIG continued turning in a shallow descent.

$T_5$ BLUE Lead went into split-S and a steep descent from about 12,000 ft in full AB toward the MIG. The MIG observing BLUE Lead closing at 6 o'clock made several hard nose-down turns and reversals.

$T_6$ With Lead at 6000 ft, chasing the MIG and just beginning to get SIDEWINDER tone, the MIG rolled inverted to the left with an altitude of about 2500 ft and crashed. The MIG either lost control of the aircraft or attempted a split-S with insufficient altitude. One member of BLUE flight declared BINGO fuel and the flight departed the area. MIG 2 in the group of three had been sighted only intermittently during the encounter and then doing little or no maneuvrring.

$T_7$ The flight rejoined and was egressing when BLUE 3 observed two MIGs at low altitude going away.

$T_8$ BLUE 3 made one high-angle, max-g turning pass, fired 2 SIDEWINDERS, then rejoined. No hits were observed.

EVENT I-28 SUMMARY

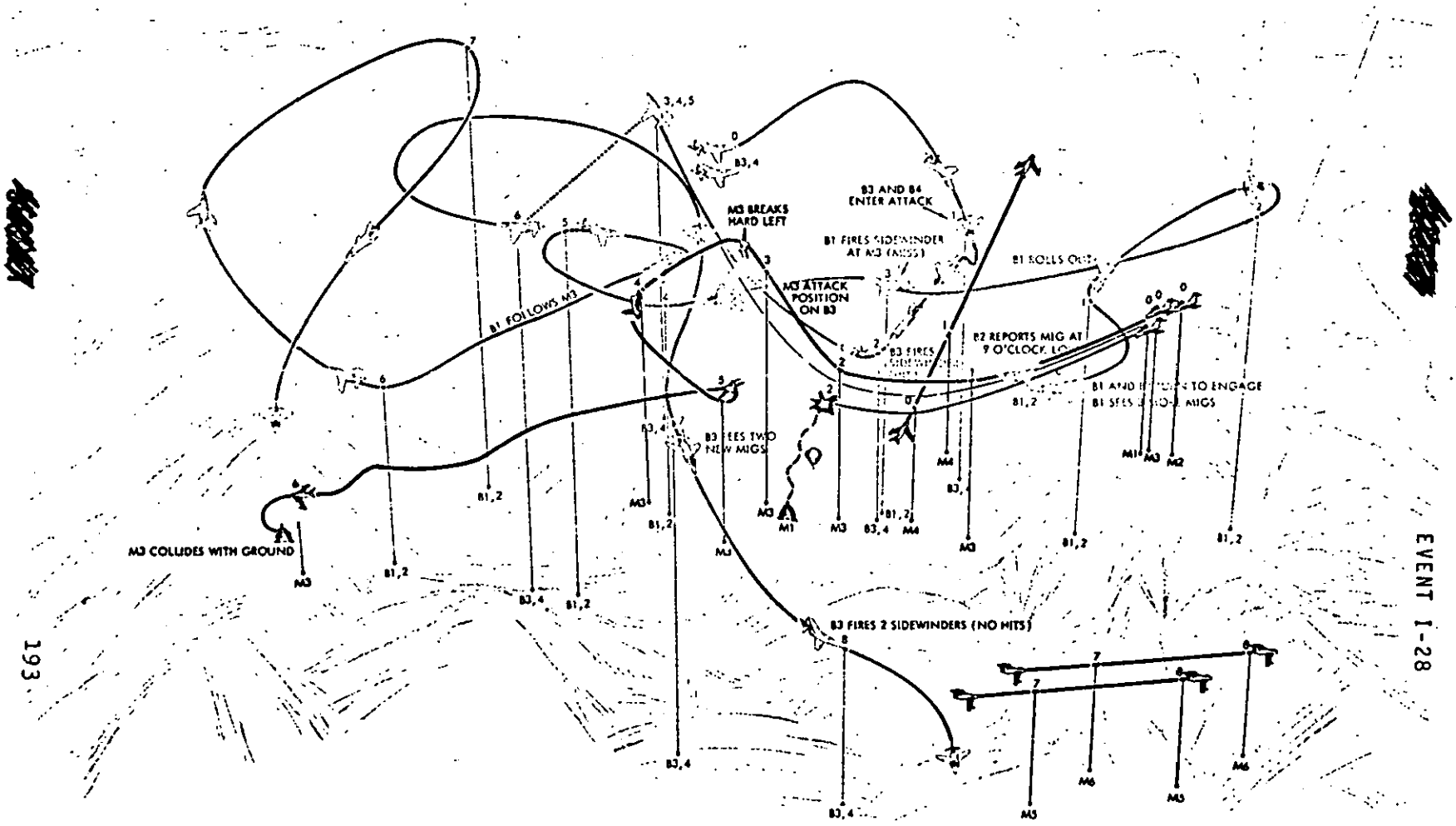
| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2, 3, 4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | Fuel - about 9000 lb<br>Speed - 400+ knots<br>Weaving and varying altitude<br>B1 - ~8000 ft<br>B3 - 12,000 ft | B1 (with B2 on wing) turns left to engage MIG and observes 3 other MIGs below. B3 (with B4 on wing) pulls nose up and rolls to right to engage. All jettison empty wing tanks. (See remarks re B2 and B4) | | B2 reports MIG at 9 o'clock low. Lead calls to engage MIGs. | Single MIG (M4) flying straight and level. Three other straight and level in staggered trail, 500 to 1000 ft apart, at low speed.<br>M1,2,3 at ~5000 ft, M4 ~4000 ft. | F-4s had been on CAP station some 15 min when MIGs were sighted. Various flight members saw MIGs just after initial call.<br>B2 and B4 maintain wing position on their element leads throughout the encounter. |
| $T_1$ | B1 up to 450-kt IAS accelerating to 6.5 g.<br>B1&3 - ~8000 ft | B1 sights B3&4 rolling in and has to break off, reversing hard to the right, going into AB and then into a high-g roll. B3 continues maneuver, coming almost canopy to canopy with M3, levels wings and goes into high-speed yo-yo. | | | Flight of three jettisons tanks and commences shallow right turn still in trail. Lead MIG initially broke hard right but then fell off. At least one MIG observed to go into AB. No change in altitude. | Movements of single MIG initially detected not known after flight of three detected. |
| $T_2$ | B1 upside down at instant $T_2$, in high-g barrel roll.<br>B3 in right turn, steep bank, nose 15° down, +500-kt IAS<br>B1 - ~11,000 ft<br>B3 - 7000 ft. | B1 continues barrel roll, rolls out and starts descending.<br>B3 fires one SIDEWINDER in this attitude and then pulls off and goes into steep climb, in AB.<br>B1 observes M3 in attack position on B3 and initiates attack on M3. | | | Lead MIG in right turn is hit by missile, goes into corkscrew roll to ground; pilot ejects with good chute. M3 pulls in behind B3 and 4. | B3 had missile tone, fired at about 1-mi range. Missile went up tail pipe and exploded. MIG on fire and trailing white smoke. MIG pilot chute orange in color, square, with four risers - one to each corner. |

EVENT I-28 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2, 3, 4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_3$ | B1 750-kt IAS, in hard, diving turn to right, 6 g, in AB.<br>B3 in 50°-60° climb in AB.<br>B1 -~8000 ft<br>B3 -~10,000 ft | B1 fires SIDEWINDER at M3 (no tone) from this attitude; reverses to left, still descending. | | | M3 apparently observes B1's missile and breaks hard left (streamers from wing root out). M2 apparently taking no hostile or evasive action. M3 ~7000 ft. | B1 fired SIDEWINDER to divert MIG from attack on B3 and 4 even though there was no tone and missile was not within parameters. Missile attempted to track but got nowhere near MIG. Track of B3 uncertain after this point until $T_6$. |
| $T_4$ | B1 700 to 750-kt IAS | After B1 and M3 pass canopy to canopy, B1 commences hard (max performance) pull up. | | | M3 in hard turn, shallow nose-down, 8000 ft. | Location and action of M2 no longer known |
| $T_5$ | B1 "on top" and unloading at 12,000 ft | B1 follows through to get on top of MIG. Split-S down to about 8000 ft. | | | M3 about 5000 ft still descending and turning toward B1. Continues shallow descent, comes out of turn, weaving left and right. | B1 feels he might have gotten off a SPARROW about this time if he had been in a higher state of training. |
| $T_6$ | B1 500-kt IAS, 6000 ft still in AB, 60° pitch. | Following MIG collision with ground, B1 pulls up and comes to SW heading. B3 and 4 follow movements of B1 and B2. | | An aircraft in the flight calls BINGO fuel.<br>B1 calls for flight to rejoin and egress. | Alternates between left and right turn then goes into split-S from about 2500 ft. Collides with ground. | B1 almost on top of MIG and closing range; has SIDEWINDER tone.<br>F-105s have completed attacks and are egressing. |

EVENT I-28 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2, 3, 4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_7$ | B3 - ~12,000 ft | B3 turns and descends toward new MIGs. B1 and B2 continue egress. B3 sees two MIGs. | | | Two MIGs flying straight and level low altitude, going away. | |
| $T_8$ | B3 +600-kt IAS, 70° nose down, in 4-5 g turn; below BINGO fuel. | B3 fires two SIDEWINDERs in this attitude; then pulls off and continues egress. Missiles fired out of range.<br><br>Flight continues egress. | | | | B3 has SIDEWINDER tone and slight lead on MIGs, but is at extreme range and high g. Fired knowingly out of parameters but felt he could not afford fuel required to get into better position. Did not observe missiles in flight or explosion. |


M3 COLLIDES WITH GROUND
B1 FOLLOWS M3
M3 BREAKS HARD LEFT
M3 ATTACK POSITION ON B3
B3 AND B4 ENTER ATTACK
B1 FIRES SIDEWINDER AT M3 (MISS)
B1 ROLLS OUT
B2 REPORTS MIG AT 9 O'CLOCK LO
B3 FIRES 2 SIDEWINDERS (NO HITS)

EVENT I-28

[redacted]

EVENT I-29

Aircraft Involved: Two F-4Cs vs four MIG-17s
Result: One MIG destroyed
Vicinity of Encounter: 21°25'N/104°20'E
Route Package V

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 30 Apr 1966/0900H

An element of two F-4Cs (BLUE 3 and 4) were alternating with F-4Cs BLUE 1 and 2 in air refueling and providing RESCAP for an attempt to recover two downed pilots. BLUE 3 and 4 were withdrawing from the RESCAP area and BLUE 1 and 2 were returning when BLUE 3 and 4 sighted four aircraft, subsequently identified as MIG-17s, closing them. It is believed that the only other U.S. aircraft over NVN at this time were two A-1s searching for the pilots, possibly a helicopter or two engaged in the search, and possibly a normal ECM intelligence aircraft.

## 2. MISSION ROUTE

BLUE 3 and 4 had been scrambled from Udorn for RESCAP, had refueled after takeoff, proceeded to their assigned area, and had been on station for about an hour when the encounter took place.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 3, 4

4 - SPARROW (AIM-7D) fuselage
4 - SIDEWINDER (AIM-9B) inboard wing station
2 - 370-gal wing tanks outboard wing station
1 - 600-gal centerline tank
IFF, TACAN and radar operating
Camouflaged

MIG-17 MIG 1, 2, 3, 4

Silver color
Wing tanks

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: High cirrus clouds; visibility much reduced in thick haze below about 15,000 ft.

| | BLUE 3 | BLUE 4 |
|---|---|---|
| Altitude: | --15,000 ft-- | |
| Heading: | -----SW------ | |
| Speed: | 300 to 350-kt IAS | |
| Fuel State: | Approximately 5000 lb | |
| Flight Formation: | Co-altitude, BLUE 4 behind and to the right of BLUE 3 | |

## 5. INITIAL DETECTION

BLUE 3 (Front) sighted four aircraft at 9 o'clock, level, about 5 mi. closing, coming out of the sun. BLUE 3 (Back) may have seen them at about the same instant. They were not immediately identified and an ID pass was initiated. They were identified as MIG-17s at about 1.5 mi. There had been some MIG warnings earlier. There was no warning of this specific encounter.

## 6. ACTION INITIATED

BLUE element broke left into the flight of four aircraft for an ID pass, jettisoning fuel tanks.

## 7. SITUATION DEVELOPMENT

Following the F-4s' pass through the MIG formation, they commenced a climbing turn to engage. When they had completed about 150° of the turn, MIGs were observed closing from the rear hemisphere, firing guns, but with apparently insufficient lead and out of range. The F-4s commenced climbing in afterburner with apparently two MIGs following. Both MIGs fell off in the climb. BLUE 4 then went into a dive, leveling out on the tail of a MIG, and downing the MIG with one SIDEWINDER. BLUE element then departed the area due to low fuel.

[redacted]

8. ORDNANCE

EVENT I-29

| | SIDEWINDER AIM-9B | SPARROW AIM-7D | Remarks |
|---|---|---|---|
| BLUE 3 | 0/0 | 0/0 | |
| BLUE 4 | 1/1 | 0/0 | Missile guided up the tail pipe and exploded. |

9. EQUIPMENT PROBLEMS

BLUE 4

Following engagement, and while trying to rendezvous with tanker, radar became inoperative. Steering dot was out of position in back seat, causing Back to give erroneous steering information while tracking MIG.

Guard frequency receiver inoperative, discovered only after return to base.

10. AIRCREW COMMENTS

| Experience | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 3 | | | | |
| Front | ------ | Unknown | ------- | Considerable ADC experience. |
| Back | 700 | 500 | ? | Had commenced his combat tour at Udorn in Feb 1966. Had observed one SIDEWINDER firing in training. No air-air gun experience. |
| BLUE 4 | | | | |
| Front | --- Not interviewed --- | | | |
| Back | 500 | 250 | ? | Had commenced combat tour at Udorn in Feb 1966. All F-4 time in back seat. No air-air gun or missile experience. |

Comments on this Encounter

BLUE 3 Back

The action was carried out as planned, i.e., in an engagement, outclimb the MIG-17.

BLUE 4 Back

If you get into a turning or up and down fight, the only thing to do is go "boresight" and keep your head out of the cockpit. In extreme maneuvers there is nothing you can do in search mode.

Confidence in SPARROW was low at this point; there had been 13 firings with no hits in the previous week.

While on RESCAP had radar on 25-mi scale, spent 20 to 30 percent of time or less looking at radar. Rest of the time looking outside.

MIGs were apparently ground controlled: (1) came out of the sun; (2) waited until F-4s low on fuel before closing; (3) were coming right toward the F-4s but apparently didn't see them until they were very close.

F-4s did not maintain flight integrity during the hassle. Probably would not have gotten the kill if integrity had been maintained.

Training was not really adequate for this engagement, didn't know what the Back should do in a hassle such as this.

Would have liked to have been able to identify the MIGs earlier, in time to make a head-on SPARROW attack.

Enemy pilots in this encounter did not seem too good: (1) when F-4s flew through them they scattered; (2) they made one pass and started firing out of range and out of angle; (3) made the mistake of trying to climb with the F-4s.

Comments from Overall Experience

BLUE 3 Back

Does not have confidence in radar-guided air-air missiles.

The two-man crew and extra eyes are an asset in an area where you must look out for SAMs.

It is desirable to have SAM warning equipment on a fighter.

BLUE 4 Back

The 100-mi scale on the radar scope is of no value in air-air combat. A MIG-21 may give you a good painting out to 35 mi. You might want a longer scale to find a tanker.

There is no need for a pilot in the back seat of an F-4.

Comments from Overall Experience (Continued) EVENT I-29

BLUE 4 Back

It is a fallacy to say that you can bring the F-4C home and land it solely from the back seat: You've got to blow the gear down and then there is no antiskid system; there is no drag chute handle; there are no fuel gauges or switches; you may be limited to using internal fuel; you can't dump fuel or can't jettison tanks; you can't go into or out of AB.

A gun would be nice in an F-4C as long as it was clearly understood that it was only a weapon of last resort. Soviet fighters are more capable than U.S. aircraft inside gun range.

## 11. DATA SOURCES

Project Interviews: BLUE 3, (Back) (3/11/67); BLUE 4, (Back) (3/17/67); BLUE 1, (Front) (3/9/67).

Letter Account: BLUE 3, (Front) (3/67)

Messages:

7AF OPREP-3 300614Z Apr 66, DOCO-0 18703
7AF OPREP-4 300800Z Apr 66, DOCO-0 18708
7AF OPREP-3 301121Z Apr 66, DOCO-0 18710
CINCPACAF Intelligence Summary 302104Z, DIE 20530 Apr 66.

Other: USAF Fighter Weapon School Combat Analysis Division (CAD) Bulletin #4, 1966.

## 12. NARRATIVE DESCRIPTION

$T_0$ - BLUE flight, consisting of BLUE 3 and 4, had been on a RESCAP station for about an hour when a flight of unidentified aircraft was sighted at 9 o'clock almost simultaneously by BLUE 3's Front and Back. They bogeys were up-sun, approximately 5 mi, level, and could not be identified at that range.

BLUE flight jettisoned their tanks and went into a hard left turn, using afterburner, to make a head-on ID pass.

$T_1$ - BLUE flight identified the aircraft as MIG-17s at about 1.5 mi, as they steadied out of their turn.

$T_2$ BLUE flight passed directly through and close aboard the flight of four MIGs, at approximately 15,000-ft altitude, and then started a 40° bank, easy-climbing left turn, possibly using afterburner, with BLUE 4 maintaining a close combat wing on BLUE 3.

Two of the MIGs then apparently turned hard and followed in an attempt to execute a gun attack. Action of the other two MIGs was not observed again.

$T_3$ - BLUE flight had turned approximately 150° when BLUE 3 sighted two MIGs, pursuing them at 7 or 8 o'clock. BLUE 3 and 4 then leveled their wings and continued their steep climb, now in afterburner.

$T_4$ - The lead MIG was observed to be firing at BLUE 4, but apparently out of range and angle. There were no hits. BLUE 4 then, continuing his climb, went into a left turn. BLUE 3, in an attempt to get behind the near MIG, went into a high-g barrel roll. With BLUE 3 and 4 pulling away from the enemy, the second MIG was observed to fall off about this time.

$T_5$ - During the barrel roll BLUE 3 realized if he continued the roll he would be in front of the lead MIG at decreased range and elected to level his wings and continue the afterburner climb. BLUE 4 rolled almost inverted to the right pulling the nose well below the horizon in afterburner as he observed the lead MIG fall off straight ahead and then roll right.

$T_6$ - BLUE 4 lost sight of the leading MIG but as BLUE 4 descended he observed one of the MIGs crossing right to left, in a shallow climb, in front of him. He went into a hard left, nose-low turn attempting to get around the MIG.

$T_7$ - In his turn, and bottoming out, BLUE 4 sighted another MIG at his 10 o'clock, about 3 mi, slightly high, opening, traveling straight and level. He continued his turn to pursue this MIG.

$T_8$ - A boresight radar lock-on was acquired and BLUE 4 continued to track the MIG with the pipper for several seconds closing as Back gave him range information.

$T_9$ - BLUE 4 fired a single SIDEWINDER with a good tone well within the SIDEWINDER envelope, in very near 1-g flight. It guided to a direct hit. The MIG was observed to break in two and crash as BLUE 4 egressed the area due to low fuel state (about 3500 lb). The MIG pilot was observed to eject with a good chute.

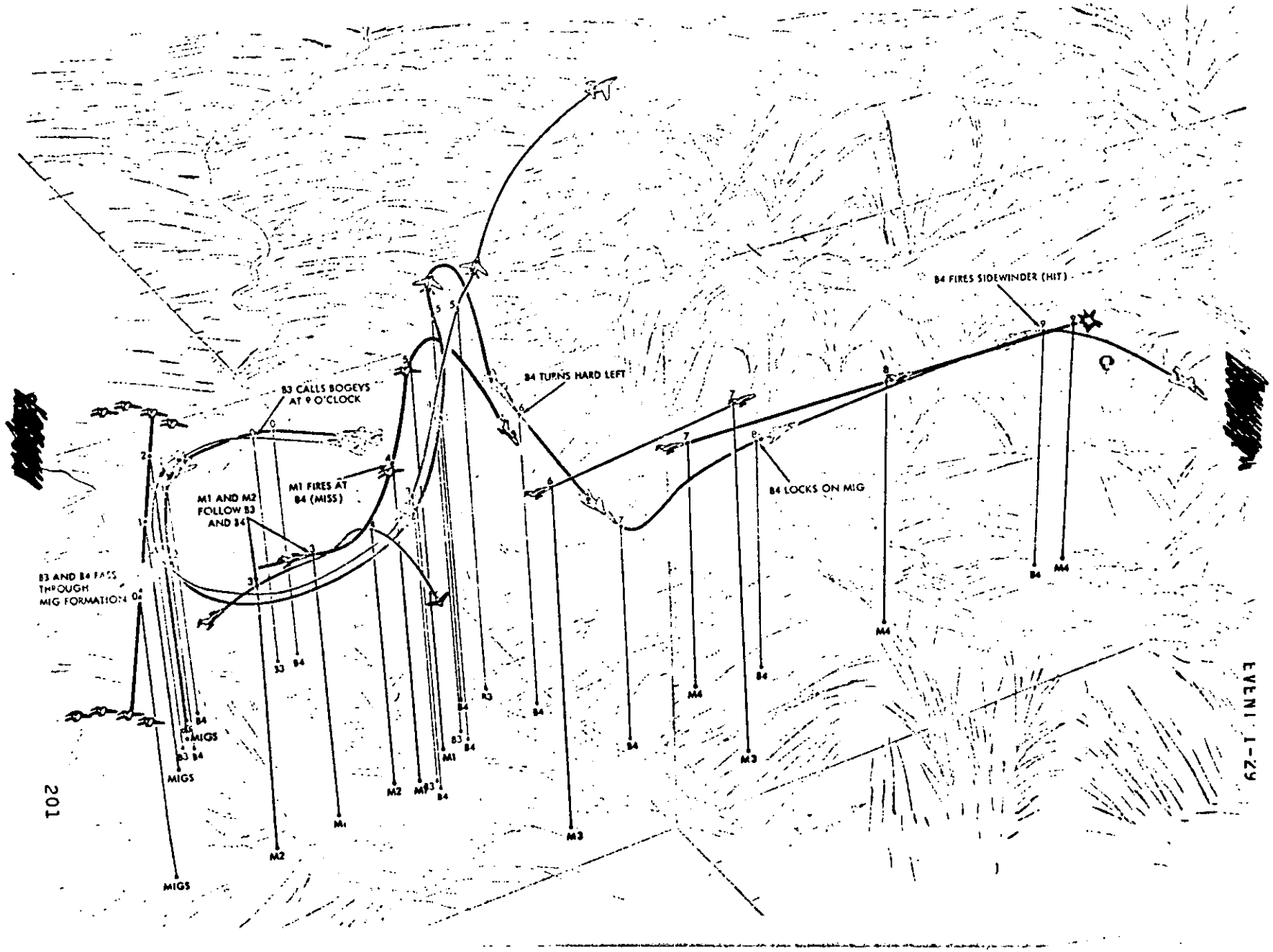
BLUE 3 and 4 did not rejoin but egressed individually. BLUE 4 attempted rendezvous with a tanker but his radar went out in reduced visibility. When 56 mi from Udorn, at 26,000 ft, 800 lb of fuel, BLUE 4 elected to return to base without attempted refueling. He shut down at Udorn with 400 lb of fuel.

EVENT I-29 SUMMARY

| Time Mark | Action Aircraft (BLUE 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2,3,4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | 320-kt IAS<br>5000 lb fuel<br>15,000-ft altitude | Element breaks left into bogeys, jettisons tanks, B4 takes position in fighting wing, increases speed (possibly into AB) | | B3 called bogeys at 9 o'clock | Level, no precise formation, roughly line abreast | B3 observed 4 aircraft closing from 9 o'clock level, about 5 mi, coming out of sun |
| $T_1$ | B3 and B4 steadying up from turn, same altitude | | | B3 calls "They're MIGs" | Straight and level in extended root formation | Distance to MIGs about 1.5 mi. MIGs are silver with red stars, readily identified as MIG-17s |
| $T_2$ | | B3 and B4 pass through MIG formation and go into medium left climbing turn in AB or at least full military power. | | | Continue straight and level | |
| $T_3$ | In AB, at 18,000 ft | B3 and B4 steady out of turn and increase rate of climb. | | | 2 MIGs follow F-4s at ~16,000 ft and climbing | B3 sights 2 MIGs closing at 7-8 o'clock |
| $T_4$ | B3 and B4 in AB, at 22,000 ft | B3 and B4 continue climb, with B4 going into left turn. Then B3 goes into barrel roll | | | M1 firing at B4. M2 falls off, about 19,000 ft | MIG apparently out of range and angle for firing. |
| $T_5$ | B3 in barrel roll, in and out of AB. B4 in AB at about 25,000 ft | B3 part way thru, comes out of barrel roll and continues climb. B4 goes into hard diving turn to right. | | | M1 falls off straight ahead and rolls right from about 22,000 ft | B3 did not complete barrel roll because he would have rolled out in front of MIG |
| $T_6$ | B4 in AB, descending, probably supersonic at about 19,000 ft | B4 goes into hard left turn (6 or 7 g) | | | | B4 sees MIG in shallow climb, ahead at 2 mi.<br>Movements of B3 unclear from this point on. |

EVENT I-29 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2,3,4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_7$ | B4 bottoming out, supersonic, at about 14,000 ft | | | B4 Front tells Back to "Go boresight and lock on" | | B4 sees another MIG at 10 o'clock, up 2000 ft straight and level at 3 mi, opening. Decided to go after MIG. |
| $T_8$ | B4 in AB Mach 0.9, 16,000 ft | B4 pulls in behind MIG, Locks on in boresight, Comes out of AB | | B4 Back calling ranges to target and calling "Steer left, steer left" | Straight and level | B4 Front did not steer left in response to Back. Later discovered that steering dot in error |
| $T_9$ | Mach 0.9, 1 g | B4 fires one SIDEWINDER | | B4 "I got one with a SIDEWINDER" | | Range to target at firing is 1 to 1-1/2 mi. Missile guides up tail pipe and explodes; MIG breaks in two behind cockpit; pilot ejects with good chute |
| | B4 fuel 3500 lb | B3 and B4 depart the area | | | | |



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EVENT I-30

Aircraft Involved: Four F-4Cs vs three unidentified aircraft, possible MIGs

Result: Sighting only

Vicinity of Encounter: Two sightings: 21°30'N/106°35'E, and 21°10'N/107°22'E Route Package VI

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 8 May 1966/1615H

A flight of four F-4Cs (BLUE flight) on a MIGCAP mission, escorting F-105 flights which were striking JCS Target 18.23 or .24 (bridges along the Northeast Railroad) vicinity of 21°30'N/106°35'E. BLUE flight was in a NW/SE racetrack orbit over the above coordinates at 15,000 ft.

## 2. MISSION ROUTE

BLUE flight departed Danang and rendezvoused over the Gulf of Tonkin for refueling and join up with the F-105 strike flights. After refueling, the F-4s followed the strike flights west to the target area north of Haiphong at approximate coordinates 21°31'N/106°35'E. After a midair collision, the flight proceeded due east to the Gulf then south over the water to recover at Danang.

## 3. AIRCRAFT CONFIGURATIONS

F-4C (PHANTOM) BLUE 1, 2, 3, 4

4 - SPARROW (AIM-7)
4 - SIDEWINDER (AIM-9B)
3 - External fuel tanks (one 600-gal centerline tank and two 370-gal wing tanks)
All aircraft camouflage paint

Unidentified Aircraft (possible MIGs)

Silver color (no markings observed)
Swept wings

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Low-level scattered to broken clouds, tops 2000-3000 ft with several thin layers at 10,000 and 20,000 ft, and some high thin cirrus.

| | (First Sighting) BLUE 1 2 3 4 | (Second Sighting) BLUE 1 2 3 4 |
|---|---|---|
| Altitude: | -----15,000 ft----- | -----19,000 ft------ |
| Heading: | Approximately 145° in a left turn | Approximately 090° |
| Speed: | ---Mach 0.8-0.85--- | ------Unknown------- |
| Fuel State: | ------Unknown------ | ------Unknown------- |
| Flight Formation: | ----Fluid Four----- (relationship of 3 to 1 not specifically known) | 3&4 had separated; 1&2 close to each other, but not actually in formation as they were attempting to join separately--one on 3 and the other on 4 |

## 5. INITIAL DETECTION

First sighting: BLUE flight was about to roll out of a left turn on a heading of 145° in their MIGCAP orbit when BLUE 4 looked down through the cloud layers and saw two unidentified swept-wing silver colored aircraft flying very low on an approximate reciprocal heading of 320°. These aircraft were headed in the general direction of the strike aircraft, and since all mission aircraft were known to be camouflaged, BLUE 4 called out, "MIGs below." Both front and back seat BLUE 4 observed the unidentified aircraft.

Second sighting: As BLUE 1 and 2 were approaching the coast line on an easterly heading to join and escort their damaged element back to Danang, BLUE 1 (Back) looked back and sighted an unidentified silver aircraft, co-altitude, and 2000-3000 ft in trail with BLUE 2. BLUE 1 could see no markings as he observed the unidentified aircraft making a turn away toward the north, apparently without firing.

[redacted]



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6. ACTION INITIATED EVENT I-30

First sighting: BLUE flight was already jinking against AA fire, but initiated a left descending turn back in the direction of the two unidentified aircraft.

Second sighting: BLUE 1 and 2 broke left toward the unidentified aircraft, however BLUE 2 never saw him and BLUE 1 lost visual contact during the break.

7. SITUATION DEVELOPMENT

BLUE 4 (Front and Back) made the initial sighting during second orbit on CAP. As the flight turned back toward the sighting, BLUE 3 and 4 had a midair collision. The damaged aircraft (BLUE 3 and 4) separated and headed east for the Gulf. BLUE 1 and 2 followed to escort BLUE 3 and 4, and the second sighting by BLUE 1 (Back) was made as their element neared the coast during egression.

8. ORDNANCE

No ordnance was fired by any aircraft concerned.

9. EQUIPMENT PROBLEMS

None mentioned except for damages received as a result of the midair collision.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | ----------Unknown---------- | | | |
| BLUE 2 | ----------Unknown---------- | | | |
| BLUE 3 | ----------Unknown---------- | | | |
| BLUE 4 | | | | |
| Front | 1950 | 475 | 80 | No missile firing experience at time of encounter. |
| Back | -------Not interviewed------- | | | |

Comments on this Encounter

BLUE 4 (Back) - Excessive chatter on radio circuit saturated the net to the point that BLUE 2 did not respond to second MIG call until repeated several times.

Comments from Overall Experience

BLUE 4 (Front) - Aircraft should be designed and outfitted for a singular mission. Should not have one aircraft to be used for both interceptor and strike missions. For air-to-air role the F-4 needs radar, internal gun, plus missile capability. The back seat should be occupied by a professional Radar Intercept Officer (RIO) and not a pilot. Present back seaters spend too much time trying to get to the front seat, and not enough becoming truly proficient with the fire control system. Further, without back seat controls, the equipment layout is better. Pilot feels an urgent need for a reliable and positive IFF/SIF system for ID purposes. He feels the SPARROW is next to useless because a visual ID must usually be made before missile can be fired. He had an experience of receiving "missile free" on a bogey approaching EC-121, but he restrained to visually identify and found it to be a friendly A-3.

11. DATA SOURCES

Project Interviews:

BLUE 1 (Front) was contacted 9 Jan 67, but no formal interview; BLUE 2 (Front) 18 Jan 67; BLUE 3 (Back) 16 Mar 67; and BLUE 4 (Front) 24 Jan 67.

Messages, Reports:

35 TFW OPREP-3 FASTEL 196, 8 May 66

12. NARRATIVE DESCRIPTION

The initial sighting was made by BLUE 4 during the last 20° of a left 180° turn during the flight's second orbit on their CAP position. The flight was in fluid-four formation jinking against radar AA fire which was detonating at their altitude and in their vicinity. After the sighting of silver aircraft, the flight initiated a left descending turn toward the position of the unidentified aircraft. During this turn a "missiles away" call was given, probably by an IRON HAND flight in the target area. BLUE 4 was flying BLUE 3's wing in tactical formation holding him at the low 10-11 o'clock position 500-1000 ft. BLUE 4 elected to roll right and check for SAMs; he did so, and as he rolled back left, still in approximately 45° of the right bank, his aircraft collided with BLUE 3 belly to belly. BLUE 3 (back) observed the two aircraft approaching a collision situation, but assumed the aircraft would roll out safely. At the last minute he took control, calling the aircraft commander's attention to the danger. Both aircraft were damaged and placed momentarily out of control, but they recovered separately and

[redacted]



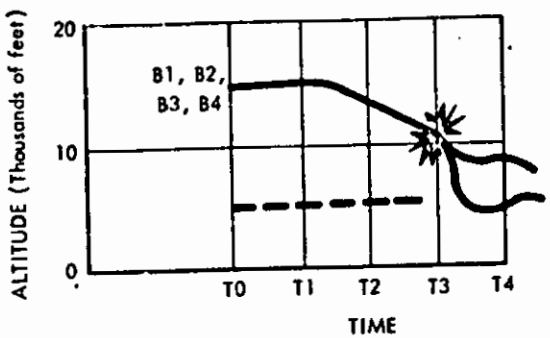
turned east to get out over the water. BLUE 1 and 2 followed to join and escort the crippled aircraft. Approximately 15 mi west of the coast, BLUE 1 (Back) noticed another unidentified aircraft in BLUE 2's 6 o'clock position, level, at approximately 3000-ft range. BLUE 1 called, "There's a MIG on your tail," but at this time the unidentified aircraft was making a turn away to the north without firing. Both BLUE 1 and 2 broke left, however visual contact was lost during the turn. BLUE 1 and 2 turned back east, reforming by DF bearing on BLUE 3 and 4, and continued the escort to Danang. All aircraft landed safely though both BLUE 3 and 4 were badly damaged.

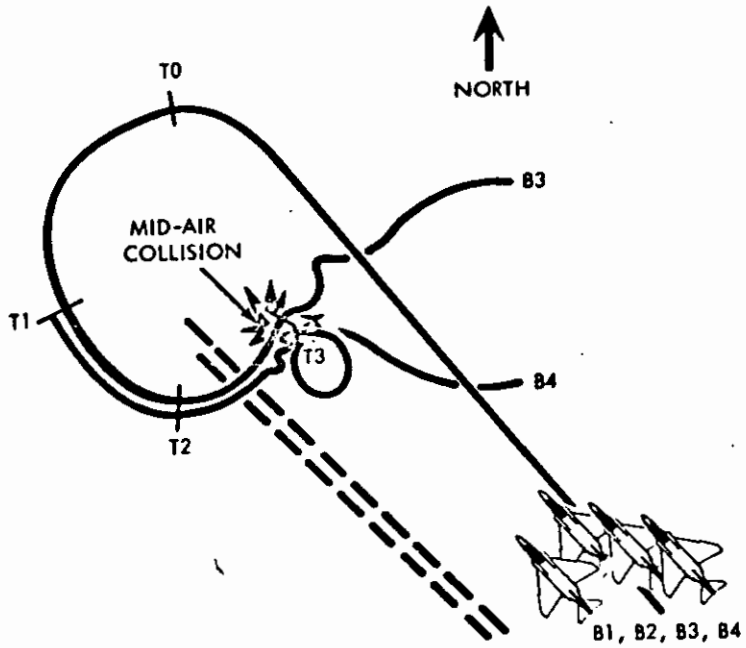
The backseaters were looking at the radar scope about one-fourth to one-third of the time.

[redacted]

EVENT I-30 SUMMARY (First Sighting)

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (Possible MIG 1, 2, 3) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | Left 180° turn 15,000 ft Mach 0.8-0.85 | MIGCAP orbit | BLUE flight in fluid-four formation | | | |
| $T_1$ | Left 180° turn heading 145° 15,000 ft Mach 0.8-0.85 | MIGCAP orbit -- B4 sights two unidentified silver aircraft low on almost reciprocal heading. | Fluid-four formation | B4 calls, "MIGs below." | | |
| $T_2$ | BLUE flight in left descending turn | BLUE flight initiates a left descending turn toward unidentified aircraft. | Fluid-four formation | IRON HAND flight calls, "Missiles away." | | |
| $T_3$ | Left descending turn | B4 rolls aircraft 90° right to check for SAMs; then rolls back left and at 45° right bank saw B3 closing. B4 tried to bank back to right but collided belly to belly with B3. | B3&4 midair collision right wing to right wing, belly to belly B1&2 not involved | B3&4 each call being hit | | Both B3&4 are damaged and momentarily lose control -- they regain control and egress separately to the E. |
| | | | | | | |


ALTITUDE (Thousands of feet)
20
10
0
B1, B2,
B3, B4
T0
T1
T2
T3
T4
TIME


NORTH
T0
B3
MID-AIR
COLLISION
T1
T3
B4
T2
B1, B2, B3, B4

EVENT I-30

Aircraft Involved: Four F-4Cs vs three MIG-17s
Result: No damage
Vicinity of Encounter: 21°28'N/104°38'E
Route Package V

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 10 May 1966/1810H

BLUE flight (F-4Cs) was on a MIGCAP 75 mi NW of Hanoi. GREEN flight (two A-1s and two CH-3s) were on a rescue mission and had just picked up a downed pilot. A C-130 (CROWN) acting as Airborne Air/Sea Rescue Control was in the area.

2. MISSION ROUTE

BLUE flight refueled and returned to an orbit point on the Red River north of Yen Bai. GREEN had made the rescue and was heading 190°, 13,000 ft.

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

4 - SPARROW (AIM-7)
4 - SIDEWINDER (AIM-9)
2 - 370-gal wing tanks

A-1 and CH-3 GREEN 1, 2, 3, 4

Unknown

MIG-17 MIG 1, 2, 3

Air-to-air rockets or missiles

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Broken to overcast, 4/8 to 7/8, with 10,000-ft tops.

BLUE flight in orbit at 25,000 to 30,000 ft. Fuel state was described as "very good."

GREEN flight had completed a rescue pickup and was heading 190°, 13,000 ft about 30-35 mi south of BLUE flight.

5. INITIAL DETECTION

GREEN flight saw three MIG-17s on a parallel course 6000 ft above.

6. ACTION INITIATED

GREEN flight called the rescue force commander (CROWN) which called BLUE flight.

7. SITUATION DEVELOPMENT

BLUE flight, after some communication difficulty headed south to intercept the MIGs. MIGs fired one or two rockets or missiles at GREEN 1 and BLUE flight chased the MIGs from the area. BLUE flight followed the direction they thought the MIGs went, but MIGs were not seen again by BLUE flight. BLUE and GREEN flights were on different frequencies.

8. ORDNANCE

One rocket or missile fired from a MIG. It is unknown whether it was guided or not.

9. EQUIPMENT PROBLEMS

None reported.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions |
|---|---|---|---|
| BLUE 1 | 3500 | 600 | 50 |
| BLUE 3 | | 400-500 | 30-40 |

Comments on this Encounter

BLUE flight expressed concern over 3 to 4 min wasted in getting position of GREEN flight from CROWN. CROWN was slow answering requests from BLUE flight. GREEN flight split into two sections which was not known by BLUE flight.

11. DATA SOURCES

Project Interviews: BLUE 1(L) - Front, 26 Jan 67
BLUE 2 - Back, 10 Mar 67
BLUE 3 - Front, 9 Mar 67
BLUE 4 - Front, 13 Dec 66

Messages, Reports:
7AF OPREP-3 1020254 DOCO-0 19246 May 66
7AF OPREP-4 1016542 DOCO-0 19235 May 66
DIA INTSUM 10 May 66

12. NARRATIVE DESCRIPTION

BLUE flight had been on station, 75 mi NW of Hanoi. They had just finished air refueling and were back in their MIGCAP orbit. During this time GREEN flight had successfully completed the rescue and had started back. After about 20 min in the orbit for the second time, BLUE flight received a call from control advising that GREEN flight had been intercepted by MIG aircraft.

GREEN flight was heading 190° at 21°28'N/104°38'E about 13,000 ft when three MIG-17s were sighted 6000 ft above on a parallel course. The MIGs then made three descending turns over GREEN flight coming as close as 2 mi and 1000 ft high. GREEN flight did not observe a firing pass. During the attack GREEN flight descended rapidly exiting towards low clouds.

BLUE flight was on one communication channel with CROWN and GREEN flight was on a different channel. It took BLUE three to four minutes to get GREEN's position via CROWN. BLUE flight finally was able to estimate that GREEN flight was approximately 45 mi south of the pickup point, and BLUE flight headed south.

The weather under and immediately south of the CAP orbit was about 7/8's broken clouds which were close to the tops of 10,000-ft mountains, consequently BLUE flight terminated the let down above this cloud deck at approximately 12,000 ft. BLUE 2, 3 and 4 at this time got a radar contact at 12 o'clock, at between 15 to 20 mi. BLUE 1 and BLUE 2 were in the lead with BLUE 2 about 200 ft back and to the right of BLUE 1, BLUE 3 and BLUE 4 were back in tactical formation about 3000 ft behind the lead element left and slightly higher. BLUE 1 was searching low in one-bar scan (MAP-B mode) with a range setting of 25 mi. Since BLUE 1 did not have a contact, BLUE 2 was given the lead.

As the flight continued south, closing on the radar contact, all missiles were tuned. At a range of 10 mi from the radar targets the flight jettisoned external tanks. By this time the cloud cover had improved to 4/8 to 5/8 with holes, with BLUE flight above the cloud deck. Unknown to BLUE flight, the rescue force had split into two groups, with the MIGs circling the trailing element. The forward element was separated by several miles. BLUE apparently had radar contact with the forward element and on overflying the trailing element dropped the tanks between the MIGs and the second element by sheer coincidence.

BLUE flight's descent was continued to about 8000 ft. At this time BLUE 1 and BLUE 2 (L) saw an A-1 at 12 o'clock low running underneath the clouds at about 5000 to 6000 ft. BLUE 1 resumed the lead and BLUE 1(L) and BLUE 2 made a hard left-hand turn (5-6g) and descent in order to reduce speed and reidentify the A-1. During the turn radar contact was lost. At 3000 to 4000 ft all visual contact with the bogeys was lost.

As BLUE 1 and BLUE 2 flew over the rescue forces and turned, BLUE 3 and 4 arrived in the area and BLUE 3 saw two A-1s and a helicopter below to the right. As he was looking down through a break in the clouds, BLUE 3 noticed a smoke trail from what he thought was a missile (described as SIDEWINDER-type trail) or a rocket. As BLUE 3 was ready to roll down through the clouds, BLUE 4 called "SAM break left," thinking the missile trails were SAMs meant for BLUE flight. After breaking left BLUE 3 and BLUE 4 continued down through the cloud layer and again picked up blips at 10 to 15 mi heading away. BLUE 3 accelerated buth both BLUE 3 and BLUE 4 were low on fuel, so the decision was made to break off and return. It was reported that BLUE 4 (Back) saw one aircraft that "looked like a MIG."

BLUE 1 and 2, after losing contact continued on a basic heading of 060° in an attempt to pick up the MIGs if they were heading back to Hanoi. They searched until they reached the proximity of the SAM defenses and low fuel state (7500 to 8500 lb for BLUE 1).

On return to the original area not more than 3 min later, BLUE 1 also saw the smoke trails but was unable to identify them. BLUE flight observed the two smoke trails at 21°15'N/104°20'E.

[redacted]

EVENT I-32

Aircraft Involved: Three F-4Cs and one RB-66C vs four MIG-17Ds

Result: One MIG-17 destroyed

Vicinity of Encounter: 22°01'N/104°15'E, Route Package V

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 12 May 1966/1622H

Three F-4C aircraft (BLUE flight) escorted an EB-66 aircraft (GREEN flight). The EB-66 mission was to provide active/passive ECM support for armed reconnaissance and IRON HAND aircraft. No BIG EYE (EC-121) was on station.

## 2. MISSION ROUTE

The EB-66 flew from Takhli to 18°02'N/103°01'E to rendezvous point (19°30'N/103°40'E) then to IP at 21°40'N/104°25'E for a N-S orbit. The F-4C flight (three F-4Cs; the fourth aircraft did not launch due to maintenance nondelivery) flew from Danang to the WHITE ANCHOR air-refueling track (17°43'N/104°03'E) to drop off at 19°00'N to the rendezvous joining with the RB-66 and then to the orbit area. Flight altitude in the orbit area was 28,000 ft.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3

4 - SPARROW (AIM-7E)
4 - SIDEWINDER (AIM-9B)
2 - 370-gal outboard wing tanks
1 - 600-gal centerline tank
All radars operating, TACAN off and IFF off
Camouflage paint

EB-66 GREEN 1

Believed not camouflaged
Various active and passive ECM gear operating including chaff

MIG-17D MIG 1, 2, 3, 4

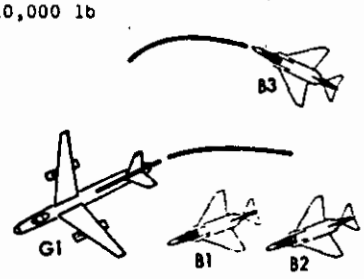
Guns and cannon
Silver color

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Very good, visibility was exceptional (75+ mi)

| | BLUE 1 2 3 | GREEN 1 |
|---|---|---|
| Altitude: | --28,000 ft-- | 28,000 ft |
| Heading: | 230° (in process of completing left turn) | |
| Speed: | 0.82-0.86 Mach | 0.72-0.80 Mach |
| Fuel State: | 9500-10,000 lb | |

Flight Formation:




## 5. INITIAL DETECTION

Visual sighting of three MIGs by BLUE 3 (both crew members) at 9 to 10 o'clock to BLUE 3 and about 1 to 2 o'clock to GREEN 1 and BLUE 1 and 2. BLUE 3 called out MIGs to his flight. At approximately this same time GREEN 1 called that someone had fired on him.

## 6. ACTION INITIATED

After passing GREEN 1 and BLUE 1 and 2, the MIGs sharply turned to their right, climbing and reversing their direction to reattack. BLUE 3 called for all to jettison tanks and for GREEN 1 and BLUE 1 and 2 to break right. BLUE 3 started a left turn toward the MIGs.

[redacted]

[redacted]

7. SITUATION DEVELOPMENT EVENT I-32

The lead MIG passed BLUE 1 and 2 and continued after GREEN 1 who had turned back to the left and was proceeding out of the area. BLUE 3 pursued MIG 1 and destroyed him with a SIDEWINDER. BLUE 1 and 2 meanwhile were attacked by MIGs 2 and 3, continued turning and eventually disengaged.

8. ORDNANCE

(No. fired/No. hits)

| | SPARROW AIM-7 | SIDEWINDER AIM-9 | CANNON | Remarks |
|---|---|---|---|---|
| BLUE 1, 2 | 0/0 | 0/0 | | |
| BLUE 3 | 0/0 | 2/1 | | One fired as MIG did a split-S, missed. Second guided up tail pipe. |
| MIG 2, 4 | | | Fired/0 | |
| MIG 1, 3 | | | | Not observed firing. |

9. EQUIPMENT PROBLEMS

BLUE 2 - Centerline tanks did not jettison from aircraft.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | 3600 | 600 | 60 | |
| Back | ----------Unknown---------- | | | |
| BLUE 2 | | | | |
| Front | 4000 | 325 | 30 | |
| Back | 600 | 400 | 80 | |
| BLUE 3 | | | | |
| Front | ----------Unknown---------- | | | |
| Back | 750 | 500 | 95 | |

Comments on this Encounter

BLUE 1 (Front) - Prebriefed information on MIG-17 performance and methods of engaging them was accurate; they turned very well, but there was no trouble obtaining vertical separation or out-accelerating them. An internal gun might have provided an opportunity to take some shots at two different MIGs during the encounter when aircraft were too close for missile firing. A shorter range missile would also have helped. Impression was that the MIGs were being vectored (GCI) into a 6 o'clock position and that the orbit turn resulted in the head-on pass that initiated the engagement.

Comments from Overall Experience

BLUE 1 (Front) - In spite of the fact that the single ship destroyed a MIG, it is difficult to operate with an odd man on an escort flight.

11. DATA SOURCES

Project Interviews:

BLUE I (Front) - 8 Mar 67
(Back) - Mar 67
BLUE II (Front) - 18 Jan 67
(Back) - 7 Mar 67
BLUE III (Front) - 2 Nov 66
(Back) - 3 Mar 67

Messages, Reports:

41TRS OPREP-4 41TRS FASTEL 032 May 66
7AF OPREP-3 DOCO-0 19369 May 66
7AF OPREP-3 FASTEL DOCO-0 107 May 66
7AF OPREP-3 FASTEL DOCO-0 108 May 66
USAF Tactical Fighter Weapons Center, CAD Bulletin #7, 12 May 66



[redacted]

[redacted]

12. NARRATIVE DESCRIPTION EVENT I-32

GREEN 1 had just rolled out of a left turn at the north end of his orbit on a heading of 210°. BLUE 1 and 2 were in the process of crossing from the outside to the inside of the turn (right to left). BLUE 3 was on the outside of the turn approximately 2 mi and slightly back. BLUE 3 sighted three aircraft in a loose left-echelon in a slight climb at his 10 o'clock position. BLUE 3 called out the bogeys, then a few seconds later identified them as MIGs. The three MIG-17s were heading 050°, almost on a reciprocal heading to BLUE flight. GREEN 1 called that he had been fired at. As the MIGs passed the GREEN and BLUE flights, they pulled up in a right chandelle, dropping in trail as they made a right diving attack on GREEN 1 and BLUE 1 and 2. BLUE 3 called for a right break and to jettison tanks. BLUE 3 started an easy left turn toward the MIGs.

BLUE 1 in his right turn saw two MIGs (MIG 1 and 2) overshoot. The MIGs, after overshooting, did a defensive split; MIG 1 going high and MIG 2 going low, turning to the left. BLUE 1 maneuvered behind MIG 1. BLUE 2 called at this time that BLUE 1 was being fired on and to break right, which BLUE 1 and 2 did. BLUE 1 saw MIG 1 turn left toward GREEN 1, who after the initial right break turned back left and was descending, making S-turns. BLUE 1 saw BLUE 3 pass overhead after MIG 1 as he broke right.

MIG 1 being high and at 6 o'clock to GREEN 1 rolled inverted. BLUE 3 launched a SIDEWINDER at the MIG just as the MIG began descending in what appeared to be a split-S. The MIG pulled down close to GREEN 1's altitude and rolled out. BLUE 3 still behind the MIG, fired the second SIDEWINDER at about the same time the MIG lit afterburner. The MIG took a direct hit and disintegrated. BLUE 3 joined with GREEN 1 and both withdrew from the area.

BLUE 1 and 2 in the meantime were in a right break, with MIG 3 and 4 in pursuit. MIG 3 overshot and BLUE 1 reversed into him, gaining a 6 o'clock position; too close, however, to fire a missile. BLUE 2 called BLUE 1 that MIG 4 was at BLUE 2's 5 o'clock position and firing. BLUE 2 started a right climbing turn in afterburner, attempting to out-climb and gain separation on the MIG. BLUE 1 broke off his attack on MIG 3 to give assistance to BLUE 2. MIG 3 dropped down and to the left, out of the flight. MIG 4 continued to chase BLUE 2 for approximately 180° of turn firing four bursts of cannon fire. As BLUE 2 gained altitude and separation MIG 4 disengaged down and left. BLUE 1 and 2 unloaded and accelerated then turned back, "after picking up a good head of steam" (1.2-1.5 Mach), but were unable to acquire the MIGs again. BLUE 1 and 2 later joined with GREEN 1 and BLUE 3 on the return route. BLUE 1 and 2 recovered, without damage, at Udorn due to minimum fuel. BLUE 3 continued to Danang. GREEN 1 recovered at Takhli.

[redacted]

## EVENT I-32 SUMMARY

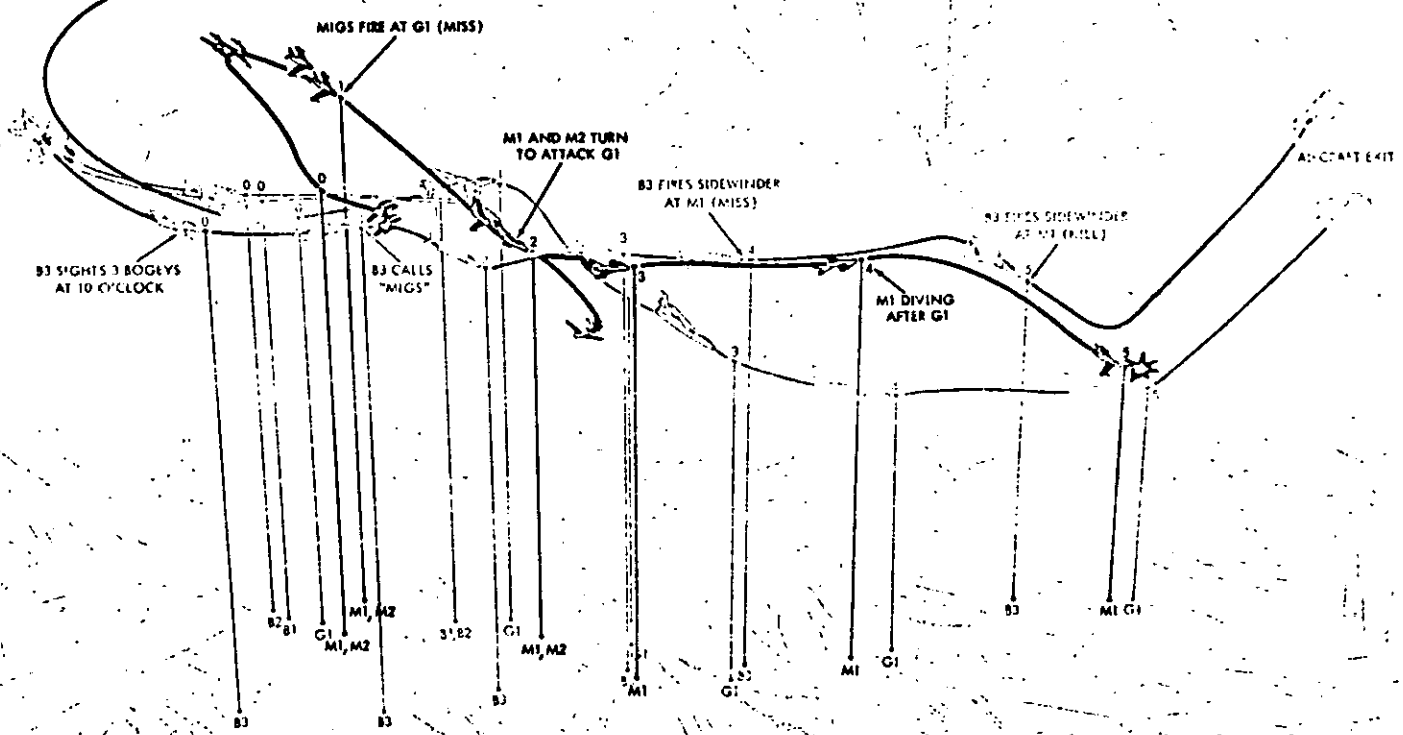
| Time Mark | Action Aircraft (BLUE 1, 2, 3) | | Other Friendly (GREEN 1) | Communications | Enemy Actions (MIG 1,2,3,4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | G1 altitude 28,000 ft, 0.72 Mach, 210°<br>B1&2 28,000 ft, 0.85 Mach<br>B3 30,000 ft, 0.85 Mach, 210°<br>Fuel 10,000 lb | B3 sighted three bogeys at his 10 o'clock (1 o'clock to G1 and B1&2) | G1 had just rolled out of a left turn heading 210° | No MIG alert from BIG EYE which aborted due to engine failure.<br>B3 calls out "bogeys" to flight. | Three MIG-17s in loose echelon to the left, making a head-on pass on G1 | B1&2 crossing behind G1 to the inside of the turn B3 2 mi out on the right slightly back<br>BINGO fuel 9500 lb<br>B3 in HEAT mode, radar on, armed in 3-bar scan.<br>B1 & 2 25-mi scan, radar on, armed. |
| $T_1$ | | B3 identifies the bogeys as MIGs. G1, B1&2 break right. | G1 is fired at by MIGs in head-on pass. G1 right turn | G1 calls that he has been fired at.<br>B3 calls that the bogeys are MIGs and for B1&2 and G1 to break right. | MIGs fire at G1 as they pass. Pull up in right chandelle going to an in-trail formation | B2 unable to jettison centerline tank |
| $T_2$ | G1, B1&2 in right turn 28,000 ft<br>B3 in slight left turn | M1&2 overshoot B1&2 MIGs split, M1 high, M2 low. B1 reverses in behind M1 (B1 is very close 1500-2000 ft). | G1 turns back to the left and starts a series of descending S-turns | B2 asked B3 where the MIGs were. B3 did not reply | MIGs in right diving turn attack B1&2. M1&2 overshoot B1&2 in the break. M1 goes high and in front of B1 reversing turn to the left. | B3 preoccupied in his attack did not reply to B2 call on MIG position<br>B1 is too close to fire missiles and attempts to get spacing.<br>B1 switches to HEAT mode. |

EVENT I-32 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2, 3) | | Other Friendly (GREEN 1) | Communications | Enemy Actions (MIG 1,2,3,4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_3$ | G1 S-turning and descending<br>B1&2 behind M1<br>B3 attacking M1 | B2 advises B1 he is being fired at and to break right<br>B3 attacking M1 as it turns left after G1.<br>B1&2 break right. | S-turning descending and heading in a SW direction out of the area. | B2 calls B1 that a MIG is shooting at B1 | M1&2 turn left to attack G1. M3 firing at B1 | M2 is quite low and is probably not seen by B3. B2 did not see MIGs until they were at 7 o'clock.<br>B2 sees MIGs jettison wing tanks. |
| | | NOTE: At this point the flight splits -- G1 & B3 vs M1, B1&2 vs M3&4. | | | | |
| $T_{4A}$ | G1 continuing to S-turn and descend<br>B3 attacking M1 1-1/2 mi in trail (B1&2) | M1 split-S diving after G1. B3 fires SIDEWINDER just as MIG does split-S. SIDEWINDER misses | S-turning and descending heading SW | | Split-S dive after G1 | B3 does not believe that the MIG knew he was behind him that the split-S was not a defensive maneuver but just a dive after G1 |
| $T_{5A}$ | (B1&2) | B3 fires second SIDEWINDER. Just as M1 lights AB. Missile hits M1 in the tail and the MIG disintegrates. B3 joins G1 and escorts him out of the area. | | B3 calls he got the MIG.<br>Note G1 did not hear any conversation until B3 rejoined after the MIG kill. | MIG closing on G1. Lights his AB | MIG 1 lit AB, apparently to close into a better gun-firing range. |
| | | | | | | |

EVENT I-32 SUMMARY (Continued)

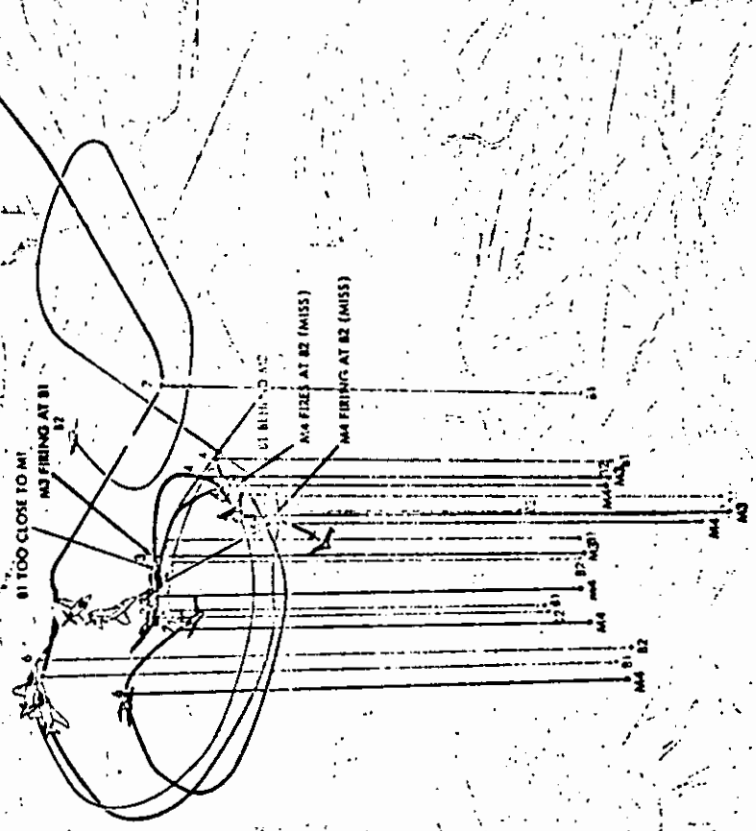
| Time Mark | Action Aircraft (BLUE 1, 2, 3) | | Other Friendly (GREEN 1) | Communications | Enemy Actions (MIG 1,2,3,4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{4B}$ | B1&2 in right break as M3 overshoots. M3 goes high, M4 low in a vertical split. (B1&2) | B1 maneuvers behind M3 after overshoot. M4 drops behind G2 and starts to fire at B2. | | | M3 overshoots B1. M4 drops behind B2 and fires. | B1 is too close to M3 to fire a missile B1 is attempting to drop back into firing position. |
| $T_{5B}$ | B1&2 in right climbing turn, AB on. (B1&2) | B2 has a MIG at 6 o'clock firing. B2 starts a right, climbing turn, outclimbing the MIG. B1 turns right breaking off his attack on M3, engages AB and attempts to assist B2. | | B2 advised B1 that B2 is receiving fire from MIG at 6 o'clock. B1 tells B2 to take the lead. | M3 falls back and left. M3 turning inside of B2's turn but dropping back. | M4 made four separate bursts at B2. Did not hit. After the right break, B2 does not think M4 was able to pull lead. |
| $T_{6B}$ | B1&2 right climbing turn, altitude 35,000 ft; air speed 220-kt IAS | M4 drops down and behind B2 turning left disengaging. B2 does right barrel roll as MIG drops back. B1&2 descend and accelerate to 1.2 Mach. | | | M4 drops back and down to the left, disengaging | B2 turned back to the N after egressing the immediate area but did not see the MIGs again. B2 in making a right, high-g barrel roll at low speed was attempting to get the MIG to spin out. The MIG broke off however, probably just prior to the roll. |
| | NOTE: There is discrepancy as to whether there were three or four MIGs. M2 was lost sight of as he went down low on the first overshoot. He may have moved back in. When M4 is mentioned this may have been M2. | | | | | |
| | | | | | | |


MIGS FIRE AT G1 (MISS)
M1 AND M2 TURN TO ATTACK G1
B3 FIRES SIDEWINDER AT M1 (MISS)
B3 SIGHTS 3 BOGEYS AT 10 O'CLOCK
B3 CALLS "MIGS"
M1 DIVING AFTER G1
B3
B2
B1
G1
M1, M2
M1
G1
M1 G1

EVENT I-32

[redacted]

EVENT I-32






[redacted]

[redacted]

EVENT I-33

Aircraft Involved: Two F-4Cs vs four MIG-17s

Result: Sighting only

Vicinity of Encounter: 21°50'N/104°00'E
Route Package V

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 30 May 1966/1750H

F-4Cs (BLUE flight) escorting two SAR helicopters.

11. DATA SOURCES

Message, Report:

7AF MSG 302313Z May 66

CINCPACFLT Staff Study 3-67

12. NARRATIVE DESCRIPTION

BLUE flight sighted four aircraft believed to be MIG-17s. The MIGs were at 22,000 ft heading 035°. BLUE flight was @ 13,000 ft, heading north. BLUE flight turned and obtained lock-on. There was no overtake and since MIGs were going away BLUE flight continued with RESCAP escort.

[redacted]

EVENT I-34

Aircraft Involved: Two F-8Es plus two F-8Cs vs four MIG-17s

Result: 1 MIG destroyed; 1 MIG destroyed, probable

Vicinity of Encounter: 21°20'N/106°30'E
Route Package VI

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 12 Jun 1966/1446H

Two F-8E (BLUE 1 and 2) plus two F-8C (BLUE 3 and 4) aircraft acting as TARCAP for an A-4 strike against the Dai Tan Military Area northwest of Haiphong. Support aircraft, BIG EYE/BIG LOOK, were also airborne.

## 2. MISSION ROUTE

Departed aircraft carrier in Tonkin Gulf about 1400H in company with A-4 strike force on an approximate heading of 360° (magnetic), climbing to an altitude of 20,000 ft. In the vicinity of Bac Long Island, the flight turned to a northwesterly heading toward a coast-in point near Cam Pha, and descended to an altitude of 2500 ft. From Cam Pha, the flight proceeded to assigned target area at low altitude. TARCAP F-8s orbited to a point 5 mi northeast of the target while the A-4s completed the attack.

## 3. AIRCRAFT CONFIGURATIONS

F-8E, C BLUE 1, 2, 3, 4

2 - SIDEWINDER (AIM-9D)
IFF and TACAN (unknown); grey/white paint
20mm guns

MIG-17 MIG 1, 2, 3, 4

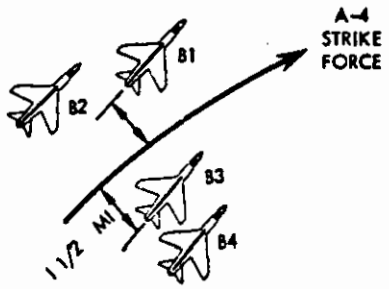
No external tanks or ordnance
Color: 2 - grey; 1 - silver; 1 - brown

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered cloubs at about 3500 ft with another cloud layer at a much higher altitude; visibility was 5 to 7 mi in haze. Sunlight penetrated the cloud layers.

| | BLUE 1 | BLUE 2 | BLUE 3 | BLUE 4 |
|---|---|---|---|---|
| Altitude: | 2500 ft | 2500 ft | 3000 ft | 3000 ft |
| Heading: | North-northeast (in slow left turn) | | | |
| Speed: | ---------- about 400 kt ---------- | | | |
| Fuel State: | Estimated 4500 lb. | | | |

Flight Formation: BLUE 1 and 2 were on the left side and above the retiring strike force, and BLUE 3 and 4 were on the right side of the strike force, slightly behind BLUE 1 and 500 ft higher.



5. INITIAL DETECTION

BLUE 3 heard MIG warning from BIG EYE/BIG LOOK about 15 sec before MIGs were sighted visually. BLUE 1, 2, and 4 received no MIG warning and BLUE 3 did not have time to warn them before MIGs were sighted. BLUE flight was in a slow left turn following the A-4 strike force. The flight had just passed through a heading of 360° when MIGs 1 and 2 were sighted by BLUE 2 at 10 o'clock, co-altitude.

6. ACTION INITIATED

BLUE 2 called out MIGs to flight. BLUE flight broke left and simultaneously lit afterburners. BLUE 2 assumed flight lead since BLUE 1 had not sighted MIGs. BLUE flight met MIG flight head-on and began a series of individual attacks on MIGs 1 and 2. MIGs 3 and 4 were sighted and attacked, after the initial encounter, by individual members of BLUE flight.

7. SITUATION DEVELOPMENT

During the initial series of turns after the MIG sighting, the engagement became a "one-on-one" situation with no flight integrity. On the initial head-on pass, BLUE 2 fired a few ineffective 20mm rounds at MIG 1. BLUE 3 also fired with no apparent results. After the initial pass, BLUE 1 resumed the lead, with BLUE 2 on his wing, and began a series of sharp scissor maneuvers with MIG 1 who was ultimately destroyed by BLUE 1 using a SIDEWINDER. BLUE 3 and 4 countered MIG 2, who had detached from MIG 1, in an engagement during which three SIDEWINDERS were fired with no favorable results.

Two additional aircraft, MIGs 3 and 4, were seen at irregular intervals, and engaged by individual elements of BLUE flight. BLUE 1 damaged MIG 4 with 20mm cannon fire.

8. ORDNANCE

| | (No. fired/No. hits) SIDEWINDER AIM-9D | Guns 20mm | Remarks |
|---|---|---|---|
| BLUE 1 | 2/1 | 175 rds | First SIDEWINDER may have guided on false target; missed actual target. Second SIDEWINDER guided and detonated; direct hit. Fired approximately 150 rds of 20mm at fleeting, long-range targets; 25 rds fired behind MIG 4 damaged wing. Both lower 20mm guns inoperative due to electrical malfunction. |
| BLUE 2 | 2/0 | 125 rds | Neither missile guided. Fired approximately 25 rds at fleeting, long-range targets; 100 rds of 20mm fired in two bursts with unknown results before guns jammed. |
| BLUE 3 | 2/0 | 100 rds | Neither missile guided. Fired 100 rds of 20mm at fleeting targets with unknown results. |
| BLUE 4 | 2/0 | 0 | First missile guided but fell short of opening target; second missile did not guide. Guns would not fire. |
| MIG 1, 2, 3, 4 | | | No ordnance expenditure observed; no missiles carried. |

9. EQUIPMENT PROBLEMS

BLUE 1, 2, 3, and 4: See Paragraph 8. ORDNANCE

BLUE 2: Gunsight inoperative: No yaw stability: No aileron/rudder interconnect.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-8 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 4500 | 1400 | 170 | |
| BLUE 2 | | Not known | | |
| BLUE 3 | 2300 | 480 | | |
| BLUE 4 | | Not known | | |

Comments on this Encounter

BLUE 1

F-8 type weapons systems, air-to-air missiles and 20mm cannon, best for air combat maneuvering where visual identification is a preliminary requirement.

SIDEWINDER missile with short range (1000 ft), high-g, and low-altitude capability could have been used to good effect.

BLUE 2

The SIDEWINDER (AIM-9) needs a range indicator.

BLUE 4

"I would have had him if my guns had worked."

The MIGs did not appear to fight well. There was never any F-8 in trouble.

11. DATA SOURCES

Project Interviews:

BLUE 1, 17 January 1967
BLUE 2, 4 November 1966
BLUE 3, 16 March 1967

Messages, Reports:

CTG 77.3 120822Z June 66
CTG 77.3 120933Z June 66
CTG 77.3 121513Z June 66
CTG 77.3 121733Z June 66
USS HANCOCK 161800Z June 66

Other:

USAF Fighter Weapons Center CAD Bulletin No. 7
Air-to-Air Missile Weapon System Flight Report, 12 Jun 66, from USS HANCOCK (CVA-19)
Air Combat Report (OPNAV Form 3840-4) 12 Jun 66, from USS HANCOCK (CVA-19)
OEG Rep. Memo of 16 Jun 66, Analysis of MIG Encounter by USS HANCOCK Aircraft.
CINCPACFLT IBM Report, Southeast Asia Air Incidents
CINCPACFLT Staff Study 11-66
CINCPACFLT Staff Study 13-66

12. NARRATIVE DESCRIPTION

BLUE flight was in a slight left-hand turn following a retiring A-4 strike force that was in a right turn. The strike force was at a very low altitude (approximately 1000 ft) as they approached a heading of north. BLUE 1 and 2 were at 2500 ft on the left of the strike force, and BLUE 3 and 4 were at 3000 ft on the right of the strike force. BLUE 2 sighted a bogey at 3 mi, 10 o'clock, and slightly high ($T_0$) and called the "tally-ho." BLUE flight broke left and split into two sections. BLUE 2 assumed the lead since BLUE 1 had not sighted the MIGs. BLUE 3 and 4 lit afterburners and the two sections headed into the oncoming aircraft. BLUE 2 and 3 each fired a short 20mm burst at long range at MIG 1, with no visible results ($T_1$). After the initial pass, BLUE 2 and BLUE 1 broke right to counter MIG 1. In this turn, BLUE 1 resumed the lead. At the same time MIG 2 detached from MIG 1 by performing a maneuver that combined a 225° roll to the left with a split-S type recovery ($T_2$) and was countered by BLUE 3 and 4. From this point on, BLUE flight lost most of its flight integrity and each member began to maneuver independently. Accordingly, the following section will deal with the encounters separately. Time marks (T) in narrative and pictorial schematic of flight are in sequence for all members of BLUE flight through $T_2$ only. Subscripted time marks ($T_3$) B1 indicate action by a special flight member, BLUE 1, 2, 3 or 4, since BLUE flight lost most of its integrity after $T_2$.

BLUE 1

BLUE 1 sighted MIG 1 as the two flights initially met head-on. MIG 1 continued his left turn and BLUE 1, resuming the lead, broke right to counter ($T_2$). A series of sharp scissor maneuvers ensued at altitudes up to 4000 ft with BLUE 1 slowly gaining the offensive. During these maneuvers, BLUE 1 fired approximately 150 rounds of 20mm with no observed results. BLUE 1 finally was in position (3/4 mi) behind MIG 1 who was in a right 5° nosedown, 3-g turn at 400 kt. From this position, BLUE 1 fired his first SIDEWINDER which guided temporarily and then fell off to the right without detonating. It is believed that this missile guided on a cloud reflection since it was fired against a scattered cloud background ($T_3$)B1. MIG 1 then rolled wings level, and BLUE 1 from a position of 1/2 mi behind fired his second SIDEWINDER. This missile detonated at the tail of the MIG and parts of MIG 1's wing and tail were seen to come off before he plunged out of control ($T_4$)B1. After BLUE 1 had destroyed MIG 1, he noticed MIGs 3 and 4 in an orbit, 9 o'clock high at about 4000 ft ($T_5$)B1. BLUE 1 had no difficulty in gaining the 6 o'clock position behind MIG 4. From this position BLUE 1 fired 30 rounds of 20mm and inflicted damage (probable kill) to the right wing of MIG 4 before he unexpectedly ran out of ammunication ($T_6$)B1. An electrical malfunction prevented the lower guns from firing.

BLUE 1 then exited the area and returned to his ship ($T_7$)B1.

[redacted]



BLUE 2

BLUE 2 passed the section lead to BLUE 1 after the initial encounter with MIG 1 and 2 ($T_2$). As BLUE 1 maneuvered for position on MIG 1, BLUE 2 stayed as wingman until he detached when MIG 3 leveled off at 3000 ft. BLUE 2 attempted to fire a SIDEWINDER from MIG 3's 7 o'clock position, about 500 ft high, and at a range of 3/4 mi. BLUE 2 was in a slight nose-down attitude, with a good tone, and pulling more than 4 gs when he fired at MIG 3. The missile hung. A second missile was immediately selected and fired but it did not guide and went ballistic ($T_3$)B2.

BLUE 2 then broke right to exit the area but noticed MIG 4 pass his 12 o'clock position, low at 1500 ft. BLUE 2 easily took position behind MIG 4 and fired about 80 rounds of 20mm without the aid of a gunsight. As he continued to close to a range of about 1000 ft behind MIG 4, he opened fire again with 20mm, but his guns failed after 15 rounds ($T_4$)B2. BLUE 2 retired at high speed ($T_5$)B2.

BLUE 3

BLUE 3 fired a few ineffective rounds of 20mm at MIG 2 on the initial head-on pass ($T_1$) at an altitude of 3000 ft. After crossing MIG 2, BLUE 3 began a 3g climbing left turn from which he was able to observe MIG 2 commence his unorthodox rolling split-S maneuver ($T_2$). As MIG 2 recovered in a high g, low-altitude pullout, with BLUE 4 following, BLUE 3 was able to gain his 5 o'clock position from which he attempted to launch two SIDEWINDER missiles from a distance of about 1500 ft ($T_3$)B3. The first missile was slow in firing, and the second was then fired in such a way that both missiles left the aircraft at almost the same time. At the instant of firing, MIG 2 was in a hard right turn, pulling about 4gs, and climbing fast. Though BLUE 3 had a tone, both SIDEWINDERS missed. As MIG 2 turned past BLUE 3, BLUE 3 climbed straight ahead, saw MIG 3 ($T_4$)B3, and maneuvered his airplane into a position from which he was able to fire a few 20mm rounds as MIG 3 ducked into a cloud ($T_5$)B3. BLUE 3 followed MIG 3 into clouds, but was unable to regain a visual sighting. BLUE 3 then departed the area at high speed ($T_6$).

BLUE 4

BLUE 4 gained the 6 o'clock position on MIG 2 at 3500 ft of altitude, and closed to within a few hundred feet. He was unable to fire his 20mm due to a malfunction. MIG 2 commenced a 225° roll to the left and recovered in a split-S maneuver. MIG 2 almost collided with the ground. BLUE 4 in following MIG 2 recovered from the dive by pulling in excess of 7g ($T_3$)B4. On recovering from his pullout, BLUE 4 regained the 6 o'clock position on MIG 2 (after BLUE 3 had fired his missiles at MIG 2) and launched a SIDEWINDER at an altitude of 3000 ft although BLUE 4 was decelerating and range was increasing ($T_4$)B4. The missile guided well but fell short of the target as MIG 2 passed through a small cloud. BLUE 4 lost sight of MIG 2 and while engaged in evasive clearing turns he observed MIG 4 and launched his second SIDEWINDER, without a missile tone, at an altitude of 3000 ft, 450 kt, at a range of 1-1/2 mi. The missile did not guide. BLUE 4 was in a slight climbing attitude at missile launch ($T_5$)B4. BLUE 4 retired from the area ($T_6$)B4.

The A-4 strike force exited the area without being engaged by the MIGs.



[redacted]

EVENT I-34 SUMMARY

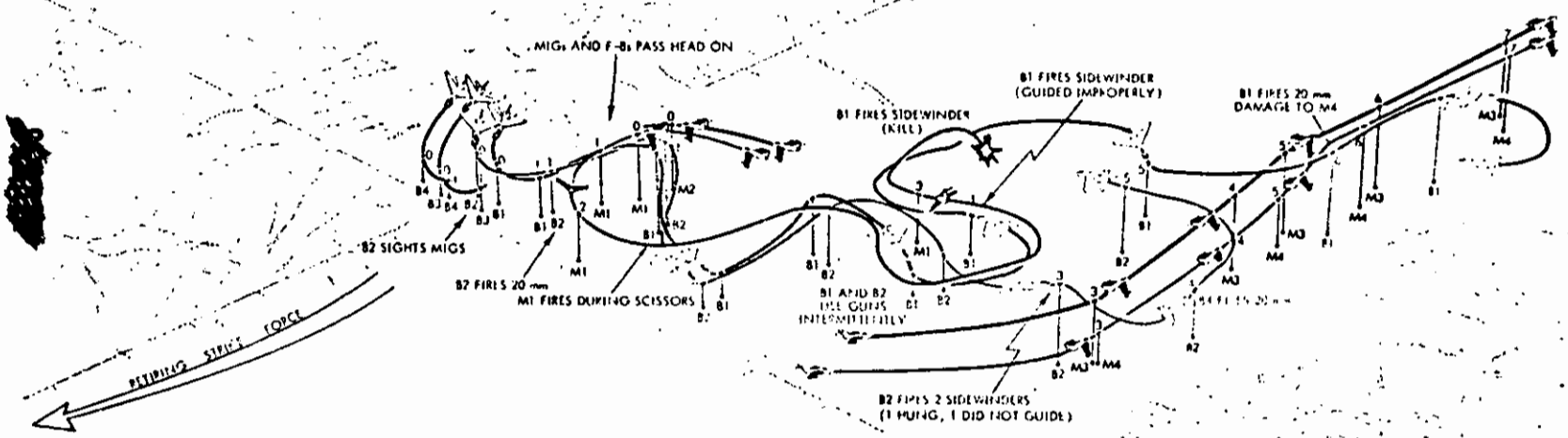
| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MiG 1,2,3,4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | B1, 2 at 2000 ft<br>B3, 4 at 2500 ft<br>400-450 kt<br>Fuel 4500 lb | B2 sights MIGs at 10 o'clock. Flight breaks left. Afterburners engaged. B2 assumes lead. | Strike force departing target at 1000 ft | B2 calls MIGs at 10 o'clock, slightly high; calls for left break | MIGs approaching in easy left turn; descending slightly | MIGs appeared to be GCI controlled to a trailing position on BLUE flight |
| $T_1$ | BLUE flight in climbing attitude to engage MIGs | B2, 3 fire 20mm at M1, 2 | Strike force continued to exit area | | M1 and 2 do not fire | B1 does not see M1 and 2. B2 takes section 1 to engage M1. B3 and 4 engage M2 |
| $T_2$ | | B1 and 2 split to engage M1. B3 and 4 counter M2. B1 and 2 start series of scissor maneuvers with M1. Fire 20mm intermittently | Strike force has exited area | | M1 and 2 passed under BLUE flight. M1 continues in easy 3g left turn. M2 starts split-S. | M1 is silver. M2 is grey. Neither has external tanks nor ordnance |
| $T_3$(B1) | 2000 ft<br>350-400 kt<br>Weather: Many scattered clouds in area | B1 gains position on M1 and fires SIDEWINDER | B2 had previously detached to engage M3 | | M1 then rolls wings level. Appears to be returning to home base | Missile guided improperly. Possibly on a cloud |
| $T_4$(B1) | 2000 ft<br>350-400 kt | B1 fires second SIDEWINDER at M1. Missile detonated properly and destroyed M1 | | | M1 in level attitude | M1 appears headed for home base at 2000 ft. |
| $T_5$(B1) | 2500 ft<br>Climbing | B1 breaks right after destroying M1 and notices M3 and 4 heading east | | | M3 and 4 in level formation | Enemy aircraft appear to be in orbit |
| $T_6$(B1) | 4000 ft level<br>350 kt | B1 gains 6 o'clock position behind M4 and fires 30 rds of 20mm before exhausting ammunition. Right wing of M4 damaged | | | M4 continues in straight and level attitude | |

EVENT I-34 SUMMARY (Continued)

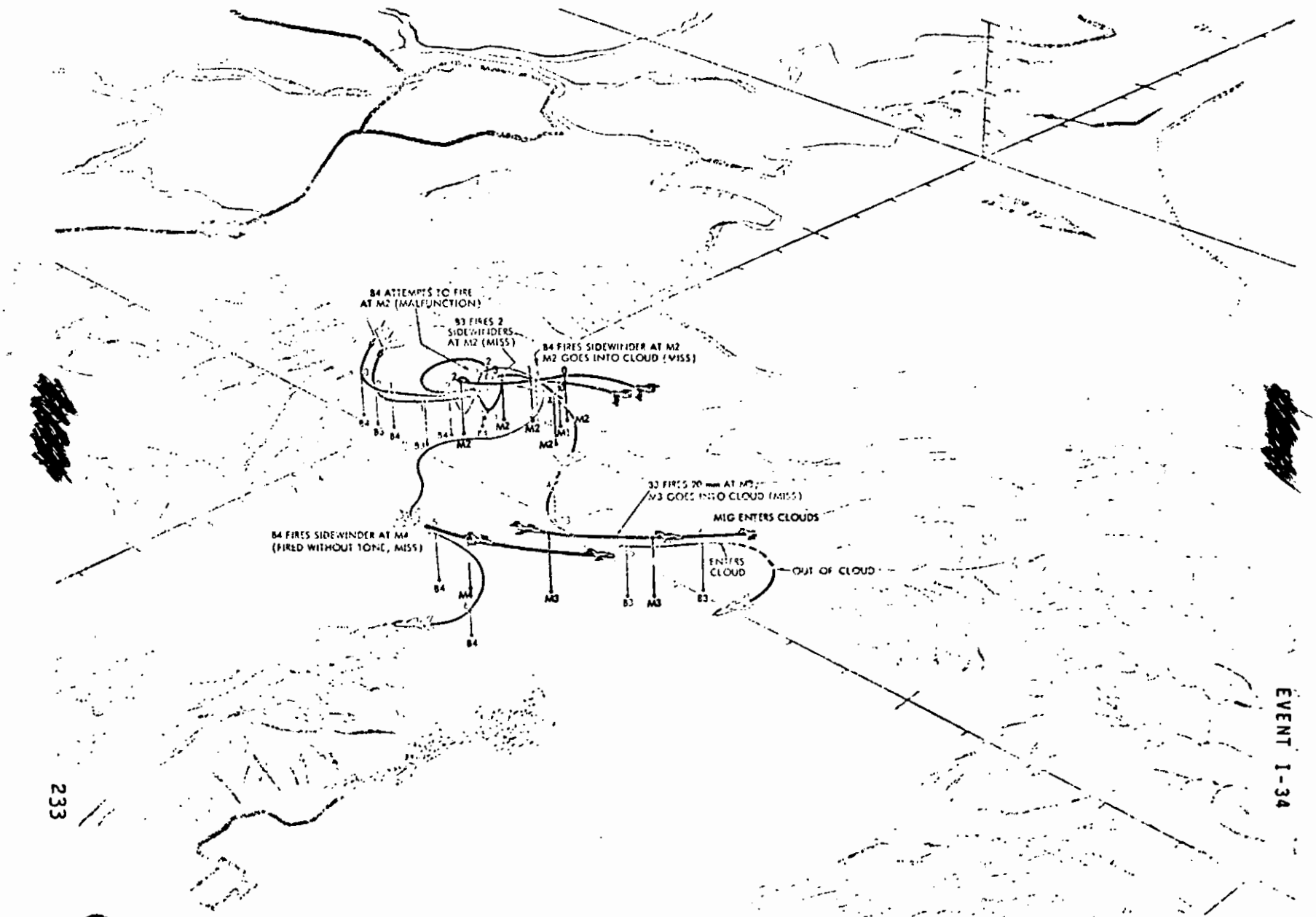
| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2,3,4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| T 7(B1) | 4000 ft<br>650 ft | B1 exits area at high speed | | | M3 and 4 continue | No evasive action employed by MIGs |
| T 3(B2) | 3500 ft<br>400 kt | B2 has detached from B1 on seeing M3. Fires SIDEWINDER from range of 3/4 mi. Missile hung. Second missile immediately selected and fired. Did not guide and goes ballistic | | | M3 is level at 3000 ft. No evasive maneuvers attempted | M3 is brown in color |
| T 4(B2) | 1500 ft<br>400 kt approx | On breaking right to exit area B2 notices M4 at 12 o'clock, low. Assumes 6 o'clock position and fires a total of 95 rds of 20mm before guns fail | | | M4 attempted no evasive maneuvers | M4 was brown or dark grey in color |
| T 5(B2) | B2 exits area at high speed | | | | No change noted | |
| T 3(B3) | 2500 ft and climbing rapidly<br>4 g's on aircraft | B3 gained M2's 5 o'clock position as he recovered from his evasive split-S followed by B4. B3 launched two SIDEWINDER missiles that missed the target | | | M2 was rapidly turning and pulling about 4 g's and climbing fast | |
| T 4(B3) | 3000 ft<br>Climbing straight and level<br>450 kt | B3 climbed straight ahead and noticed M3 | | | M3 was not maneuvering. 3500 ft at 450-500 kt level flight | Enemy appeared to be in a wide orbit. Gentle left turn |
| T 5(B3) | B3 gained M3's 6 o'clock position and fired a few 20mm rds without results before M3 ducked into cloud | | | | No change | |

EVENT I-34 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2,3,4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| 6(B3) | | B3 attempted to locate M3 in cloud without results. Departed area at high speed | | | Unknown | |
| 3(B4) | 3000 ft in a climbing pullout | B4 gained M2's 6 o'clock position in the split-S dive. Unable to fire 20mm due to malfunction | | | M2 recovers from dive at high-g and very low altitude | Maneuver by M2 appeared to be for purpose of causing pursuer (B4) to run into ground |
| 4(B4) | 3800 ft in slight climb | B4 regains M2's 6 o'clock position and fires SIDEWINDER that misguides as M2 goes into cloud | | | M2 ducks into cloud at high speed, climbing and turning | B2 loses sight of M2 in cloud |
| 5(B4) | Slight climbing attitude | B4 while doing evasive turn sees M4 and fires SIDEWINDER without tone. Missile falls short of target | | | M4 appears, does no maneuver to evade | |
| 6(B4) | Fuel 2500 lb | B4 exits area at high speed while going to lower altitude | | | Unknown | |


MIGs AND F-8s PASS HEAD ON
B1 FIRES SIDEWINDER (KILL)
B1 FIRES SIDEWINDER (GUIDED IMPROPERLY)
B1 FIRES 20 mm DAMAGE TO M4
B2 SIGHTS MIGS
B2 FIRES 20 mm
M1 FIRES DURING SCISSORS
B1 AND B2 USE GUNS INTERMITTENTLY
B2 FIRES 2 SIDEWINDERS (1 HUNG, 1 DID NOT GUIDE)
RETURNING STRIKE FORCE

EVENT I-34


B4 ATTEMPTS TO FIRE AT M2 (MALFUNCTION)
B3 FIRES 2 SIDEWINDERS AT M2 (MISS)
B4 FIRES SIDEWINDER AT M2 M2 GOES INTO CLOUD (MISS)
B3 FIRES 20 mm AT M3 M3 GOES INTO CLOUD (MISS)
MIG ENTERS CLOUDS
B4 FIRES SIDEWINDER AT M4 (FIRED WITHOUT TONE, MISS)
ENTERS CLOUD
OUT OF CLOUD

EVENT I-34

Aircraft Involved: Two F-4Bs vs slow-speed prop aircraft (possibly COLTS)(night engagement)

Result: One enemy aircraft probably destroyed

Vicinity of Encounter: 20°00'N/106°00'E Route Package V

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 Jun 1966/0040H

Two F-4B aircraft BLUE 1 and GREEN 1 (the aircraft were from different squadrons) were on Condition 1 deck-alert on the USS RANGER (CVA-61) to be launched when required against air or surface targets. For Condition 1 the aircraft are on the catapults and the pilot and RIO in the cockpits with all preflight checks completed and starting units plugged in to permit launch in minimum time.

2. MISSION ROUTE

Initial GCI vector after launch was 320°, 165 mi from USS RANGER to targets in vicinity of 20°00'N/106°00'E.

3. AIRCRAFT CONFIGURATIONS

F-4B BLUE 1 and GREEN 1

2 - SPARROW (AIM-7E)
2 - SIDEWINDER (AIM-9B)
4 - LAU-3 (2.75" rocket pods)
6 - MK-24 illuminating flares
1 - 600-gal external fuel tank.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: About 12,000-ft overcast, making it very black.

Aircraft on Condition 1 deck-alert as indicated in paragraph 1

5. INITIAL DETECTION

At 140015H, USS COONTZ on station vicinity 19°30'N/107°00'E reported air radar contact vicinity 20°00'N/106°00'E. At 0027H, contact evaluated as two aircraft below 5000 ft in left orbit. Flares reported in area of contact. Apparently enemy aircraft assisting in attack against friendly surface forces.

6. ACTION INITIATED

Condition 1 deck-alert aboard the USS RANGER (BLUE 1 and GREEN 1) was launched and vectored 320°, 165 mi at 0040H.

7. SITUATION DEVELOPMENT

BLUE 1 and GREEN 1, after clearance to shoot from the USS COONTZ and necessary coordination to ensure against shooting at each other, made separate low-altitude full-radar attacks assisted by the COONTZ. BLUE 1 fired two SPARROW missiles, one of which hit and downed an enemy aircraft. GREEN 1 fired one SPARROW which was observed to explode and probably downed a second enemy aircraft. Later analysis revealed aircraft were probably COLTS.

8. ORDNANCE

(No. fired/No. hits)

| | SPARROW AIM-7E | Remarks |
|---|---|---|
| BLUE 1 | 2/1 | No motor ignition. Short in umbilical cord. |
| GREEN 1 | 1/1 | |

9. EQUIPMENT PROBLEMS

None (See 8).

## 10. AIRCREW COMMENTS



Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | ----------Not obtained---------- | | | |
| Back | ----------Not obtained---------- | | | |
| GREEN 1 | | | | |
| Front | 3100 | 1000 | 90 | Had fired approximately 20 AIM missiles (SIDEWINDER and SPARROW). |
| Back | | | | Had only been with squadron a month. His first tour as RIO. |

Comments on this Encounter

BLUE 1 Front

A single-seat aircraft could not have carried out this operation.

More than one friendly aircraft in the area at night or in bad weather complicates the situation. Better if there is only one.

GREEN 1 Front

Control switched from the RANGER to the COONTZ before the attack was made. This was a smooth transition requiring no frequency change; the COONTZ just started to control. The COONTZ tried to run a closed-control GCI, but was having problems due to low altitude of the engagement. Actually ran our own control with the COONTZ providing supplementary vectors.

COONTZ tried to break off the engagement as the target passed over the beach. Since I was rapidly approaching firing position, I pressed on.

Never saw the enemy aircraft. Later analysis indicated they were probably COLTS.

One aircraft would have been better for this particular mission. Should have held one aircraft in reserve to reduce the confusion factor.

Impossible to identify aircraft at night, must have authority to shoot.

Was "squawking" IFF on this mission. Probably of no help to COONTZ because of ground clutter.

Comments from Overall Experience

GREEN 1 Front

Firm believer in two-seater aircraft with two engines. Back seater is a must for intercept missions such as this one and for night attack missions. Feel that many aircraft have been saved by having the extra set of eyes on night missions.

Guns would be most valuable for the RESCAP role but not particularly valuable in the air-to-air role. However, do need a close-in weapon capability in the 2000- to 1000-ft range.

Would like tail warning gear in F-4s for SAMs to tell when they are fired. Feel available SAM radar warning gear of little value because it creates mass confusion and disrupts the mission. Wants to know when the missile is about to be fired or has been fired.

## 11. DATA SOURCES

Project Inverviews: BLUE 1, Front and Back - 3 November 1966
GREEN 1, Front - 13 January 1967
GREEN 1, Back - 18 January 1967

Messages, Reports:

CTG 77.4, OPREP 3, 132309Z June 1966

## 12. NARRATIVE DESCRIPTION

At 140015H, USS COONTZ reported air radar contact vicinity 20°00'N/106°00'E. At 0027H, the contact was evaluated as two aircraft, below 5000 ft in a port orbit dropping flares to support NVN attack on friendly surface forces.

At 0040H, two F-4Bs (BLUE 1 and GREEN 1) were launched from the USS RANGER and vectored to intercept the enemy aircraft 320°/165 mi. GCI control switched to the USS COONTZ located approximately 19°30'N/107°00'E at about 0050H at which time the vector was 315°/65 mi.

BLUE 1 launched first, followed by GREEN 1. Both aircraft jettisoned LAU-3, 2.75" rocket pods and MK-24 flares after take-off, leaving two SPARROW and two SIDEWINDER in addition to a 600-gal external fuel tank per aircraft.

$T_0$ The F-4Bs proceeded on course at about 10,000 ft at 600-kt TAS. GREEN 1 was 15-20 mi in trail on BLUE 1.

Both aircraft accomplished radar system checks and tuned SPARROW missiles en route. Clearance to shoot was given by USS COONTZ approximately 40 mi from the target. Missiles were armed at that time. Flares were observed by both F-4Bs.

$T_1$ BLUE 1 did not have radar contact upon closing with the target and executed a 360° right turn. GREEN 1 had radar contact at approximately 36 n mi. Target was low. The COONTZ indicated the two enemy aircraft were in a left orbit between 500-1500 ft. GREEN 1 reduced altitude to 500 ft, airspeed to 400-kt TAS.

$T_2$ As GREEN 1 approached firing range, he was not certain of the whereabouts of BLUE 1. GREEN 1 requested BLUE 1 to turn out to the east to clear the area.

$T_3$ As GREEN 1 came into firing range, the target was turning hard right. GREEN 1 made a 360° right turn at 500-ft altitude approximately 4 g's trying to get into firing position. Had two chances to fire, but did not because of uncertainty as to the location of BLUE 1.

$T_4$ BLUE 1 and GREEN 1 exchanged position information using the COONTZ TACAN. GREEN 1 requested BLUE 1 come in from the south and he (GREEN 1) would clear area to the east.

$T_5$ BLUE 1 received vector from COONTZ 290°/18 mi and had radar lock-on at 8 mi. Did not fire SPARROW because his estimate of GREEN 1's position, based upon exchange of TACAN position information, was only 3 mi from the target.

$T_6$ BLUE 1 got break X (minimum missile firing range) at about 2 mi, saw two red lights, flew toward them.

$T_7$ BLUE 1 passed within 20 ft of the two enemy aircraft which were recognized by their interior (cockpit) red lights. Aircraft were in a hard left turn toward BLUE 1 at 700 ft. Cockpits were large and rectangular and BLUE 1 judged them to be prop aircraft because of their shape.

$T_8$ BLUE 1 executed a 360° left turn and received an additional vector from the COONTZ.

$T_9$ BLUE 1 got radar lock-on heading 300°, 700 ft, 450-kt, head-on aspect slightly nose-up attitude.

$T_{10}$ At 0116H BLUE 1 fired first SPARROW missile at 4 mi, no motor ignition.

$T_{11}$ BLUE 1 fired second missile at 3-1/2 mi. Explosion was observed approximately 2 sec later. GREEN 1 heard BLUE 1 call FOX (missile away) and observed the SPARROW flight and explosion. COONTZ reported losing radar contact on one target after this explosion. Approximate time and location of this shoot down was 0116H at 20°09'N/106°17'E.

BLUE 1 called he was breaking out to the east.

$T_{12}$ GREEN 1 made radar contact at 12 mi, had lock-on at 8 mi as target passed over the beach on a westerly heading and descending.

$T_{13}$ GREEN 1 doing 400-500 kt with 300 kt overtake.

$T_{14}$ GREEN 1 climbed to about 3500 ft as he passed over the coastline then fired one SPARROW slightly nose-down, attitude, 2-21/2- to 3-mi range. GREEN 1 saw the SPARROW come off, guide and detonate at the proper time.

$T_{15}$ The radar broke lock after the explosion. BLUE 1 made a hard left turn after the radar broke lock and proceeded back over water. Approximate time and location was 0118H at 20°05'N/106°14'E.

The COONTZ reported no more contacts. The two F-4Bs were released and recovered aboard the RANGER.

A night low-altitude full radar intercept assisted by the GCI radar aboard the COONTZ, although complicated by coordination problems between the two F-4Bs, resulted in one probable kill.

## EVENT I-35 SUMMARY

| Time Mark | Action Aircraft (GREEN 1, BLUE 1) | | Other Friendlies | Communications | Enemy Actions | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | 10,000 ft<br>600-kt TAS<br>315° | G1 in 20-mi trail behind B1 got radar contact at 36 mi. B1 does not yet have radar contact.<br>B1 and G1 descending to low altitude for the intercept and slowing down | | USS RANGER provided initial vectors. Function later taken over by USS COONTZ w/o channel change | Two enemy flare drop aircraft in left orbit 500-1500 ft | Enemy aircraft held by USS COONTZ radar. COONTZ was controlling F-4Bs and had given clearance to fire at 40 mi. |
| $T_1$ | 500-ft alt<br>~300-kt TAS<br>2 g | B1 did not have radar contact. Made 360° right turn. | | B1 advised G1 turning to the right. | | |
| $T_2$ | 500 ft<br>400-kt TAS | G1 approached SPARROW firing range. Did not fire because he was not certain of B1's position. | | G1 asked B1 to break out to the east. B1 acknowledged and complied. | Target aircraft in hard right turn | |
| $T_3$ | 500 ft<br>400-kt TAS<br>4 g | G1 attempting to position to fire SPARROW. Had two chances to fire but did not due to uncertainty of B1's position. | | B1 and G1 exchange position information using the COONTZ TACAN. | In hard right turn | |
| $T_4$ | | G1 turned to heading 90° to start time pattern to provide separation on B1. | | G1 advised B1 to come in from the S and that G1 was clearing to the E. | | |

EVENT I-35 SUMMARY (Continued)

| Time Mark | Action Aircraft (GREEN 1, BLUE 1) | | Other Friendlies | Communications | Enemy Actions | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_5$ | | B1 turned to 290° to follow COONTZ vector instruction<br>G1 proceeded to the E. | | COONTZ gave B1 vector 290°, 18 mi.<br>B1 and G1 still exchanging position information | | |
| $T_6$ | 700 ft | B1 got lock-on but did not fire because his estimate of G1's position was 3 mi from target. Got break X at $T_6$ approximately 2 mi. | | | | |
| $T_7$ | 700 ft<br>340- to 350-kt TAS | C1 passed within 20 ft of prop-type aircraft in hard left turn. B1 made left turn. | | | Enemy aircraft in hard left turn | |
| $T_8$ | | B1 continued left to follow COONTZ vector of 300° | | COONTZ gave B1 additional intercept vector. | | |
| $T_9$ | 700 ft<br>450-kt TAS<br>300° | B1 radar contact approximately 12 mi | | | Proceeding overland in apparent effort to evade F-4Bs. | |
| $T_{10}$ | 750 ft<br>450-kt TAS<br>300° | B1 fired one SPARROW at 4 mi. No motor ignition | | B1 called FOX (missile away) | | |

EVENT I-35 SUMMARY (Continued)

| Time Mark | Status | Action | Other Friendlies | Communications | Enemy Actions | Remarks |
|---|---|---|---|---|---|---|
| $T_{11}$ | 750 ft<br>450-kt TAS<br>300°<br><br>Time<br>0016H | B1 fired second SPARROW at 3-1/2 mi. Missile exploded after about 2 sec.<br><br>G1 observed SPARROW flight and explosion.<br><br>B1 right turn to 90° to clear area for G1 | | COONTZ reported loss of radar target at explotion time.<br><br>B1 stated he was breaking out to the E. | | |
| $T_{12}$ | 400- to 450-kt TAS | G1 got radar contact at 12 mi. | | | | |
| $T_{13}$ | 400- to 450-kt TAS | G1 radar lock-on, overtake speed on target approximately 300-kt (from radar) | | COONTZ called G1 "You are approaching feet dry, break it off." | | G1 continued attack due to ideal conditions and rapid closure rate. |
| $T_{14}$ | 3000-3500 ft<br>450-kt TAS<br><br>Time<br>0018H | G1 had climbed slightly as he approached beach at 3500 ft, nosed over, had good missile indication (2 lights). Fired one SPARROW in nose-down attitude at 2-1/2- to 3-mi range. | | | Going for the deck to evade | SPARROW appeared to guide and detonate at an appropriate time. The radar broke lock after the detonation. |
| $T_{15}$ | | G1 broke left and departed the area.<br><br>B1 and G1 returned to RANGER. | | COONTZ advised no more targets | | |

[redacted]

EVENT I-35

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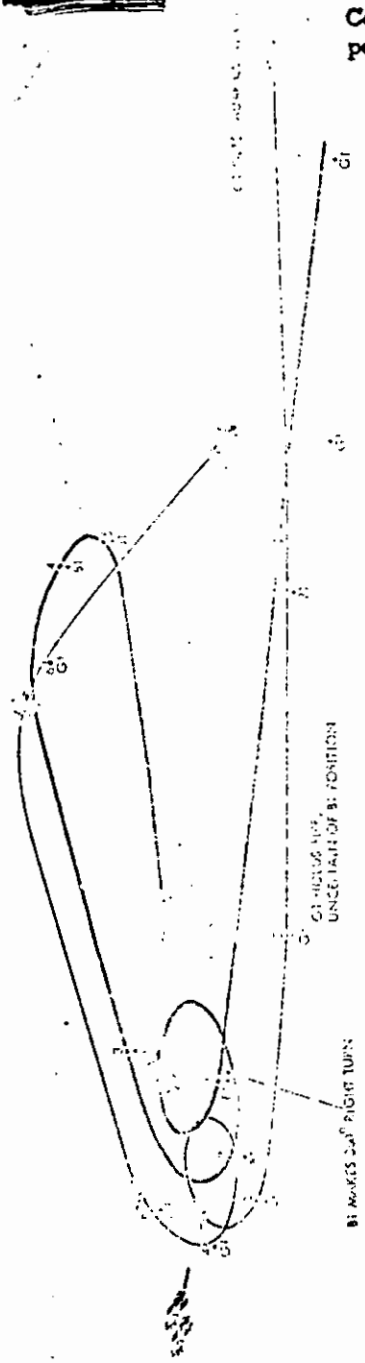

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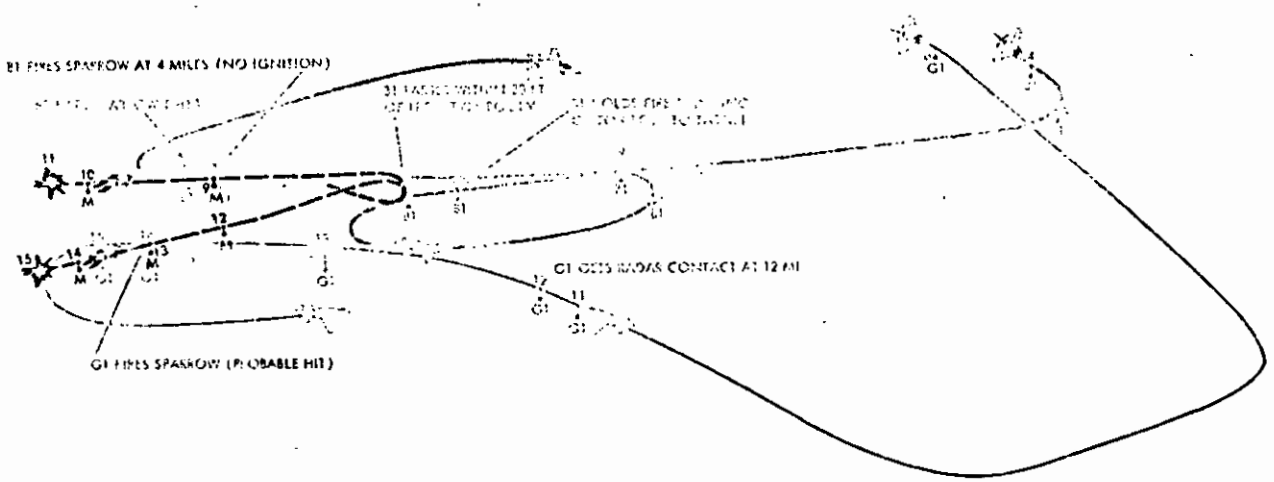

B1 FIRES SPARROW AT 4 MILES (NO IGNITION)
G1 FIRES SPARROW (PROBABLE HIT)
G1 GETS RADAR CONTACT AT 12 MI

EVENT I-35

[redacted]

EVENT I-36

Aircraft Involved: Four F-8Es vs four possibly five MIG-17s

Result: One F-8E lost, two MIG-17s destroyed

Vicinity of Encounter: 21°33'N/106°37'E Route Package VI

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 Jun 1966/1535H

One F-8E aircraft (GREEN 1) launched on photo escort mission and became SAR aircraft orbiting over the photo pilot downed by AA at 21°36'30"N/106°35'10"E. Three F-8E (BLUE flight) conducting TARCAP mission in vicinity of 21°30'30"N/106°36'E diverted at completion of mission and joined GREEN 1 in the SAR effort over the downed photo pilot.

## 2. MISSION ROUTE

GREEN 1 and photo aircraft proceeded from the carrier via unknown route to commence photo reconnaissance of Route 1. Reconnaissance started 3 mi north of the point at which the photo aircraft was ultimately hit. BLUE flight departed the same carrier as GREEN and accompanied the strike group via Bac Long Island to the target (Mexa Bridge 2104/10632) at 2500 ft and assumed TARCAP. At mission completion, BLUE flight proceeded north at low level to rendezvous with GREEN 1.

## 3. AIRCRAFT CONFIGURATIONS

F-8E BLUE 1, 2, 3 and GREEN 1

2 - SIDEWINDER (AIM-9D)
400 rds 20mm

MIG-17D MIG 1, 2, 3, 4, 5

23/37mm cannon
No external stores
Silver Color

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 3500 ft overcast, tops at 5000 ft, visibility 10-15 mi

| | BLUE 1 | BLUE 2 | BLUE 3 | GREEN 1 |
|---|---|---|---|---|
| Altitude: | 2000 ft | 2000 ft | 3000 ft | 3000 ft |
| Heading: | --------Unknown-------- | | | Unknown |
| Speed: | Approximately 400 KIAS | | | Approx. 400 KIAS |
| Fuel State: | ---------BINGO--------- | | | 2800 lb |

Flight Formation:

BLUE 1 and 2 in combat spread formation executing a left turn with BLUE 2 crossing over BLUE 1, left to right, slightly high, abeam and approximately 500 ft away. GREEN 1 and BLUE 3 were returning to coast to refuel, and separated from BLUE 1 and 2.

## 5. INITIAL DETECTION

BLUE 1 and 2 were in left orbit when BLUE 1 saw a section of MIGs coming out of clouds at 1-2 o'clock position, approximately 1/2 mile away. BLUE 1 transmitted "MIGs." Red MIG warning in BG-4 broadcast during period 1531H-1549H. GREEN 1 and BLUE 3 heard this warning while departing SAR area due to fuel state.

## 6. ACTION INITIATED

Action of BLUE 1 unknown. BLUE 2 pitched up to engage MIG 2. GREEN 1 and BLUE 3 broke hard port at MRT power to return and engage.

## 7. SITUATION DEVELOPMENT

The action of BLUE 1 is unknown from the initial MIG sighting until he was observed later by BLUE 3 with a MIG in trail, firing. BLUE 3 then observed BLUE 1 eject and the aircraft crash.

After BLUE 2 pitched up and fired 20mm at MIG-2 resulting in a kill, then he broke hard right and down, received SIDEWINDER tone and fired at MIG 2. SIDEWINDER did not guide. BLUE 2 then initiated a series of high g dives and climbs to keep section of MIGs on tail at high angle off until low fuel state required breaking off and departing area.

GREEN 1 returned to engagement area at low level and saw a section of MIGs coming out of the overcast, diving in AB at his 1-2 o'clock. GREEN 1 turned into leader and fired a short burst of 20mm at high angle off. GREEN 1 disengaged, broke down, checked his tail. When he heard BLUE 3 call, "F-8 you have a MIG on your tail," GREEN 1 then exited area at low fuel state.

[redacted]

[redacted]



BLUE 3 returned behind GREEN 1, saw BLUE 1 and transmitted, "F-8 you have a MIG on your tail." After observing BLUE 1 crash, BLUE 3 then detected MIG on his own tail, within range and firing. He broke into the MIG and realized he could not out-maneuver MIG due to previous AA damage. He then selected afterburner to open on MIG and exited the area. The MIG followed BLUE 3 for a time then disengaged, and turned 180°. BLUE 3 detected MIG in turn, reversed and destroyed MIG with SIDEWINDER. BLUE 3 then exited with extremely low fuel. The four F-8s had used afterburner intermittently.

8. ORDNANCE

(No. fired/No. hits)

| | SIDEWINDER AIM-9D | 20mm | 23mm/57mm | Remarks |
|---|---|---|---|---|
| BLUE 1 | Unknown | Unknown | | Suspect BLUE 1 did not fire. |
| BLUE 2 | 1/0 | 75 rds | | Hits with 20mm. Missile firing range unknown. Did not guide -- possibly due to abrupt pitch-up by MIG at firing. |
| BLUE 3 | 1/1 | None | | Fired at 3/4 mi. Left missile would not fire. Right missile guided well and exploded by tail of MIG. |
| GREEN 1 | None | 20-25 rds | | Fired high g, high angle off. No hit observed. Guns jammed. |
| MIG 1 | | | 1/1 | Killed BLUE 1. |
| MIG 2, 3, 4 | | | None | |
| MIG 5 | | | 1/0 | Fired at BLUE 3, no hits. |

9. EQUIPMENT PROBLEMS

BLUE 1 - None known.
BLUE 2 - None.
BLUE 3 - Left missile did not leave launcher when fired.
GREEN 1 - 20mm quit after 25 rds fired.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-8 Hours | Combat Missions |
|---|---|---|---|
| BLUE 3 | 1000 | 800 | >50 |
| GREEN 1 | 1700 | 1325 | about 100 |

Comments on This Encounter and from Overall Experience

BLUE 3 - F-8 tops as fighter -- needs little improvement. F-8 does need more reliable guns. Do not need second man in a fighter. Acceleration and deceleration capability most important in a fighter.

BLUE 2, 3, 4; GREEN 1 - MIGs tended to make all turns to left.

11. DATA SOURCES

Project Interviews: BLUE 3, 3 Nov 66; GREEN 1, 21 Jan 67
Messages, Reports:

Air Combat Report (OPNAV Form 3450) for BLUE and GREEN
F-8E Combat Performance Report - CVA-19/03, 3310, Serial: 0034, 25 Jun 66 (OEG Memo analysis of MIG encounter by USS HANCOCK aircraft 21 Jun 66)
CTG 77.3 Msg 212246Z Jun 66
COMUSMACV Msg 251156Z Aug 66
CG 1st MAW OPREP-4 211202Z Jun 66
CTG 77.3 OPREP-3 211008Z Jun 66 Chg 1
CTG 77.3 OPREP-3 210744Z Jun 66
CTG 77.3 OPREP-3 210812Z Jun 66
USS HANCOCK Msg 211454Z Jun 66
CTG 77.3 OPREP-3 212246Z Jun 66 Chg 3
CTG 77.3 OPREP-3 211044Z Jun 66 Chg 1
CTG 77.3 OPREP-3 211226Z Jun 66
CINCPACFLT Msg 302334Z Jun 66
USAF Fighter Weapons Center Bulletin #7
Air-to-Air Missile Weapon System Flight Report 11ND-FMBAEG-8811/4 for BLUE 2 and 3

Statements: BLUE 2, 3 and GREEN 1

[redacted]

[redacted]

12. NARRATIVE DESCRIPTION [redacted] EVENT I-36

GREEN 1 launched as photo escort with an RF-8 from CVA-19 as photo recce for railway northeast of Hanoi. BLUE flight launched as strike flight escort and TARCAP and proceeded to target (See para 1 and 2).

The photo and escort commenced their run as planned. Approximately 3 mi from the start, the photo plane took an AA hit and caught fire. The pilot turned 180° to exit and had to eject. GREEN 1 observed the crash scene and took up SAR orbit while broadcasting on guard for SAR assistance. BLUE flight, while on TARCAP, heard the escort broadcast. BLUE flight proceeded to the scene (as soon as the strike group exited from the target), with DF from GREEN 1 emergency calls. GREEN 1 joined with BLUE flight as a section leader with BLUE 3 on his wing and both sections took up SAR orbit (1500-2000 ft) looking for the downed pilot.

During the orbit BLUE 3 took an AA hit in his right elevator from intense AA fire located by the railroad just west of the downed pilot. BLUE 3 decided to remain on station. GREEN 1 and BLUE 3 sighted the downed pilot just east of the ridge line which was acknowledged by an orange flare and BLUE 1 and 2 climbed to contact SAR forces. At 6000-7000 ft, BLUE 1 heard SAM warning in his area and descended to below overcast and resumed orbit. BLUE 1 checked flight fuel state and sent GREEN 1 and BLUE 3 home since they were approaching low fuel state. Prior to leaving all BLUE AND GREEN crews saw an orange flare.

Shortly thereafter, BLUE 1 called "MIGs," ($T_0$). As BLUE 2 crossed from BLUE 1's left to right he looked up and saw a section of MIG-17s (MIG 1 and 2) coming out of the clouds 500 ft above, at 1-2 o'clock and 1/4 to 1/2 mi away. BLUE 2 pitched up and fired 75 rds 20mm, close range at MIG 2. As MIG 2 passed, BLUE 2 observed fuel streaming from MIG 2's wing, believed caused by 20mm, and this was credited as a kill. The MIG section split with MIG 2 diving for the deck. BLUE 2 broke left and down, got a harsh SIDEWINDER tone on MIG 2 and fired -- range unknown. MIG 2 pitched up as BLUE 2 fired tail-on and the SIDEWINDER did not guide, due either to excess range or target maneuver.

The action of BLUE 1 and MIG 1 was not observed from the time BLUE 2 pitched up to fire on MIG 2 ($T_1$) until BLUE 1 was observed by BLUE 3 on fire from a MIG firing in trail ($T_4$). Suspect MIG 1 followed BLUE 1 undetected by BLUE 1.

At BLUE 1's tally ho, GREEN 1 and BLUE 3 were 2-3 mi to the east 3000 ft exiting area. GREEN 1 and BLUE 3 immediately reversed hard left to return and engage. BLUE 3 could not turn with GREEN 1 due to aircraft damage and followed 1-1/2 mi in trail to GREEN 1. Shortly after GREEN 1 rolled out of his turn, he observed two MIGs (MIG 3, 4) ($T_5$) diving out of the clouds at 2 o'clock, 200 ft, in a right turn in AB. GREEN 1 pulled hard causing MIG 3 to pass out in front, at high angle off and attempted a 20mm firing pass. The guns jammed after 25 rds.

BLUE 3 returned 1-1/2 mi behind GREEN 1 at 500 ft ($T_6$) and saw a MIG behind an F-8 on the deck. BLUE 3 transmitted, "F-8 you have a MIG on your tail." He then saw the MIG guns firing, and the F-8 tail burst into flames, after which he observed the F-8 pilot eject. BLUE 3 then checked his own tail and saw a MIG (MIG 5) in range and firing. BLUE 3 broke into the MIG but could not counter due to damage sustained previously by AA. BLUE 3 then disengaged.

As GREEN 1 finished his firing pass on MIG 3, he heard BLUE 3's transmission and disengaged from MIG 3 and 4, selected AB and dived to check his tail. During GREEN 1's maneuvering to clear his tail, he observed a fireball later confirmed to be BLUE 1. GREEN 1 then exited to the east due to low fuel state.

As BLUE 3 departed to the east with MIG in trail opening, he observed a MIG (MIG 5) to break off attack ($T_9$) and commence an easy left turn. As soon as BLUE 3 ascertained that MIG 5 had disengaged, B3 reversed course to again engage the MIG for a SIDEWINDER shot. As BLUE 3 closed within range on MIG 5 ($T_{10}$) in 3/4-mi trail, 3000-ft altitude, slightly high, he attempted to fire his left missile but it did not leave the launcher. BLUE 3 switched to the right missile and fired, the missile detonated at the MIG's tail pipe. BLUE 3 immediately reversed to exit east due to critically low fuel but did observe MIG 5 to roll into steep nose down, right wing down turn and smoking badly. MIG 5 considered destroyed.

From all information available, it is assumed that BLUE 1 fired neither SIDEWINDERs nor cannon. The leader of the first MIG section came from a favorable position directly into firing range on BLUE 1's tail and after a short chase destroyed BLUE 1 with gunfire.

MIGs used afterburner intermittently. All F-8 aircraft tanked on the way back to the carrier.

No radar was used prior to ordering the encounter because of poor low-altitude capability.

[redacted]



[redacted]

## EVENT I-36 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2, 3, GREEN 1) | | Maneuvers, Ordnance, etc. | Communications | Enemy Actions (MIG 1,2,3,4 possibly 5) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | B1&2 in SAR orbit heading south around previously downed photo pilot, 2000 ft. G1 & B3 en route home base in section. 3000 ft G1 in MIL power | B1 calls, "MIGs." B2 looks up and sees two MIGs (M1&2) slightly high passing right to left. G1 and B3, hearing B1's call, turn hard left to return to area of B1&2. | B1&2 were in loose deuce form. B1,2, 3 & G1 loaded with 2 SIDEWINDERS and 400 rds 20mm. G1 leader of section. B3 finds he cannot turn with G1 due to previous damage to his elevator. | B1 calls, "MIGs." | MIG section (M1&2) sighted coming out of cloud layer at 3500 ft, approximately 400 KIAS | G1 launched as photo escort and joined BLUE flight upon their arrival in area of downed photo pilot. Limited to MIL power due to fuel. |
| [redacted] | B2 splits from B1. B2 at 2000 ft | Upon seeing M1&2, B2 pitches up to engage. B2 fires at M2 range 800-1000 ft, nearly head on, engages AB and breaks down hard left to follow M2. | B2 expended 75 rds of 20mm. | | M1&2 passed very close to B1&2. The section then split with M2 diving for the deck at firing. M2 at 2000 ft. M1 not observed from this point but believed to have engaged B1. | B2 observed what he believed to be fuel streaming from M2's wing as he passed. B1's and M1's actions not observed following the split. This MIG (M2) was killed. |
| $T_2$ | G1 & B3 returning to area of B1&2. Altitude 2000 ft several g's | G1 sights section of MIGs (M3&4) in diving right turn. G1 pitched up, causing M3 to pass in from high angle off and fired one burst | 20-25 rds 20mm expended--guns failed | | M3&4 were descending out of overcast in AB. It appeared M3&4 split as G1 engaged. MIG pulling out of diving right turn at firing. | G1 aircraft overstressed in this turn. |
| $T_3$ | B2 in trail on M2 Altitude 2000 ft Mach .75 | Following break turn heading north, B2 picks up M2, at 1/2-mi range low. B2 acquires harsh SIDEWINDER tone and fires. Range one mile tail on aspect, in push over. | 1 SIDEWINDER expended and did not guide. | | M2 had descended to the deck during his turn north and pitched up abruptly as B2 fired his SIDEWINDER. Altitude 200 ft, speed Mach 0.75 | Missile fired with intermittent tone. |

EVENT I-36 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2, 3, GREEN 1) | | Maneuvers, Ordnance, etc. | Communications | Enemy Actions (MIG 1,2,3,4 possibly 5) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_4$ | B3 in approximately 1-1/2-mi trail to G1 | B3 sees F-8 with MIG on its tail and firing and transmits same. Determined later to be B1.<br>B3 then checked his tail and saw MIG closing and firing. B3 broke into him. MIG at 7 o'clock, 500 ft | | B3 transmits, "F-8 you have a MIG on your tail."<br>All F-8s responded to this call except B1. | MIG believed to be M1 shot and downed B1 with guns.<br>Unknown MIG engaged B3 in level flight and effectively countered B3's actions. | B3 was unable to remain with G1 during the 180° turn due to AB damage inflicted during downed photo pilot SAR orbit.<br>Although four MIGs were listed as the number encountered, it is believed the MIG that engaged B3 most probably was M5. |
| $T_5$ | B2 recovering from nose down SIDEWINDER firing on M2 | B2 hears B3's above transmission and looks back to check tail and sees two MIGs approaching at 7 o'clock. B2 counters with series of hard turns. | B2's hard turns were sufficient to keep the MIGs at a high angle off and out of a firing position. | | MIG section believed to be M3&4. M3&4 countered B2 but did not reach a firing position. | M3&4's flight path from $T_2$ until $T_5$ unknown. |
| $T_6$ | G1 finishing high deflection gun shot at M3 | G1 hears B3's transmission and disengages from M3&4, dives for the deck in AB and checks tail for MIGs, comes out of AB, sees fireball of B1 1/2 mi behind shortly thereafter. | G1 fires at almost 90° bank. | | Believe M3&4 regroined and continued their diving right turn and engaged B2 (see $T_5$). | G1 did not observe actions of M3&4 after his one firing pass. |
| $T_7$ | B3 exiting to the east with MIG in trail | B3 determined he cannot counter M5 possibly due to aircraft damage and dives for the deck to open on M5 and to exit the area. B3 also reaching low fuel state. | B3 accelerated to approximately 600 KIAS which was maximum for maintaining aircraft control due to previous damage. | | M5 did fire at B3 during their brief encounter but no hits. M5 appeared not to be able to accelerate with B3. | During descent B3 sees crash of F-8 (B1) and pilot's chute. |

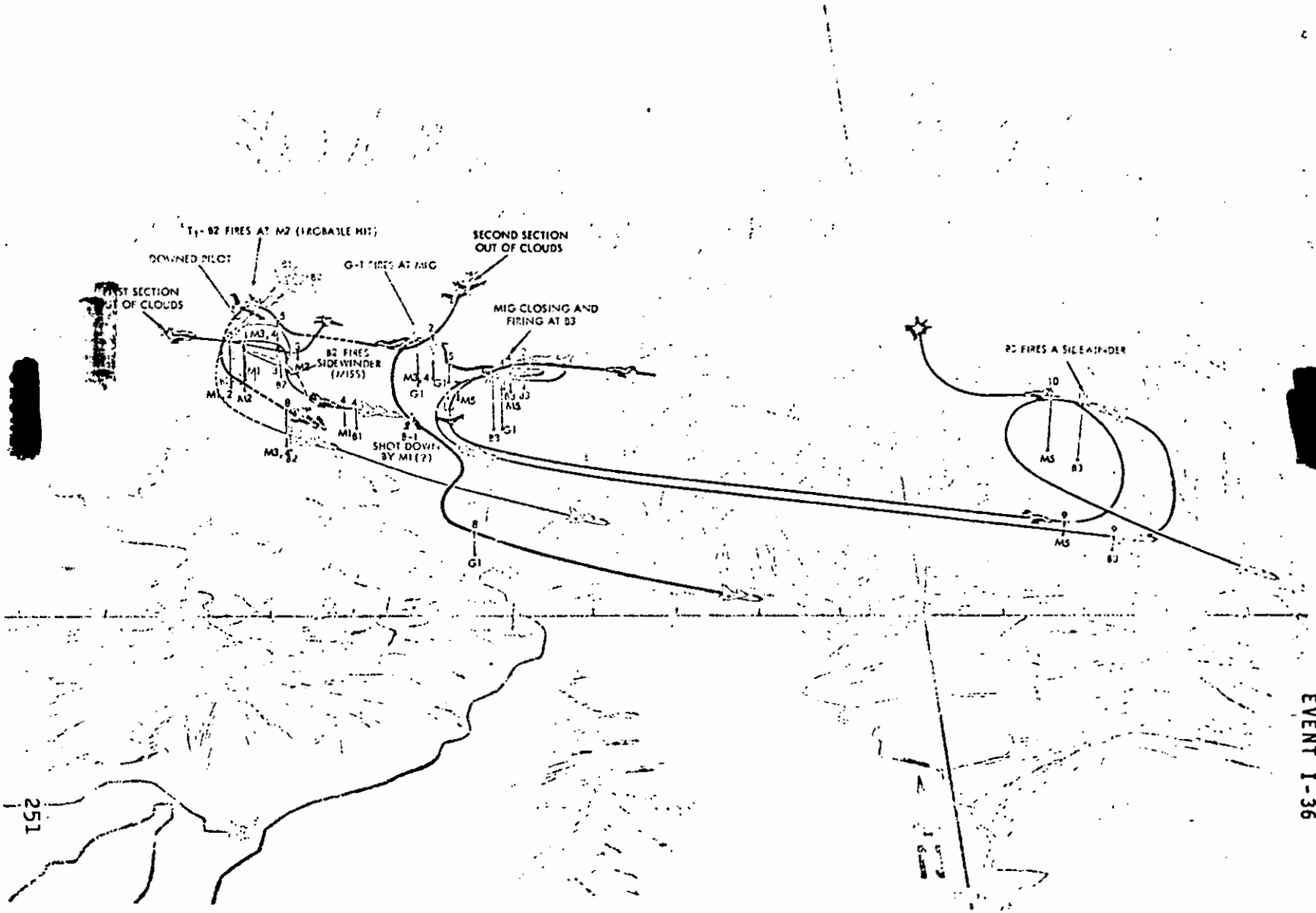
EVENT I-37 SUMMARY (PART B) (Continued)

| Time Mark | Action Aircraft (BLUE 3) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2, 3, 4, 5, 6) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{6B}$ | In AB<br>Slight climb | Headed straight up to 9000 ft | | | MIG at 9 o'clock in 90° turn came across about 2000 ft away | |
| $T_{7B}$ | At top of climb<br>Alt: 9000 ft<br>Heading: --<br>Speed: 200 kt | Came out of AB, full left stick in corner-half flaps and rudder to slip aircraft around<br>Dove down -- relit AB | | | | Came out of reversal on SSW heading with a 70° dive angle |
| $T_{8B}$ | As nose swung around, acquired MIG visually<br>Leveled off at 4000-5000 ft in left turn | Went to radar to pick up target. Finally picked up noisy signal and held lock by override | | Told Back that MIG is 30° left off nose and low | MIG was in hard left turn going toward the east | |
| $T_{9B}$ | Alt: 4000 ft<br>Heading: 090°<br>Speed: 450 kt | Continued left turn and closed range | | | MIG in hard left turn, range about 2 mi | Target was drifting toward nose, B3 pulling more g's than MIG |
| $T_{10B}$ | Got SIDEWINDER tone<br>Still in left turn<br>Alt: 3000 ft<br>Speed: 400 kt | Fired SIDEWINDER | | | MIG was still in left turn. Started hard right turn<br>Alt: less than 1000 ft | MIG was 10° left of B3<br>B3 pilot saw missile leave and make hard left turn (about 20 g's) and head off MIG<br>Range approx 1.5 to 2 mi<br>Fused near tailpipe |
| $T_{11B}$ | Still in left turn; followed MIG around to assess damage. Got down to 1500 ft alt. Speed: 350 kt Heading: 000° | | | | MIG rolled into 120° bank and crashed | Saw explosion. Orange fireball.<br>MIG pilot did not eject |

B3 made one more fast orbit -- observed no other aircraft and proceeded to coast. Speed: 450-500 kt, Alt: 3500 ft.

EVENT I-36 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2, 3, GREEN 1) | | Maneuvers, Ordnance, etc. | Communications | Enemy Actions (MIG 1,2,3,4 possible 5) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_8$ | G1 determined tail clear of MIGs. | G1 observes MIG heading up through the clouds. Exits to the east due to low fuel state. | | G1 calls leaving the area | Believe MIG was one of MIG flight engaged earlier | B2 disengaged because of superior airspeed capability |
| | B2 maneuvering to counter M3&4. | B2 breaks off his engagement and exits to the east. | | B2 calls leaving the area | Enemy action unknown after B2 disengages | B2 observed F-8 tail on fire and pilot in chute during engagement. F-8 determined later to be B1. |
| $T_9$ | B3 exiting at maximum speed with M5 on tail. Altitude 3500 ft Mach .80 | B3 observes M5 to break off his tail chase and commence a left turn. B3 waits to ensure M5 is reversing and then also reverses to reengage M5. | | | M5, upon seeing that B3 is opening breaks off pursuit and turns easy left | B3 was able to disengage because of superior airspeed capability |
| $T_{10}$ | B3 closes to within SIDEWINDER range to M5 500 KIAS, Mach .85 Altitude 3000 ft 1G | At 3/4 mi behind, slightly high, B3 fired SIDEWINDER in tail on aspect. Missile exploded at M5's tail pipe. B3 immediately turned left to exit area due to extremely low fuel state. B3 did observe M5 trailing smoke in a right turn and steep dive. | B3 attempted to fire left missile first with weak tone but it would not leave launcher. | | M5 was apparently unaware that B3 had reversed and was setting up for SIDEWINDER shot, altitude 2500 ft Mach .6 | Left lower fuselage missile gave tone on deck and in air but it would not leave aircraft on attempted firing good tone on second missile, explosion at 7 o'clock left of tail. Heavy black smoke came from the MIG. MIG goes into 30° nose down 45° right wing down spiral. No pieces observed coming from MIG. |


SECOND SECTION
OUT OF CLOUDS
DOWNED PILOT
MIG CLOSING AND
FIRING AT B3
B2 FIRES
SIDEWINDER
(MISS)
SHOT DOWN
BY M1 (?)
B2 FIRES A SIDEWINDER
MS
B3
G1

EVENT I-36

[redacted]



Aircraft Involved: Four F-4Bs vs six MIG-17s
Result: One MIG-17 destroyed
Vicinity of Encounter: 20°41'N/105°55'E
Route Package VI

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 13 Jul 1966/1102H

Four F-4Bs (BLUE flight) were assigned TARCAP in support of an Alpha strike on the Co Trai Bridge (JCS Target No. 18.22). BLUE flight was briefed to overfly the target area after departure of the strike force to perform preliminary BDA. The strike force consisted of six A-6As, four A-4Cs, and two A-4Es (IRON HAND) aircraft.

## 2. MISSION ROUTE

Departed Yankee Station on a heading of 310°, making landfall due South of Nam Dinh (at the "Hour Glass" River). The flight popped up to 3500 ft when reaching land and proceeded to the target area (20°41'N/105°55'E) on a heading of 340°. One element of BLUE flight was deployed in trail on each side of the strike force corridor. As the strike group headed back, BLUE flight stayed in the target area to obtain preliminary BDA. The two IRON HAND A-4Es (GREEN 1, 2) were still N of area. BLUE flight started to depart the target area on a heading of 110°.

## 3. AIRCRAFT CONFIGURATIONS

F-4B BLUE 1, 2, 3, 4

3 - SPARROW (AIM-7E)
1 - SIDEWINDER (AIM-9B) (BLUE 1, 3, 4)
1 - SIDEWINDER (AIM-9D) (BLUE 1, 3, 4)
2 - SIDEWINDER (AIM-9D) (BLUE 2)
1 600-gal centerline tank
APQ-72, APA-157 (inoperative on BLUE 4)
CMR-312 (Little Ears)
TACAN
No camouflage (white and grey)

A-4E GREEN 1, 2 (on IRON HAND Mission)

Dark camouflage

MIG-17C MIG 1, 2, 3, 4, 5, 6

AA rockets
20mm cannon
Color: a dark purple or grey

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered small cumulus clouds with tops to 5000 ft. Visibility 5 to 10 miles. Haze below 3000 ft.

| | BLUE | | | | GREEN | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 |
| Altitude: | ----- 3500-4500 ft ----- | | | | -- 3000 ft -- | |
| Heading: | 110 | | 030 | | SSE | |
| Speed: | 450 kt | | 400 kt | | Unknown | |
| Fuel State: | Probably full internal | | | | Unknown | |

Flight Formation:

Elements (i.e., BLUE 1, 2 and BLUE 3, 4) were flying as two sections each in a tactical "loose deuce." Second section perhaps 5 mi off 4 o'clock position of first section in a "loose deuce" of sections.

## 5. INITIAL DETECTION

This event consisted of several independent encounters and is described in three separate parts. There was no MIG warning from support forces until after start of engagement.

Part A

BLUE 1(L) made visual contacts with two smoke trails in 8 o'clock position. BLUE 2 turned left for ID pass and identified them as A-4s. BLUE 1 stayed in 2-mi trail. BLUE 2 then reversed to rejoin BLUE 1, both dropping behind the A-4s. The A-4s (GREEN 1, 2) then reported they had MIGs at their 6 o'clock position. Two MIGs (MIG 1, 2) were then acquired visually coming in a high gunnery pass from the NW, 1-1/2 mi astern, MIG 1 firing cannon at BLUE 1. A total of four MIGs engaged BLUE 1 and 2.

[redacted]



[redacted]

[redacted]



Parts B and C

BLUE 3 and 4 heard MIG call from BLUE 1(L) and headed toward the NE, searching for MIGs. Visual detection was hampered by cumulus clouds in the 3000-5000-ft altitude regime. BLUE 3 sighted two MIGs (MIGs 5, 6) at his 10 o'clock position, chasing an A-4 (GREEN 1).

6. ACTION INITIATED

Part A

BLUE 1 and 2 broke hard left into MIGs 1 and 2. They did not drop centerline tanks and did not light afterburners.

Parts B and C

BLUE 3 directed BLUE 4 to go in trail and BLUE 3 headed directly for MIGs 5, 6. MIG 5 ducked into a cloud and BLUE 3 fired a SPARROW into the cloud hoping it would cause the MIG to break off the attack on GREEN 1. MIG 6 broke left and was engaged by BLUE 4.

7. SITUATION DEVELOPMENT

Part A

As BLUE 1, 2 descended to the deck to pick up airspeed the second element of MIGs (MIGs 3, 4) attacked in a high gunnery pass (at 7 o'clock position) as soon as the first section overshot. BLUE 2, 3/4 mi behind BLUE 1, saw two aircraft in the vicinity of BLUE 1 but could not identify them as MIGs. He could not get an ID message from BLUE 1 because of a crowded radio channel. BLUE 1 got separation at low level and lost sight of the MIGs. BLUE 1 then picked up another target, turned towards it but could not get ID. Approaching on a head-on course, BLUE 1 identified the bogey as a MIG (MIG 6) and fired a SPARROW in boresight mode. BLUE 1 was within minimum range and only fired the missile to scare off the MIG. After a close pass, BLUE 1 climbed back up, looked around, saw no more MIGs and departed the area with BLUE 2. Both BLUE 1 and BLUE 2 were at BINGO fuel.

When reaching the coastline BLUE 1 made one more turn and sighted a MIG about 7 mi in trail. The MIG was momentarily acquired on radar but the MIG turned back and the radar broke lock. BLUE 1, 2 could not pursue because of lack of fuel.

Parts B and C

After BLUE 3 fired the SPARROW into the cloud, MIG 5 turned back almost head-on to BLUE 3. BLUE 3 went to full AB and executed a rapid vertical reversal ending up behind MIG 5. BLUE 3 fired a SIDEWINDER at MIG 5 which was still descending. MIG 5 turned hard right; however, the SIDEWINDER guided and detonated near the MIG's tailpipe. MIG 5 rolled into a 120° bank and impacted with the ground. BLUE 4 engaged MIG 6 and met him head-on. BLUE 4 could not fire any SPARROW missiles since the radar was inoperative. BLUE 4 reversed and continued the head-on maneuvers hoping to get separation for a SIDEWINDER attack. MIG 6 was firing both guns and cannon. MIGs 3, 4 were behind and below BLUE 4 firing AA rockets. BLUE 4 sighted a single MIG (MIG 6) tailing BLUE 1 and 2. BLUE 4, in AB, attempted to close on MIG 6 engaging BLUE 1. MIGs 3 and 4, firing AA rockets, were again behind BLUE 4 which he shook off using vertical maneuvering. BLUE 4 broke off because of low fuel state and all aircraft headed back for the coast.

8. ORDNANCE

(No. fired/No. hits)

| | SPARROW AIM-7E | SIDEWINDER AIM-9D | Soviet AA Rockets | Remarks |
|---|---|---|---|---|
| BLUE 1 | 1/0 | 0/0 | | Fired within minimum range, missile did not have time to fuze. |
| BLUE 2 | 0/0 | 0/0 | | |
| BLUE 3 | 1/0 | 1/1 | | Radar broke lock. Target within minimum range. MIG destroyed |
| BLUE 4 | 0/0 | 0/0 | | Radar inoperative after takeoff. |
| MIG 3, 4 | | | 4/0 | Went behind BLUE 4. |

The other MIGs also fired guns and cannon. Apparently did not have AA missiles.

9. EQUIPMENT PROBLEMS

BLUE 2 - Back

Helmet crept down during high-g maneuvers pulling mask off -- had to keep replacing mask. Opening the visor helped.

BLUE 3 [redacted]

One SIDEWINDER was inoperative -- cause not given.



[redacted]

BLUE 4

Both radars (APQ-72 and APA-151) went out on take-off. Thus, BLUE 4 had no SPARROW capability. The radars had been checked prior to take-off and were operating. Later examination showed that the unit had a bad power supply with a blown fuse in the radome, apparently caused by moisture in the system.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1(L) Front | 5000 | 600 | 15 | Fired seven SPARROWs and five SIDEWINDERs in training. Leader was squadron CO. First MIG encounter. |
| BLUE 1 Back | | 130 | 22 | First MIG encounter. |
| BLUE 2 Front | 1000 | 650 | 20 | |
| Back | 500 | 300 | | Only had high-altitude ACM training, quite different from low-altitude regime. |
| BLUE 3 Front | data not available | | | Flown many ACM sorties. Tactics instructor. Aeronautical engineer. |
| BLUE 3 Back | | 600 | 25 | One MIG encounter. |
| BLUE 4 Front | 850 | 550 | 25 | First MIG encounter. Not much air-air combat training, one direct and seven or eight training missions. |
| BLUE 4 Back | data not available | | | |

Comments on this Encounter

Communications:

Saturation of communication channel was a problem. The radios were cluttered with messages during the entire flight making flight coordination extremely difficult.

Normal radio procedures were ignored during the heat of the engagement; callers were not identifying themselves or specifying whom they were warning. This confusion caused some aircraft to break away to lose a MIG which was not there at all.

Amount of traffic on UHF net also made use of intercom (ICS) very difficult.

BLUE 1 - Back

A close-in head-on weapon would have been useful in this encounter.

BLUE 2 - Front

Visual identification of MIGs presented a problem in this encounter since both MIGs and A-4s were dark and dull in color. When the MIGs are not shiny (as is usually the case) it is easy to mistake MIG 17 for A-4s, particularly at certain aspect angles when the tail surfaces fill in the swept-wing area, making it appear like a delta wing. BLUE 2 felt he could have gotten one or both of the MIGs near BLUE 1, had he known they were MIGs. Again the communication difficulty described above prevented him from obtaining identification information from BLUE 1.

Ordnance carried was three SPARROW missiles rather than four because of weight limitations due to carrier operations.

At the time period of this engagement, Navy F-4s generally did not drop their centerline tanks because they were difficult to replace and pilots felt that the empty weight of 250 lb really did not handicap them too much.

In the initial acquisition, BLUE 2 felt that they should have looked beyond the A-4s which were initially identified with radar, and had they done so they probably would have seen the four MIGs trailing the flight of A-4s.

BLUE 2 - Back

He felt that he did not have sufficient practice with "dog fighting" at low altitudes, which makes operation of the weapons system much more difficult, because of the proximity of terrain which greatly increases the amount of radar clutter.

They had problems with the radar locking on to cloud targets, and it was difficult to distinguish these from aircraft targets inside clouds.

BLUE 3 - Front

It was very difficult to maintain visual contact during the engagement. It was also difficult for the Back to acquire radar lock during the brief engagement and the pilot felt that although he had flown exactly as he had during training (perhaps, not as well due to the combat situation) that extensive and realistic air combat maneuvering training prior to combat, particularly at low altitudes, would have helped their performance.

BLUE 3 - Back

Visual ID requirements made the engagement much more difficult. Would like to be able to fire at once, without visual ID, and probably would have had better results. Because of the ID requirements, the SPARROW is not too useful because generally one must get too close to the target to make the ID.

Having some additional indicators in the back seat would eliminate some of the need for talk between front and back seats. The Back felt that the following would be useful: the IFF box control -- the pilot is often too busy to set it and at times gets vertigo when he must set it; the g-meter guage -- this is particularly helpful at night; rate of climb indicator; communication channel indicator; scale indication on the radar scope (either 25- or 50-mi range); left and right RPM gauges; fuel gauges.

BLUE 4 - Front

Probably should have aborted flight when radars were found to be inoperative.

The F-4 is at a distinct advantage when fighting vertically to get separation. F-4s can always separate successfully by climbing in afterburner.

11. DATA SOURCES

Project Interviews: BLUE 1 (Lead) Front, 16 Mar 67; Back, 18 Jan 67
BLUE 2 Front, 18 Jan 67, Back, 18 Jan 67
BLUE 3 Back, 18 Jan 67, Front, 17 Mar 67 (letter)
BLUE 4 Front, 17 Jan 67; Back, 10 Mar 67 (letter)

Messages, Reports:

CTF 77 130309Z Jul 66
CTG 77.8 130454Z Jul 66
CTG 77.8 131002Z Jul 66
7AF DAI 132254Z; DIO 29999 Jul 66

USAF Fighter Weapons Center, Bulletin No. 7

Air Combat Report, 13 July 1967, No. 1 USS CONSTELLATION (CVA-64)

12. NARRATIVE DESCRIPTION

This event consisted of several independent encounters and is described in three separate sections (Parts A, B, and C).

BLUE flight, consisting of four F-4B aircraft was assigned TARCAP in support of an Alpha strike on the Co Trai Bridge. The flight was briefed to overfly the target area after departure of the strike forces to perform preliminary BDA and to watch for possible MIGs.

The flight did not receive any MIG warnings prior to the start of the engagement. After the strike force had departed the target area, BLUE flight made another orbit. Two A-4E IRON HAND aircraft (GREEN 1, 2) were still north of the area. BLUE flight had just decided to depart and were flying in a loose deuce of sections, with the second section (BLUE 3, 4) about 5 mi behind and to the right of BLUE 1(L) and 2.

Part A

$T_{0A}$ The first section (BLUE 1, 2) was proceeding on a heading of about 110° at an altitude of 3500 ft and speed of approximately 450 kt and jinking. BLUE 1 sighted two contacts at his 8 o'clock position at 9000 ft and started to turn back and
$T_{1A}$ sent BLUE 2 to make a positive ID. By this time the contacts were close enough for BLUE 2 to identify them as A-4Es. BLUE 1 returned to his original heading and almost immediately saw two aircraft at about the same position. They were MIG-17s
$T_{2A}$ in a curve of pursuit and starting to fire at BLUE 1. At this point BLUE 1 called a hard left break (at full military power). The two MIGs, (MIG 1, 2) were follow-
$T_{3A}$ ing BLUE 1, 2 and firing as the range closed. BLUE 1, 2 continued their turn, went to AB and MIG 1, 2 overshot BLUE 1 firing as he passed. At this point, BLUE
$T_{4A}$ 1 was pointed N, still turning, when another section of two MIGs (MIG 3, 4) started a pass on BLUE 1, also from his 7 o'clock position and high. BLUE 1 (and 2) con-
$T_{5A}$, tinued the turn in AB and MIG 3, 4 overshot. By this time MIG 1, 2 returned for a
$T_{6A}$ second attack. BLUE 1 lowered his nose and relaxed the g's on the aircraft to pick

$T_{7A}$, $T_{8A}$, $T_{9A}$, $T_{10A}$, $T_{11A}$, $T_{12A}$, $T_{13A}$, $T_{14A}$, $T_{15A}$, $T_{16A}$, $T_{17A}$

up speed. BLUE 1 descended to near tree-top level and lost sight of all other aircraft. As BLUE 1 started to pull up, still turning, he sighted two MIGs (probably MIG 3, 4) at a range of 4 mi making a head-on firing run. BLUE 1 was unable to fire as he could not get his pipper lined up. BLUE 1 made a hard left level turn (altitude about 1000 ft) heading approximately east as the MIGs crossed approximately 200 ft above his aircraft. As BLUE 1 went out of AB and climbed slightly he received call to reverse for a single contact at 2 o'clock level. BLUE 1 was below the cloud deck and started a reverse to the right as he saw a bogey approximately 4 to 5 mi away. BLUE 1 put the pipper on the target but did not fire because no ID had been made. As the aircraft closed approximately head-on, BLUE 1 identified the target as a single MIG-17 (probably MIG 5) and fired a SPARROW missile in boresight mode at a range of 4000 to 5000 ft. At the same time the MIG opened fire as evidenced by the muzzle flashes. The SPARROW passed close to MIG 6 but did not detonate. MIG 6 passed BLUE 1 head-on. BLUE 1 started a hard climbing left turn, climbed to 7000 ft and checked his fuel state at 4500 lb. BLUE 2 was still flying wing to BLUE 1. Seeing no further contacts BLUE 1 and 2 proceeded to the coast, jinking. Just off the coast another contact was seen over land. BLUE 1 turned back, however, the contact also turned back and was lost in the clouds (range about 7 mi). BLUE 1 could not pursue the target because of low fuel. BLUE 1 and 2 then proceeded back to the ship.

Part B

$T_{0B}$, $T_{0C}$, $T_{1B}$, $T_{1C}$

When the second section (BLUE 3, 4) heard the MIG call of BLUE 1 and 2 it headed N toward the other section looking for MIGs. Throughout this encounter the various aircraft of the strike were on the air with MIG calls resulting in a lot of confusion on the communications channel. BLUE 3 sighted two dots in the sky, identified them as MIGs and directed BLUE 4 to go in trail.

$T_{2B}$, $T_{3B}$, $T_{4B}$, $T_{5B}$, $T_{6B}$, $T_{7B}$, $T_{8B}$, $T_{9B}$, $T_{10B}$, $T_{11B}$

BLUE 3 acquired the targets on radar at a range of 5 mi, armed the missiles and started an easy right turn. The MIGs were in a hard left turn about 2500 ft behind the two A-4E IRON HAND aircraft (GREEN 1, 2). BLUE 3 locked the radar on the lead MIG and was in range. GREEN 1, 2 were in a hard left turn. Just as BLUE 3 fired a SPARROW, the lead MIG ducked into a cloud and the radar broke lock (range 1-1/2 mi). The second MIG broke off and BLUE 4 followed him. (This part of engagement is covered in Part C). The first MIG (MIG 5) reversed rapidly and came back from 10 o'clock -- 1 to 2 mi away. BLUE 3 went to full AB and climbed to 9000 ft. The MIG turned 90° and crossed approximately 2000 ft ahead of BLUE 3. At the top of the climb BLUE 3 came out of AB and slipped the aircraft through the turn, then went back in AB and headed SSW with a 70° dive angle. MIG 5 was ahead of him in a hard left turn, going East. BLUE 3 leveled off at about 4000 to 5000 ft in a left turn and went into the HEAT mode. The Back picked up a noise target on radar and held lock by override. MIG 5 continued his hard left turn with BLUE 3 2 mi behind and starting to close range pulling more g's than the MIG. With MIG 5 10° left of BLUE 3 and a good SIDEWINDER tone BLUE 3 fired a SIDEWINDER. MIG 5 was below 1000 ft at this time and had started a hard right turn as the missile impacted the tailpipe. MIG 5 then went into a 120° bank and crashed. BLUE 3 followed the MIG around to assess damage and saw an orange fireball. After this BLUE 3 made one more fast orbit, observed no other aircraft and proceeded to the coast at a speed of 450-500 kt, altitude 3000 ft.

Part C

$T_{2C}$, $T_{3C}$, $T_{4C}$, $T_{5C}$, $T_{6C}$, $T_{7C}$, $T_{8C}$, $T_{9C}$, $T_{10C}$, $T_{11C}$, $T_{12C}$, $T_{13C}$, $T_{14C}$

BLUE 3, 4 had sighted two MIGs chasing the A-4Es (GREEN 1 and 2). BLUE 4 had sighted the second MIG (MIG 6) first and crossed over MIG 5 as they turned left. BLUE 4 saw BLUE 3 chase MIG 5 and he went after MIG 6. BLUE 4 pulled up his nose and climbed, turning left. MIG 6 reversed course and BLUE 4 met him head-on. BLUE 4 could have gotten a SPARROW shot had his radars been working. BLUE 4 pulled up to repeat this maneuver, hoping to get sufficient separation for a SIDEWINDER attack. (At this time he heard BLUE 3 call that he had shot down a MIG.) He again made a head-on pass with the MIG and could see the MIG firing his guns. MIG 6 started to turn left and BLUE 4 broke right to turn into the MIG. At this point two other MIGs (probably MIGs 3 and 4) fired rockets at BLUE 4 who rolled to the left and reversed into the attacking MIGs. BLUE 4, sighting a MIG tailing BLUE 1 and 2, headed toward the MIG (probably MIG 6), and tried to get into position to fire a SIDEWINDER. Two MIGs again attacked BLUE 4 with rockets and BLUE 4 broke left and up to separate from the attacking MIGs. BLUE 4 pulled up to make a high reversal and saw the MIGs 2500 ft below him, heading N, while he was heading S. He leveled off at 5000 to 6000 ft and headed for the coast, having approximately 4600 lb of fuel left. BLUE 4 had to use the tanker to get back to the ship.

EVENT I-37 SUMMARY (PART A)

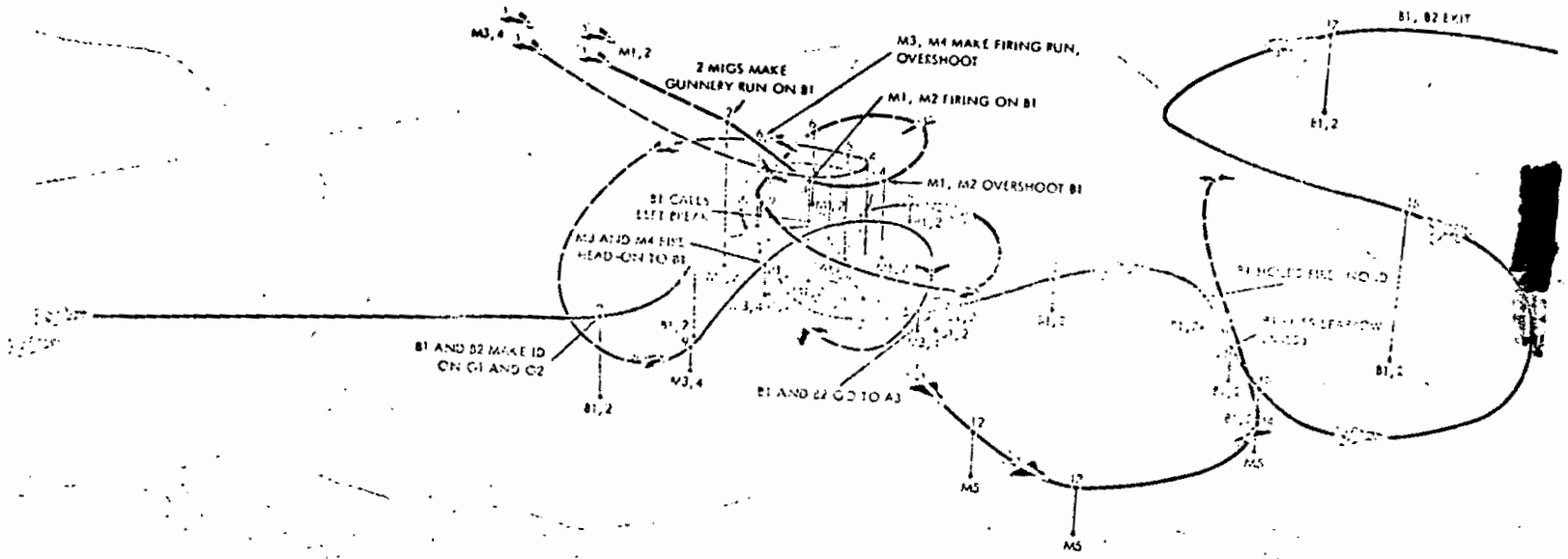
| Time Mark | Action Aircraft (BLUE 1, 2) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2, 3, 4, 5, 6) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | Alt: 3500 ft<br>Heading: 110°<br>Speed: 450 kt | B2 turned left to make ID pass. B1 stayed in 1 to 2 mi trail | | | | B1 (Back) spotted 2 smoke trails bogeys at 8 o'clock |
| $T_{1A}$ | Alt: 3500 ft<br>Heading: 045°<br>Speed: 450 kt | Returned to original heading | Two A-4Es (G1, 2) heading in southerly direction<br>Alt: 8000-9000 ft | Called "They're friendlies." | | Identified bogeys as A-4Es. Fuel approx 8000 lb |
| $T_{2A}$ | Alt: 3500 ft<br>Heading: 110°<br>Speed: 450 kt<br>Full military power | Hard break to left | B2 stayed with B1<br>G1, 2 out of sight | B1 called "left break" | 2 MIGs at 7000 ft 7:30 position 1 mi made gunnery run on B1 | |
| $T_{3A}$ | Alt: 3500 ft<br>Heading: 045°<br>Speed: 400 kt | Continued turn | | Called "MIGs" | M1, 2 were firing and closing on B1(L) | |
| $T_{4A}$ | Alt: 3500 ft<br>Heading: 000°<br>Speed: 350 kt | Continued turn. Went to AB | | | M1, 2 overshot on B1<br>Second section (M3, 4) high, came in from 7 o'clock | |
| $T_{5A}$ | Alt: 3500 ft<br>Heading: 315°<br>Speed: 350 kt | Continued turn in AB | | | M3, 4 started to fire in gunnery run | |
| $T_{6A}$ | Alt: 3500 ft<br>Heading: 270°<br>Speed: 300 kt in AB | Continued turn. Put nose down | | | M3, 4 continued to fire<br>M3, 4 overshot<br>M1, 2 returned for second attack | B1(L) lost sight of M3, 4 |
| $T_{7A}$ | Alt: 2000 ft<br>Heading: 135°<br>Speed: 300 kt<br>Kept nose down and g's on aircraft | Relaxed g's to pick up more speed<br>Nose down | | | MIGs not in range | |

EVENT I-37 SUMMARY (PART A) (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2, 3, 4, 5, 6) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{8A}$ | Alt: 100 ft<br>Heading: 110°<br>Speed: 575 kt | | | | | B1 completely lost sight of everybody |
| $T_{9A}$ | Alt: 1000 ft<br>Heading: 270°<br>Speed: 450 kt | | | | Section of MIGs (probably 3, 4) at range of 4 mi, alt 1000 ft, were heading towards B1, 2<br>Made head-on firing run | B1 could see muzzle flashes |
| $T_{10A}$ | Alt: 1000 ft<br>Heading: 270°<br>Speed: 450 kt | Made hard left turn (level) | | | MIGs passed B1 head-on, firing<br>MIGs turned right | B1 was unable to fire, could not get pipper lined up |
| $T_{11A}$ | Alt: 1000 ft<br>Heading: 090°<br>Speed: 450 kt in AB | Went out of AB | | | MIGs headed SW<br>Crossed over top of B1 (200 ft) from 11 o'clock to 5 o'clock | |
| $T_{12A}$ | B1 Alt: 1500 ft<br>Heading: 090°<br>Speed: 450 kt<br>Below cloud deck | Made hard right turn | | Back or B2 called to "reverse"; visual contact at 2 o'clock level | | |
| $T_{13A}$ | Alt: 1500 ft<br>Heading: 180°<br>Speed: 450 kt<br>Slight right turn | Kept pipper on bogey<br>Did not fire because ID had not been made | | | | Saw a black speck at 2 o'clock, range 4-5 mi, alt approx 2000 ft<br>Bogey heading: 135° in left turn<br>No ID made yet |

EVENT I-37 SUMMARY (PART A) (Continued)

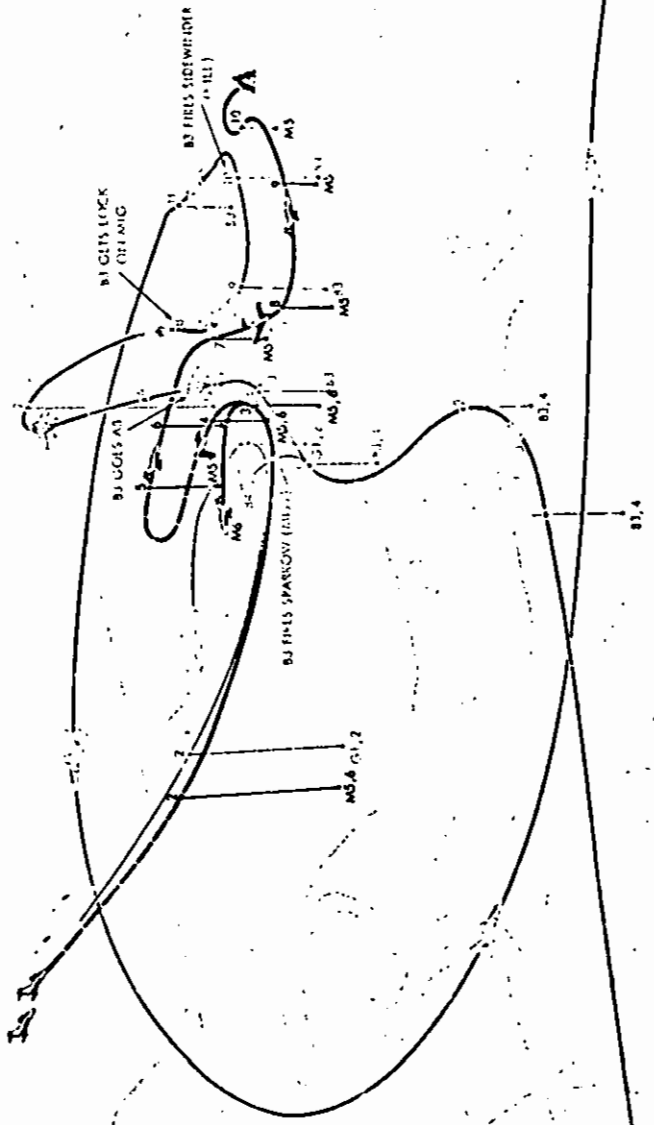
| Time Mark | Action Aircraft (BLUE 1, 2) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2, 3, 4, 5, 6) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{14A}$ | Alt: 1500 ft<br>Heading: 180°<br>Speed: 450 kt | Fired SPARROW<br>Range 4000 to 5000 ft in boresight mode | | | ID showed bogey to be single MIG (probably M6)<br>MIG starts to fire as missile goes by | Missile passed close but did not detonate |
| $T_{15A}$ | Alt: 1500 ft<br>Heading: 180°<br>Speed: 450 kt | B1 started hard climbing left turn | | | M6 passed B1 head-on | |
| $T_{16A}$ | Alt: 7000 ft<br>Heading: 315°<br>Speed 450 kt | Checked fuel - had about 4500 lb<br>Made gradual right turn to heading of 110 and alt of 4000 ft | B2 still flying wing on B1 | | | B1, 2 at edge of cloud cover<br>No further contacts |
| $T_{17A}$ | Alt: 4000 ft<br>Heading: 110°<br>Speed: 450 kt | Proceeded to coast, jinking | | | | |


M3, 4
M1, 2
2 MIGS MAKE
GUNNERY RUN ON B1
M3, M4 MAKE FIRING RUN,
OVERSHOOT
M1, M2 FIRING ON B1
M1, M2 OVERSHOOT B1
B1 CALLS
LEFT BREAK
M3 AND M4 EXIT
HEAD-ON TO B1
B1 AND B2 MAKE ID
ON C1 AND C2
B1, 2
M3, 4
B1 AND B2 GO TO A3
M5
B1, B2 EXIT
B1, 2
B1, 2
M5

EVENT I-37

EVENT I-37 SUMMARY (PART B)

| Time Mark | Action Aircraft (BLUE 3) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2, 3, 4, 5, 6) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{0B}$ | Alt: 3000 ft<br>Heading: 100°<br>Speed: 400 kt<br>jinking | Started to look for MIGs | | B1, 2 and G1, 2 reported MIGs in area | | B3, 4 were flying back to coast |
| $T_{1B}$ | Alt: 3000 ft<br>Heading: 090°<br>Speed: 400 kt<br>jinking | Started to head N toward B1, 2<br>Changed radar scale to see what could be picked up | | B1 identified two contacts as MIGs | | All sixteen aircraft were on air with numerous MIG calls resulting in a lot of communication confusion |
| $T_{2B}$ | Alt: 3000 ft<br>Heading: 010°<br>Speed: 450 kt | Acquired targets on radar at range of 5 mi<br>Locked on lead aircraft missiles armed<br>Started easy right turn | B3 directed B4 to go in trail<br>Did not see G1, 2 on radar | B1, 2 called two MIGs on tail | MIGs were heading in easterly direction | B3 sighted two dots in sky<br>Identified as MIGs |
| $T_{3B}$ | Alt: 3000 ft<br>Heading: 070°<br>Speed: 450 kt | MIG locked up on radar and in range | G1, 2 in hard left turn | B3 reported two MIGs at 12 o'clock | MIGs were in hard left turn, following G1, 2 at about 2500 ft<br>MIG rolled into 90° left bank, range about 1-1/2 mi | |
| $T_{4B}$ | B3 was 1-1/2 mi behind MIGs | Fired SPARROW<br>In range light was still on (or ready to go to break X) | G1, 2 still in hard left turn | B3 announced he's firing SPARROW (on ICS) | MIG in hard left turn, ducked into cloud | Radar lost lock (possibly on clouds) just as B3 fired SPARROW<br>Missile went into cloud and missed aircraft |
| $T_{5B}$ | Alt: 3500 ft<br>Heading: NE<br>Speed: 400 kt | Went to full AB and started climb | | | MIG returned (1 to 2 mi away) at 10 o'clock position crossing toward 5 o'clock | |

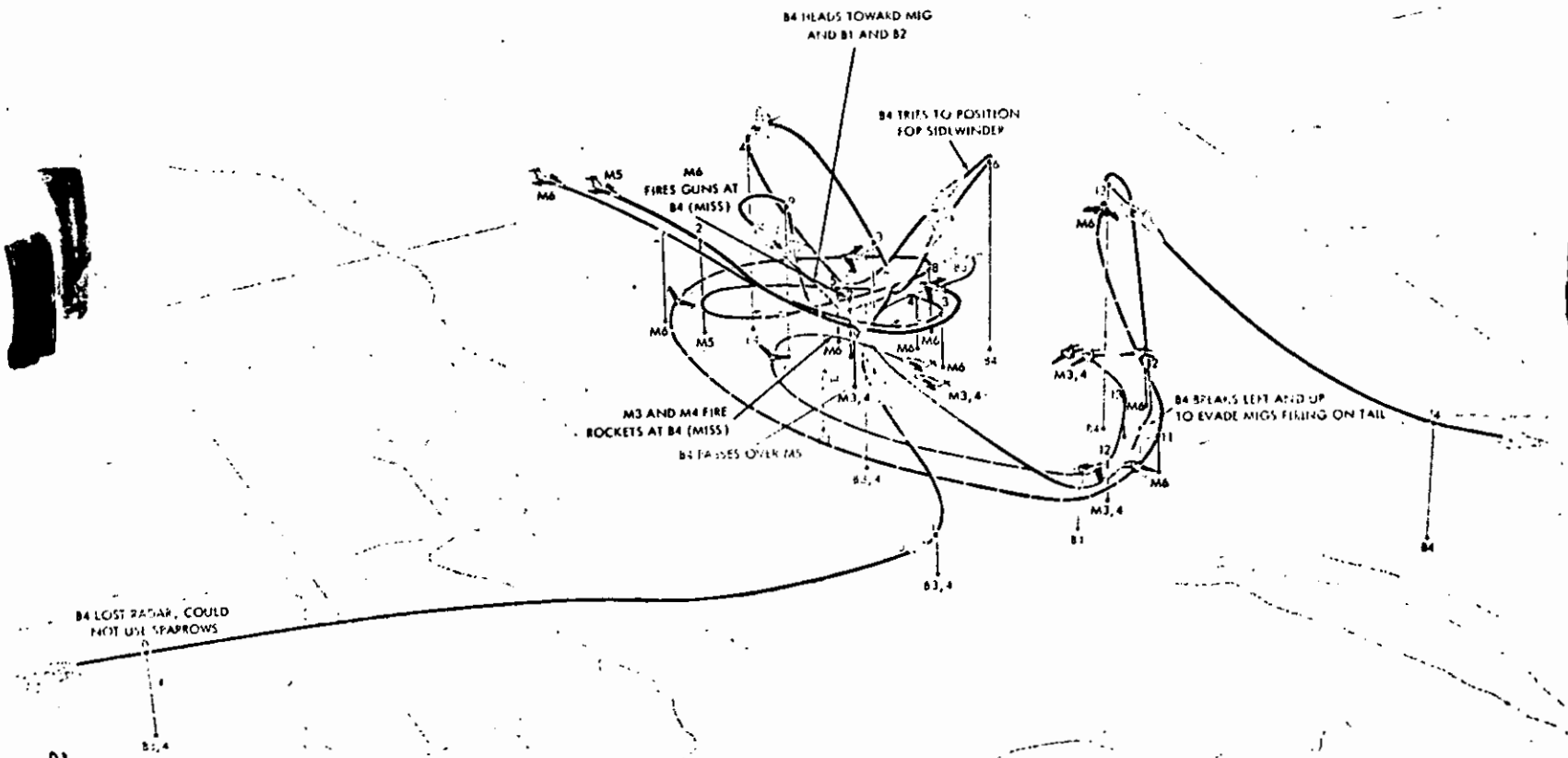

B3 FIRES SIDEWINDER
B1 GETS STICK OFF MIG
B3 GETS AS
B3 FIRES SPARROW
M5
M3
M3
M3
M3
M3,6
M3,6
M3
M3
M3,6 (1,2)
B3,4
B3,4

EVENT 1-37 SUMMARY (PART C)

| Time Mark | Action Aircraft (BLUE 4) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2, 3, 4, 5, 6) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{0C}$ | Orbited target area (CCW)<br>Alt: 3500-4000 ft<br>Speed: 400 kt<br>Jinking | Went to AB headed N | B3 went to AB (Seen by B4) | G1, 2 called "MIGs" | | B4 lost radars on takeoff -- had no displays, could not use SPARROW |
| $T_{1C}$ | Alt: 3500-4000 ft<br>Heading: 010°<br>Speed: 475-500 kt | | B1(L) and 2 were heading N | | MIGs were chasing G1, 2 | |
| $T_{2C}$ | B4 sighted two MIG-17s<br>Alt: 4500-5000 ft<br>Speed: 475-500 kt | Passed directly over first MIG (M5); had sighted M6 first; made clear ID<br>Started to pull up | B3 started pull up* (see Remarks) | | M5, 6 were at heading of 160°, separated 1/2 mi, chasing G1 and 2, M5 was at 4500 ft M6 was at 5000 ft | *Note: This is not substantiated by B3's account |
| $T_{3C}$ | Alt: 4500-5000 ft<br>Speed: 475-500 kt | B4 pulled up nose 80° and climbed turning left | B3 picked up M5 and broke right chasing MIG | | M5 was still chasing G1, 2<br>M6 turned left | B4 lost sight of B3 for remainder of encounter |
| $T_{4C}$ | Alt: 10,000 ft<br>Speed: 375 kt<br>(On top of pull-up and descending) | Started down and reversed to original MIG heading<br>Met M6 head-on at about 3000 ft | | | M6 reversed course<br>M5 was still chasing G1, 2 | Could have fired SPARROW had radars been working |
| $T_{5C}$ | Passed M6 head-on<br>Alt: 3000 ft<br>Heading: 135°<br>Speed: 475 kt | Pulled up to repeat maneuver to attempt to get separation for possible SIDEWINDER launch | | B3 called that he got a MIG (M5) | MIG reversed to left | |
| $T_{6C}$ | Out of AB for about 15 sec<br>Alt: 10,000 ft | At top of pull-up maneuver | | | | B4 could see guns firing |
| $T_{7C}$ | Westerly heading | Made second head-on pass at MIG 6 | | | M6 firing guns at B4 | B4 again was in position for SPARROW shot |

EVENT I-37 SUMMARY (PART C) (Continued)

| Time Mark | Action Aircraft (BLUE 4) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2, 3, 4, 5, 6) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{8C}$ | Heading: W<br>In AB | Broke right to turn into MIG | | | MIG started to turn left | |
| $T_{9C}$ | Alt: 7500-8000 ft<br>Speed: 350 kt<br>in pull up | Rolled to left and reversed into MIGs | B2 also saw MIGs on tail of B4 | Back called "two MIGs on tail -- 7 o'clock position" | MIGs (probably 3 and 4) fired air-to-air rockets | Rockets passed behind B4. No evasive maneuver needed. |
| $T_{10C}$ | Alt: 6500-7000 ft<br>Heading: 180°<br>Speed: 425 kt<br>Came out of AB for turn | Headed toward MIG 6 and B1, 2 | B1(L) and B2 in scissors with MIG 6 started to turn NE<br>B1, 2 estimated at about 2500 ft | | MIG 6 3000 ft behind B1, 2<br>Alt: 2000 ft<br>Firing at B1, 2 (probably M6) | Sighted MIG 6 tailing B1, 2 |
| $T_{11C}$ | Alt: 1500 ft<br>Speed: 275 kt and accelerating in AB | Chasing MIG 6--tried to get into position for a SIDEWINDER shot | | | MIG 6 was hanging on to B1, 2 | |
| $T_{12C}$ | Closed to 2 mi from MIG 6 in front | Broke left and up because of 2 MIGs on tail | B1, 2 continued their maneuvers | Back called "2 MIGs at 7:30 position--firing air-to-air rockets" | Two MIGs had evidently rolled in again and commenced firing rockets | |
| $T_{13C}$ | Alt: 13,000 ft | Pulled up to make high reversal | | | MIGs turned left. MIGs were below at about 2500 ft heading N, were in head-on situation | |
| $T_{14C}$ | Down to Alt 5000-6000 ft, full AB<br>Fuel: approx 4600 lb | Headed for coast | | | | Ended up with low fuel -- had to use tanker |


B4 HEADS TOWARD MIG AND B1 AND B2
B4 TRIES TO POSITION FOR SIDEWINDER
M6 FIRES GUNS AT B4 (MISS)
M3 AND M4 FIRE ROCKETS AT B4 (MISS)
B4 PASSES OVER M5
B4 BREAKS LEFT AND UP TO EVADE MIGS FIRING ON TAIL
B4 LOST RADAR, COULD NOT USE SPARROWS
M6
M5
M3,4
B1
B2
B3,4
B4

EVENT 1-37

followed by a MIG as BLUE 2 tracked the MIG and fired sporadically. BLUE 1 was in trail position following BLUE 2. The MIG took some hits but was not disabled. A second MIG was on the other side of the circle but not in position to fire on BLUE 1. This continued for several turns as BLUE 2 fired a SIDEWINDER unsuccessfully and when his guns jammed BLUE 1 resumed the lead and went into a high yo-yo to get into position on the MIG. MIG 2 crossed the circle and fired at BLUE 1, scoring hits in the right UHT, wing, and lower fuselage causing a fuel leak. BLUE 1 later ejected over the Gulf of Tonkin as a result of the fuel loss. BLUE 3 continued his turns going down to the deck (50-ft AGL), pulled up, and lost MIG 1 in the clouds. BLUE 2 fired the last SIDEWINDER, but without success.

8. ORDNANCE

(No. fired/No. hits)

| | SIDEWINDER AIM-9B | SIDEWINDER AIM-9D | 20mm Cannon | Remarks |
|---|---|---|---|---|
| BLUE 1 | 0/0 | 0/0 | None | |
| BLUE 2 | 1/0 | 1/0 | 124 rds | SIDEWINDER (AIM-9B) launched at high g's, pitched down and hit ground. SIDEWINDER (AIM-9D) guided but could not follow target. Guns jammed preventing full firing. (See Equipment Problems for details) |
| BLUE 3 | 0/0 | 0/0 | None | |
| MIG 1, 2, 3 | Fired unknown amount of 23/37mm cannon | | | |

9. EQUIPMENT PROBLEMS

BLUE 2 - While pulling over four g, the pilot tracked the MIG with the gyro pipper and fired the 20mm cannon. The tracers indicated the rounds were passing well behind the target. Apparently the sight was computing insufficient lead over four g. Three of the four 20mm cannon jammed and the rate of fire of the fourth decreased under the g loads.

Right - upper cannon fired 3-4 rounds, lower cannon none.

Left - upper cannon fired 20 rounds, lower cannon almost fired out.

Each cannon was loaded with 100 rounds.

BLUE 3 - Lost radio during first maneuvers when earphone cord became disconnected.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-8 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 3500 | 1000 | 210 | Much gun and missile firing experience. |
| BLUE 2 | 1300 | 800 | 8 | |
| BLUE 3 | 3000 | 800 | 125 | |

NOTE: All BLUE flight had continuous fighter background and were graduates of the F-8 Training Squadron.

Comments on this Encounter and Previous Experience

MIGs were well controlled by GCI and were generally expected to be at 6 o'clock when first sighted. F-8 was able to counter all MIG-17 maneuvers, possibly due to pilot abilities. F-8 had little capability of shooting down the MIG in this encounter, even after maneuvering to the MIG 6 o'clock because: (1) Cannons were completely unreliable, particularly in high-g environment, (2) When successfully engaging the MIG, which of necessity put the F-8 inside the MIG's radius of turn, the F-8 was inside minimum range for the missile.

F-8 gunsight was unreliable due to lead errors generated at high-g. Use of tracers was helpful in determining bullet proximity to the target. A requirement definitely exists for a short-range weapon, for a weapon to assist in the rescue of downed airmen, and for a reliable gun system.

11. DATA SOURCES

Project Interviews: BLUE 1, 17 Dec 66; BLUE 2, 20 Jan 67; BLUE 3 19 Jan 67

[redacted]



Messages, Reports:

CTG 77.6 OPREP-3 [illegible] 1609227 July 66
CTG 77.6 OPREP-3 [illegible] 1406042 July 66
CTG 77.6 OPREP-3 [illegible] 1408502 July 66
CTG 77.6 OPREP-3 [illegible] 1406462 July 66
35 TFW OPREP-3, 35101 FASTEL 566, July 66

12. NARRATIVE DESCRIPTION

After passing the coast-in point, BLUE flight continued inland in a combat formation with BLUE 1 and 2 in section and with BLUE 3 S-turning above to assist in the look-out in the rear hemisphere.

$T_0$ - Approximately 10 nm before arriving at the diversionary target, BLUE 2 sighted two MIGs in trail passing from right to left, low and to the rear below the clouds. BLUE 2 called, "MIGs at 9 o'clock, break left." BLUE 2 took the tactical lead and broke left and down, descending below the clouds in pursuit of the MIGs. BLUE 3 was crossing over the section in a right turn and continued turning as he pulled up into a climbing yo-yo maneuver.

$T_1$ - As BLUE 3 reached the top of his maneuver, he saw a MIG overshoot to the left as the MIG made a firing pass. BLUE 3 also saw a MIG come up through the clouds on his right. BLUE 3 reversed his turn to the left to counter the first MIG. The MIG saw BLUE 3 reverse, turned left and dove below the clouds, with BLUE 3 following.

$T_2$ - BLUE 2, with BLUE 1 in trail, leveled out below the clouds at 500 kt, and saw a MIG in an easy, right turn. BLUE 2 reversed his turn to the right (approximately 3 g), and pulled inside the MIG to track for a gun attack.

$T_3$ - Just as BLUE 2 was ready to shoot, he observed BLUE 3 passing right to left in front of the MIG at a range of approximately 1000 ft. BLUE 2 called BLUE 3 to break left and advised him that he was passing in front of a MIG. BLUE 3 did not hear any radio transmissions because his earphone cord apparently had become disconnected during his first maneuver. The MIG saw BLUE 3 and reversed his turn to the left and commenced tracking BLUE 3 as he closed the range. BLUE 2 also reversed his turn, again pulled to the inside of the turn to track the MIG.

$T_4$ - BLUE 2 placed the gyro pipper on the MIG and fired a burst of 20mm but the tracers passed well behind the MIG.

$T_5$ - BLUE 2 then used the fixed pipper and pulled as much lead as possible with 30° angle off, 500 kt, and 6 g. When he fired again, only the left guns fired, the right guns had jammed. The MIG was hit at least twice, but before significant damage resulted, one of the two guns firing stopped and the other gun fired erratically at a very reduced rate before it finally stopped. BLUE 2 was unable to expend more than about 25 percent of his ammunition.

$T_6$ - The encounter had developed into a continuously turning, high-g, high-speed engagement, as the altitude ranged from the base of the clouds to the ground (estimated within 50-ft AGL). In trail behind BLUE 3 were the MIG, BLUE 2 and BLUE 1. A second MIG descended through the clouds and was sighted by BLUE 2 as it joined the fight on the opposite side of the circle.

$T_7$ - Although well outside the missile envelope, BLUE 2 fired a SIDEWINDER-B at the MIG in an attempt to force the MIG away from BLUE 3. The missile came off the launcher and pitched down and behind the MIG into a rice paddy. BLUE 2 then advised BLUE 1 that his guns had stopped firing. The tactical lead was resumed by BLUE 1 who started a high yo-yo to the inside to move into a firing position on the MIG.

$T_8$ - As BLUE 1 reached the top of his maneuver, the MIG that had just entered the encounter took advantage of BLUE 1's reduced speed and closed the range by cutting across the circle. The MIG fired at BLUE 1 and scored hits in the tail, wing, and lower fuselage. Because of control difficulties, BLUE 1 disengaged by entering the clouds. BLUE 3 observed the hits on BLUE 1 and for the first time saw the MIG on his tail.

$T_9$ - After slowing to 250 kt, to maintain control of his damaged airplane, BLUE 1 headed for the coast. In an attempt to disengage from the MIG on his tail, BLUE 3 dove for the ground in afterburner to open the range. The MIG did not follow BLUE 3 down to ground level, but remained a little high at 6 o'clock, not in a firing position.

$T_{10,11,12}$ - Unable to lose the MIG by diving, BLUE 3 pulled up hard into the clouds and then executed a 360° right turn just above the clouds followed by a 360° left turn below the clouds and departed the area to the NE. As the MIG detached from BLUE 3, BLUE 2 launched a SIDEWINDER with 60° angle-off, in a 45°-50° climb, at a range of about 1000 ft. The missile appeared to guide initially but passed well behind as the MIG continued to maneuver. BLUE 2 continued to follow both MIGs, which were out in front heading toward Phuc Yen. With no remaining ordnance, BLUE 2 entered the clouds and turned toward the coast after giving BLUE 1 and 3 time to exit the area.

The flight rendezvoused over the water and proceeded toward the carrier at a reduced speed while assessing the damage to BLUE 1. Unable to refuel in flight because of a utility hydraulic failure, the pilot of BLUE 1 ejected when fuel was exhausted (result of fuel leaks from battle damage).

[redacted]



[redacted]

EVENT I-38 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2, 3) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2, 3) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | BLUE flight in tactical formation patrolling for MIGs and acting as strike decoy group. | B2 sights two MIGs passing 3-9 o'clock behind and calls flight to break left. B1&2 turn left and down below undercast and B3 turns right and up due to position on B1&2. B2 takes lead of section. | Altitude 3000 ft Speed 450-kt IAS | B2 calls "MIGs 9 o'clock--break left." | Three MIGs (MIG 1, 2, 3) pass behind BLUE flight and turn to intercept. | |
| $T_1$ | B3 at top of yo-yo and in right turn | B3 sees MIG (M2) make firing pass and overshoot to left--looks down and sees another MIG coming up through clouds. B3 decides must turn left to counter top MIG. B3 reverses left, down to below clouds. | | | M2 fires on B3 and reverses down to below clouds. | Position of M3 unknown after being seen by B3. |
| $T_2$ | B1&2 under clouds looking for MIGs | B2 spots M1 and turns to track him with guns | B1 in trail to B2 | | M1 in easy right turn | |
| $T_3$ | B2 getting ready to fire on M1 at 1000 ft | B2 spots B3 coming from right to left and passing out in front of M1. As M1 reverses on B3, B1&2 also reverse to track M1. | | B2 calls "B3 break left, you are passing in front of a MIG." | As B3 passes in front of M1, he reverses and turns to the inside of B3. | B3's radio was out and he did not get B2's message. |
| $T_4$ | B2 tracking M1 at 1000 ft. B3 unaware M1 is tracking him | B2 fires on M1 but no hits. | | | M1 tracking B3 at 500 ft, but not firing for unknown reasons | |

EVENT I-38 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2, 3) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2, 3) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_5$ | B2 firing on M1 B3 being tracked by M1 | B2 hits M1 at least twice with 20mm. B2 saw holes but it didn't affect M2's performance | | | M1 still tracking B3 | B2's guns not working well, and gradually worsen to where all guns stop<br>B2 was firing approximately 30° angle off, 500-kt IAS, 6 g's |
| $T_6$ | B1, 2, 3, M1 all in tight left turn | B2 sees M2 entering circle and directly on opposite side | | | M2 finds flight below clouds, enters engagement | |
| $T_7$ | Same as above | B2 fires SIDEWINDER (AIM 9B) at M1 hoping to scare him off of B3 | | B2 transmits to B1 that his guns had stopped. B1 states he "will yo-yo high to inside and try to cut across to inside on M1." | Same as above | B2 was aware SIDEWINDER (AIM-9B) had no chance of tracking M1, missile pitched down out of sight<br>B2 did observe what he thought was M1 firing at B3 one time. |
| $T_8$ | B2 in trail on M1 with M1 tracking B3. B1 at top of yo-yo getting ready to start down | B1 hit in wing, UHT and fuselage by M2. B1 climbs into clouds to lose M2. | B3 still with no radio, saw M2 fire and hit B1 from across the circle | B1 transmits that he has been hit. | M2 had been gradually gaining on B1 by cutting across the circle and when B1 pitched up, M2 took advantage of B1's reduced speed and was able to maneuver into a firing position. | B1 commenced losing fuel due to hit in fuselage. |

EVENT I-38 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2, 3) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2, 3) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_9$ | B1 in clouds evading M2. B3 still trying to evade M1 | B1 slows to maintain control and turns to fly to the Gulf.<br>B3, seeing that M1 is still tracking, dives for the deck in AB to put M1 out of a firing position and to open | B2 still trailing M1 | | M2 disengages B1 and continues turn toward base.<br>M1 will not follow B3 to ground level, instead stays high at 6 o'clock | B1 subsequently ejects due to fuel exhaustion--cannot refuel due to hydraulic failure. |
| $T_{10}$ | | B3 pitches up into clouds to evade M1 and does a series of turns above and below clouds to ensure M1 had not followed before heading for the Gulf. | B2 still trailing M1 | B1 transmits that he doesn't know whether he will make the Gulf or not. | M1 breaks off from B3 as he enters clouds and continues turn toward base. | |
| $T_{11}$ | B2 trailing M2 | B2 observes M1 detach from B3, B2 fires SIDEWINDER (AIM-9D) at M1--missile initially guides then passes behind without exploding.<br>B2 also sees M2 ahead and follows both M1&2 in level flight momentarily breaking off with nothing to shoot at them. | B1&3 heading for the Gulf | | M1&2 both had broken off attacks and were heading home below clouds. | Although SIDEWINDER (AIM-9D) appeared to guide, B2 now believes he was inside minimum range due to M1's g forces. |
| $T_{12}$ | | B2 breaks off attack and heads for clouds enroute to the Gulf. | | | M1&2 in level flight proceeding to base. | |

[redacted]

EVENT I-38

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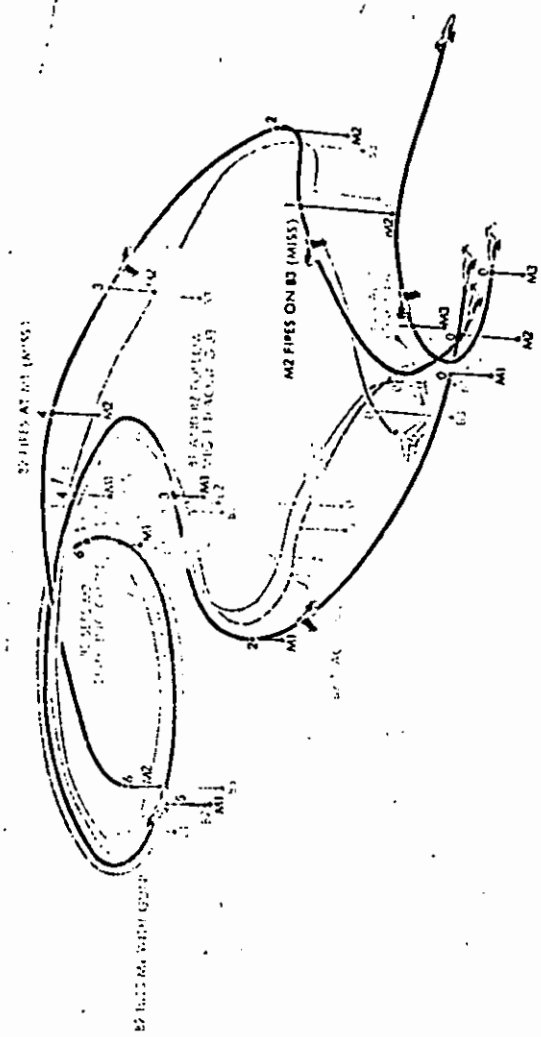


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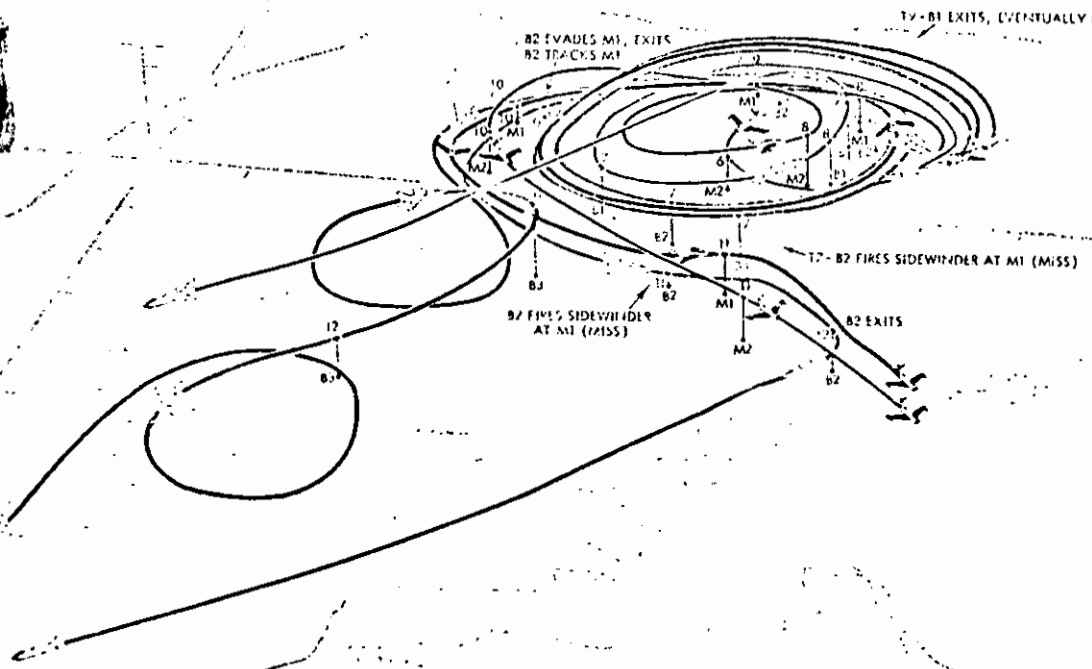

B2 EVADES M1, EXITS
B2 TRACKS M1
T1 - B1 EXITS, EVENTUALLY EJECTS
T2 - B2 FIRES SIDEWINDER AT M1 (MISS)
B2 FIRES SIDEWINDER AT M1 (MISS)
B2 EXITS

EVENT I-38

[redacted]

EVENT I-39

Aircraft Involved: One F-105 and four F-4Cs vs two or three MIG-21s

Result: Two MIGs destroyed

Vicinity of Encounter: 21°18'N/105°32'E Route Package VI

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 Jul 1966/about 1200H

Four F-4C (BLUE flight) were flying MIG cover for an IRON HAND flight of three F-105s (GREEN flight) which were in turn supporting ROLLING THUNDER strikes in the area north of Hanoi. F-4Cs were to trail and maintain visual contact with IRON HAND flight. Additional support aircraft (BIG EYE, SILVER DAWN, and EB-66s) were airborne at the time of the encounter.

2. MISSION ROUTE

BLUE flight departed Danang about 1030H and proceeded on approximate course 280° to rendezvous with the tanker in the vicinity of Udorn. After refueling at 26,000 ft, 310 kt, the flight broke off the tanker about 19°N, and proceeded to the rendezvous with GREEN flight with BLUE trailing GREEN 1 to 1-1/2 mi. The flight proceeded in a northeasterly direction, GREEN about 12,000-15,000 ft, BLUE about 3000 ft higher at 550-560-kt TAS. At approximately 21°57'N/104°35'E, GREEN began letting down to 3000-4000 ft, coming to a generally southeasterly heading toward the target area, changing course from time to time and searching out radar (FAN SONG) contacts. GREEN picked up a FAN SONG signal and one SHRIKE was fired. GREEN then reversed course and proceeded northwest picking up another FAN SONG signal. As the flight was too close in for a SHRIKE launch, GREEN lead advised he was making a 360° turn to the right. It was during this turn that enemy aircraft were sighted and subsequently engaged.

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

4 - SPARROW (AIM-7)
4 - SIDEWINDER (AIM-9B)
2 - 370-gal wing tanks
1 - 600-gal centerline tank
IFF (B1 only) on, TACAN off, camouflage paint

F-105 GREEN 1, 2, 3

Not given. At least two were F-105F WILD WEASEL aircraft and had SHRIKE missiles.

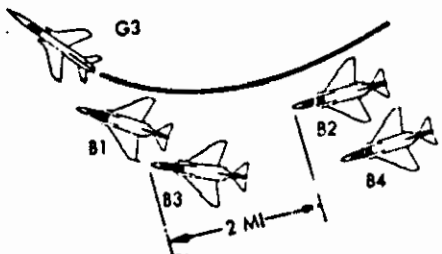
MIG-21 MIG 1, 2

One AA missile
Silver color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered to broken cumulus clouds at about 8000-10,000 ft; visibility 10+ with slight haze.

| | BLUE 1 | BLUE 2 | BLUE 3 | BLUE 4 | GREEN 3 |
|---|---|---|---|---|---|
| Altitude: | 7500 ft | 9000 ft | 8000 ft | 9000 ft | 4500 ft |
| Heading: | North-northwest (in right turn) | | | | |
| Speed: | About 500 knots | | | | |
| Fuel State: | 15,000-16,000 lb (full internal plus some external) | | | | |
| Flight Formation: | Not clearly determined. During the engagement some flight positions became interchanged and it is not clear if this occurred during the maneuver, prior to MIG sighting, or during the initial series of turns after the sighting. Probable relative positions at the time of initial MIG sighting, based on all interviews, is given below. | | | | |

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5. INITIAL DETECTION

EVENT I-39

No MIG warnings received from support aircraft. BLUE flight was in a right (360°) turn, following GREEN when MIG 1 was sighted by BLUE 3 at 7 o'clock.

6. ACTION INITIATED

BLUE 3 called out MIG to flight. BLUE jettisoned tanks. MIG 2 was then almost immediately sighted by BLUE 3 at 4 o'clock passing BLUE 1 and 3 heading toward GREEN 3. BLUE 1 after an initial left turn, reversed to right and sighted the MIG heading toward GREEN 3; he turned to intercept MIG 2 pulling in front of BLUE 3, who had begun to turn toward MIG 2. At this same time BLUE 2 and 4 some 1-1/2 to 2 mi behind became engaged with a MIG. MIG 3 (perhaps this was MIG 1, but not sure) was sighted by BLUE 4 at 4 o'clock. BLUE 4 broke right, jettisoning tanks; BLUE 2 broke right also. BLUE flight was thus involved in two separate, not-related encounters, neither involving the same aircraft. The two encounters will be handled separately.

7. SITUATION DEVELOPMENT

BLUE 1 and 3 were in a chase-type engagement. GREEN 3, continuing with his SHRIKE launch mission (although knowing he was under attack) was pursued by MIG 2 who was in turn pursued by BLUE 1 and 3. As MIG 2 closed in on GREEN 3, BLUE 1 fired a SIDEWINDER which did not hit, but did cause MIG 2 to turn away from GREEN 3. BLUE 1 continued after MIG 2 and downed him with a SIDEWINDER.

BLUE 2 and 4 were in an engagement in which MIG 3 fired a missile at BLUE 4 (missed). BLUE 2 pursued MIG 3 and downed him with a SIDEWINDER.

Neither engagement required extensive maneuvering.

8. ORDNANCE

(No. fired/No. hits)

| | SPARROW AIM-7 | SIDEWINDER AIM-9 | Soviet AAM | Remarks |
|---|---|---|---|---|
| BLUE 1 | 0/0 | 3/2 | | No. 1 passed over MIG. No. 2 guided and detonated behind MIG. No. 3 guided up tailpipe and detonated. |
| BLUE 2 | 0/0 | 2/1 | | No. 1 guided and detonated near right side of tail. No. 2 not observed. |
| BLUE 3, 4 | none | none | | |
| MIG 1, 2 | | | none | |
| MIG 3 | | | 1/0 | Missile corkscrewed low and left rear of BLUE 4. |

9. EQUIPMENT PROBLEMS

None reported.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | 2000 | 250 | ~40 | TAC fighter background. Had fired SIDEWINDER (4) and SPARROW in training. Only air-to-air engagement. |
| BLUE 2 | | | | |
| Back | 400 | 100 | 6 | |
| BLUE 3 | | | | |
| Front | 2600 | 400 | ~60 | TAC fighter background. No missile firings. |
| BLUE 4 | | | | |
| Back | --Interviewed but this information not recorded-- | | | |

Comments on this Encounter

Enemy pilot capability not impressive as indicated by providing good missile target source (afterburner) and failing to take evasive action. (BLUE 1)

F-4C aircraft is an excellent performer. In this case a better decleration capability would have helped BLUE 1 to back off. (BLUE 1)

An internal gun might have enabled BLUE 1 to down MIG on first pass. (BLUE 1, BLUE 3)

Radio frequencies are overcrowded and overworked, creating confusion. (BLUE 1)

Comment from Overall Experience

Need more ACT in training (all interviewees).

Need passive SAM detection gear (BLUE 3 Front).

Value of 2-man crew is great, two sets of eyes better than one, especially at night (all interviewees).

## 11. DATA SOURCES

Project Interviews: BLUE 1-Front (9 Jan 67), BLUE 2-Back (14 Mar 67), BLUE 3-Front (25 Jan 67), BLUE 4-Back (10 Jan 67)

Messages:

7AF OPREP 3, 140722Z; DOCO-O 22886 Jul 66

7AF OPREP 3, 140751Z; DOCO-O 22888 Jul 66

7AF 140755Z; DOCO-O 22887 Jul 66

7AF 140721Z; DOCO-O 22885 Jul 66

7AF OPREP 3, 140825Z; DOCO-O 22892 Jul 66

35 TFW OPREP 3 FASTEL 557 Jul 66

35 TFW OPREP 3 FASTEL 556 Jul 66

Other

Letter, BLUE 1 (Lead)-Back

USAF TFWC CAD Bulletin #7

## 12. NARRATIVE DESCRIPTION

BLUE flight was in a right-hand turn following GREEN flight (F-105s) who was preparing to launch SHRIKE missiles.

MIG 1 was sighted by BLUE 3 at 7 to 8 o'clock and almost immediately afterwards MIG 2 at 4 o'clock was sighted by BLUE 3.

BLUE lead began a hard left turn and quickly reversed into a hard right turn as MIG 1 passed behind him (estimated 2 mi). In this right turn he sighted MIG 2 coming up behind GREEN 3.

It is not clear how other aircraft in BLUE flight maneuvered relative to BLUE 1, especially in light of the uncertainty regarding the initial formation positions noted previously. It is known that in the initial maneuvers BLUE 3 became wingman for BLUE 1. BLUE 2 and BLUE 4 became separated from the other two and perhaps each other in the initial maneuvers also. During the initial maneuvers all BLUE flight jettisoned their tanks.

After the initial MIG sighting and maneuvering BLUE flight in effect became involved in two separate, nonrelated encounters - neither involving the same aircraft. Accordingly, this section will deal with the encounters separately.

BLUE 1 (Lead) and 3

$T_0$ - About the time BLUE 1 reversed his turn to the right, GREEN 2 (Lead) called a MIG at 5 o'clock and GREEN 3 confirmed. (Note: It is assumed that GREEN 2 and 3 detected the MIG airborne intercept radar on their special equipment.

$T_1$ - BLUE 1 spotted the MIG coming up behind GREEN 3 and advised GREEN 3 to break right and that BLUE 1 had the MIG. GREEN 3 declined to break, saying he was preparing to launch a SHRIKE, and continued in a slight right turn - the MIG turning to cut him off about 3 mi behind. BLUE 1 turned and got behind the MIG, overtaking the MIG rapidly.

$T_2$ - About the time the MIG had closed to approximately 1/2 mi behind GREEN 3 (who by this time has rolled out on an easterly heading) BLUE 1 was 1/2 mi behind the MIG and fired a SIDEWINDER missile which passed without detonating over the canopy of the MIG. The MIG then lit his afterburner and initiated a 30° climb - in a slight right turn.

$T_3$ - BLUE Lead then fired a second missile which detonated behind the MIG.

$T_4$ - A third missile then launched by BLUE 1 went up the MIG tailpipe and exploded - the MIG exploded into many pieces.

BLUE 1 and 3 then exited the area, rejoined GREEN flight and all returned to their respective bases.

[redacted] [redacted]



BLUE 2 and 4

$T_0$ - At the time of initial MIG sighting and call by BLUE 3, BLUE 4 was to the rear of BLUE 1 and 3. BLUE 4 spotted a MIG at 4 o'clock and broke right.

$T_1$ - The MIG turned in behind and fired a missile at BLUE 4; the missile missed low to the left and rear. BLUE 4 continued his right turn and lost sight of the MIG.

$T_2$ - BLUE 2 meanwhile had broken right and spotting the MIG behind BLUE 4, turned in behind him. The MIG lit afterburner and started climbing. BLUE 4 fired a SIDEWINDER which hit the MIG near the right side of the tail. The MIG pilot ejected and the chute was seen by both BLUE 2 and 4. (BLUE 4 had seen the explosion and flew over to investigate.)

Estimated duration of each engagement, 2-4 min.

[redacted] [redacted]

EVENT I-30 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | B1 7000-8000-ft altitude<br>~500 kt, 1-2 g's<br>Right level turn<br>15,000-16,000 lb fuel<br>BLUE flight following GREEN 1-3 mi<br><br>B3 8000 ft<br>~500 kt, 1-2 g's<br>Right level turn<br>15,000-16,000 lb fuel<br>Sees MIG at 7 o'clock | On hearing MIG call from B3, B1 starts hard turn to the left, goes into AB and jettisons centerline tank. As MIG passes behind him about 2 mi, he reverses turn to right and sights MIG to right heading toward G3, turns to engage M2, jettisoning wing tanks.<br><br>B3 calls out MIG to flight. Jettisons tanks. Breaks into M2 then sees B1 turning in front of him toward MIG. Did not go into AB. | GREEN flight is in a right turn 5000 ft or lower turning toward an easterly heading to launch SHRIKE missile(s) at FAN SONG radar signals. G3 is behind G1&2 and ~1-2 mi ahead of BLUE flight. G1&3 pick up MIG AI radar on electronic equipment. | B3--MIG at 8 o'clock high<br>G1--MIG at 5 o'clock<br>G3--Confirmed MIG at 5 o'clock | M1 at 9000 ft descending heading from 7 o'clock to 6 o'clock-- ~2 mi behind BLUE 3.<br>M2 at 6000 ft heading toward G3 in ~45° bank turn. | G1&3 lose sight of M1 in initial turns as their attention was focused on M2 apparently heading to attack G3. It is possible M1 was subsequently engaged with B2&4.<br>Looks toward B1 (right side) sees B1's tank(s) go and sees MIG at 4 o'clock passing by B1. |

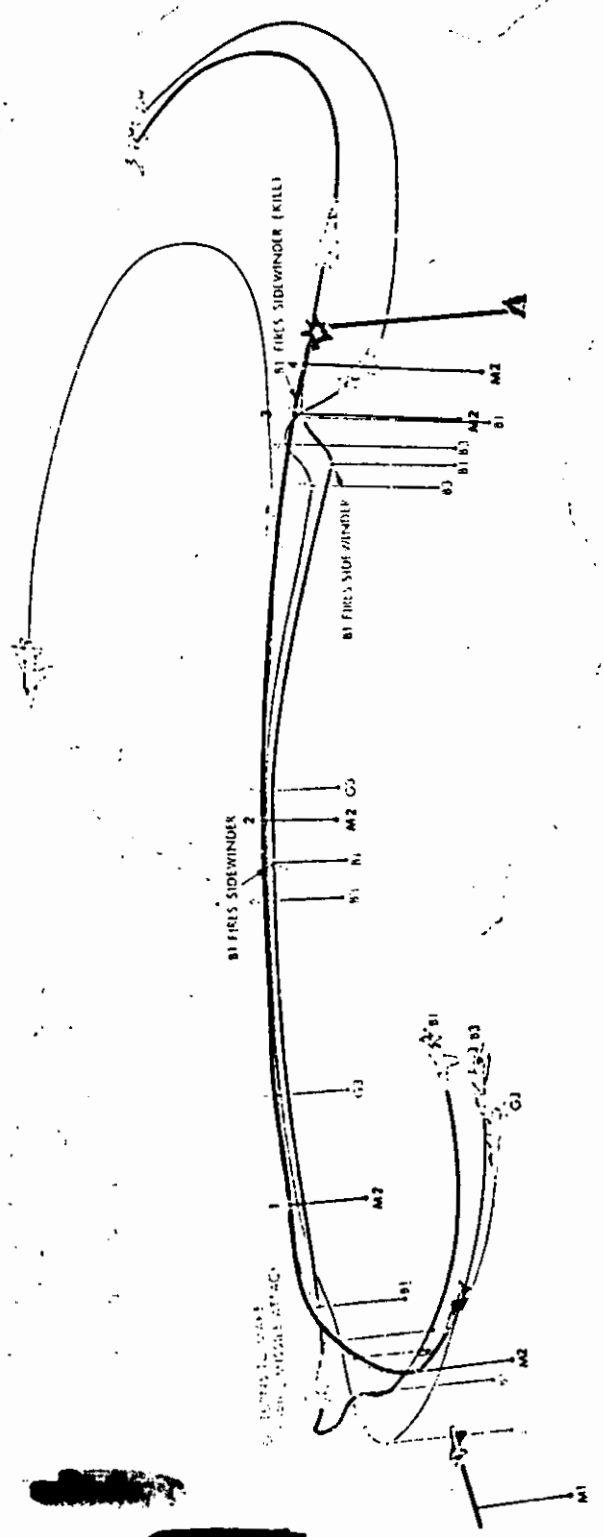
EVENT I-39 SUMMARY (CONTINUED)

| Time Mark | Action Aircraft (BLUE 1, 3) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_1$ | B1 6000 ft<br>~550 kt in AB<br>1-2 g's<br>Slight descent<br>B1 rolls in behind MIG about 2 mi | Front tells back to go to 10-mi scope and boresight. Back acknowledged and advised front to advise when MIG was in reticle. B1 was accelerating rapidly, up to 550-600 kt. Front advised back MIG in reticle. Back says he is locked on the MIG, in range and also has G3 on the scope. Front started to squeeze the trigger but back advised they were too close. Sometime in here front realized he was overtaking MIG rapidly and came out of AB and extended his speed brakes. Front then switched to HEAT. Back advised they were in range and at less than 2 g's. | G3 rolled out of turn on easterly heading. | B1--"G3 break right. B1 has the MIG."<br><br>G3 --"Negative--have contact--getting ready to launch." (SHRIKE) | M2 ~1 mi behind G3 and closing ~1 mi. | |
| | B3 6000 ft | Flying as wingman for B1. | | | | |
| $T_2$ | B1 5000 ft<br>~500 kt<br>1-2 g's | B1 launches SIDEWINDER at MIG. | | | M2 about 1/2 mi behind G3. After missile passed went into AB and started to climb to right. | Front did not recall hearing missile tone, and did not see missile in flight. Did get a break X as missile left. |
| | B3 ~5000 ft | Front saw missile pass over MIG's right wing past canopy. He did not observe it explode but did see smoke trail. | | | | B3 sees B1 launch missile. |

EVENT I-39 SUMMARY (CONTINUED)

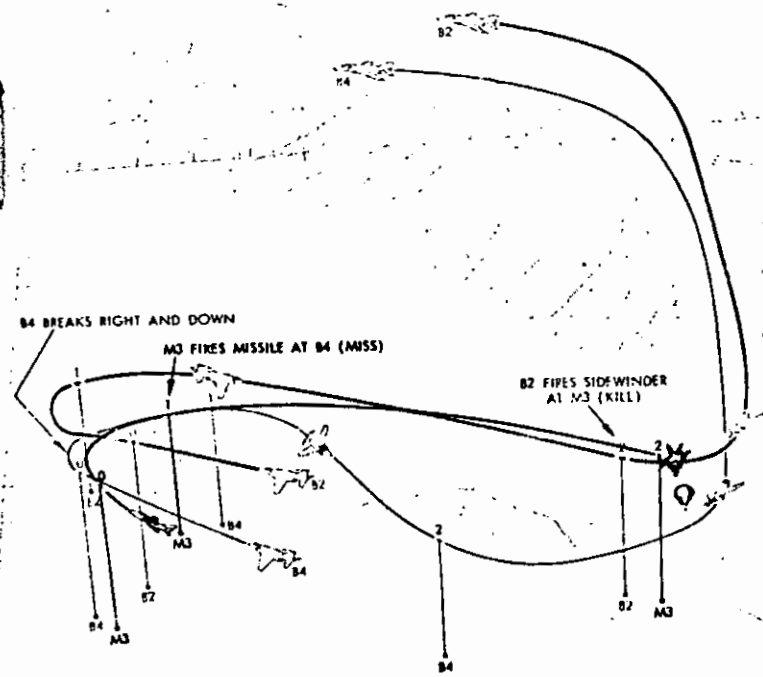
| Time Mark | Action Aircraft (BLUE 1, 3) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_3$ | B1 at 9000 ft ~500 kt, 1 g.<br>B3--no data | B1 back into AB. B1 pursuing MIG. Fires another SIDEWINDER with good tone just as he returns to minimum range (3/4 mi). Missile explodes ~200 ft short.<br>B3 flying wing. | G3 continues on SHRIKE launch. | | M2 climbing but not turning.<br>After SIDEWINDER detonation M2 out of AB then back in. | |
| $T_4$ | B1 at 10,000-11,000 ft, ~500 kt, 1 g<br>B3--no data | B1 fires third SIDEWINDER with good tone, very quickly after second firing ($T_3$). | | | Missile goes up tailpipe. M2 exploded into many pieces--some on fire. Pilot ejects (seen by B3 only) before explosion. | B1 sees no ejection.<br>B3 flying wing sees MIG pilot eject, just before missile hit. |

NOTE: After $T_4$ B1&3 reestablish communication with GREEN, obtain DF steer and pick them up visually. All exit area and return to bases.


B1 FIRES SIDEWINDER (KILL)
B1 FIRES SIDEWINDER
B1 FIRES SIDEWINDER
M2
B1
B3
G3
G1
M1

EVENT I-39 SUMMARY (CONTINUED)

| Time Mark | Action Aircraft (BLUE 2, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | B2&4, 9000 ft ~500 kt; in AB (catching up) | B2&4 hear B3 MIG call. B2 sees MIG behind B4. B4 breaks right and down (5 g's). B2 at first eases left then also breaks right. Tanks jettisoned and into AB. | B1&3 ahead--becoming engaged separately | B2&4 both called MIG behind B4. | M3 close behind B4. | M3 may be M1, the first one sighted by B3. |
| $T_1$ | B2: No data<br>B4: 7000 ft ~500 kt, 5 g's | B4 in break. MIG fires missile. B2 is turning to right and begins to pursue MIG. | | | MIG fires missile at B4, missile misses--low and to rear; MIG then slides behind B4 who did not see him again. B2 sees MIG go into AB and climb. | |
| $T_2$ | B2, ~9000 ft, 550 kt, SPARROW mode 10-mi scope and boresight | B2 is behind MIG and closing rapidly. Back advised too close so front put down speed brakes and went out of AB. Front went to HEAT and fired SIDEWINDER after sliding back into range (good tone). Missile exploded at side of tailpipe. Pilot ejected. B4 saw explosion off to left, flew over to look and saw chute. | | | MIG hit, pilot bailed out. | |


B4 BREAKS RIGHT AND DOWN
M3 FIRES MISSILE AT B4 (MISS)
B2 FIRES SIDEWINDER
AT M3 (KILL)
B2
B4
M3
1
2

EVENT 1-39

[redacted]

EVENT I-40

Aircraft Involved: Three F-4Cs vs one MIG
Result: Sighting only
Vicinity of Encounter: 21°40'N/105°50'E
Route Package VI

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 Jul 1966/1550H

Three F-4C aircraft (BLUE flight) on a MIGCAP mission near 21°40'N/105°26'E. Flight had launched as a flight of four, but shortly after takeoff from Danang, BLUE 3 had aborted.

11. DATA SOURCES

Messages, Reports:

35TFW, OPREP-3, 20 Jul 66, DOCC-0
7AF, OPREP-3, 201441Z Jul 66, DOCO 023227
CINCPACFLT Staff Study 3-67

12. NARRATIVE DESCRIPTION

BLUE flight departed from Danang at 1505H; configuration unknown, but flight carried no ECM equipment. BLUE 4 sighted a MIG-type aircraft at 1546H. MIG was bright silver in color, 6 to 8 mi in trail with BLUE 4. MIG at 500- to 1000-ft altitude. BLUE flight and MIG heading 150°. BLUE flight turned to make intercept, but lost visual contact with MIG. BLUE 4 observed an SA-2 missile explosion at 1555H, 21°40'N/105°26'E in conjunction with MIG sighting.

[redacted]



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Aircraft Involved: One F-104C vs one MIG-21
Result: Sighting only
Vicinity of Encounter: 20°50'N/107°10'E
Route Package VI

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 7 Aug 1966/0910H

One F-104C (BLUE flight) was on an IRON HAND escort mission.

## 11. DATA SOURCES

Reports: 7AF IBM Print Out, DIO66-2198

## 12. NARRATIVE DESCRIPTION

BLUE flight observed one MIG-21 at 11,000 ft, heading 360° with a speed of about 550 kt. BLUE flight was at 1500 ft heading 130° and 425 kt. The weather was scattered clouds with 5 mi visibility.

[redacted]



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Aircraft Involved: Three F-4C vs one MIG

Result: Sighting only

Vicinity of Encounter: 22°00'N/104°58'E
Route Package V

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: Late Aug or early Sep 1966/1430H or 1500H

Three F-4C aircraft (BLUE flight) escorting a flight of F-105 strike aircraft in Route Package VI-A.

II. DATA SOURCES

Project Interview: BLUE 3 (Back) - 16 Mar 1967

12. NARRATIVE DESCRIPTION

BLUE 3 at 10,000 ft, 350-400 kt, on a heading of 080°, saw a possible MIG (silver airplane) passing 5 or 6 mi behind the formation. BLUE 3 turned right to intercept the MIG and lost sight of him. BLUE 3 searched in the direction the possible MIG was heading at 5000-ft altitude, but he was unable to find him.

[redacted]

EVENT I-43

Aircraft Involved: Two F-8Es vs two MIG-17s
Result: One F-8E lost, one F-8E damaged.
Vicinity of Encounter: 20°15'N/105°59'E
Route Package IV

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 Sep 1966/1645H

Two F-8Es (BLUE 1 and 2), operating in rotation with two other F-8Es, providing TARCAP covering A-4s during attack on a train.

2. MISSION ROUTE

Penetrated NVN coast at 20°07'N/106°20'E on initial heading of 300°, then proceeded north to the scene of action.

3. AIRCRAFT CONFIGURATIONS

F-8E BLUE 1 and 2

2 - SIDEWINDER (AIM-9) load was either 1 AIM-9B and 1 AIM-9D or 2 AIM-9D
400 rounds - 20mm
Radar off
No external stores

MIG-17 MIG 1 and 2

23mm and 37mm cannon

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Broken to overcast, 1500 ft with tops about 2000 ft, occasional buildups to 7000 ft.

| | BLUE 1 | BLUE 2 |
|---|---|---|
| Altitude: | --3000-5000 ft-- | |
| Heading: | South in right-hand turn | |
| Speed: | -----400 kt----- | |
| Fuel State: | ---Near BINGO--- | |

Flight Formation: Loose-deuce, with BLUE 2 in process of crossing under BLUE 1.

5. INITIAL DETECTION

Warnings were not received and MIGs were not sighted before or during engagement. MIG presence was indicated by observation of tracer by BLUE 2 followed by hits on BLUE 2.

6. ACTION INITIATED

When hit, BLUE 2 turned left into a cloud to evade further hostile firing. BLUE 2 observed BLUE 1 turning right into a cloud.

7. SITUATION DEVELOPMENT

BLUE 2 transmitted to BLUE 1 that he had been hit and was heading for the beach. Visual and voice contact with BLUE 1 was lost and never regained. BLUE 1 later reported as missing. Prior to loss of visual contact, BLUE 2 did not observe hits on BLUE 1. BLUE 2 believed that BLUE 1 may have flown into karst after entering cloud cover because terrain elevation was approximately 2300 ft and BLUE 1 was descending through the cloud. At no time did BLUE 2 see enemy aircraft.

8. ORDNANCE

(No. fired/No. hits)

| | | Soviet AAM | Remarks |
|---|---|---|---|
| BLUE 1, 2 | -----None expended------ | | |
| MIG | | 23mm and 37mm fired | BLUE 2 hit by 23mm and 37mm fire. |

9. EQUIPMENT PROBLEMS

The flight was plagued with voice communications problems. BLUE 2 was unable to receive response or acknowledgment from BLUE 1 on several occasions. His last failure may be attributed to the high noise level following destruction of his canopy but prior to that time he had not received responses to his calls or transmissions.

[redacted]



RESTRICTED DATA BY AIR FORCE

[redacted]

## 10. AIRCREW COMMENTS

EVENT I-43

Experience

| | Total Hours | F-8 Hours | Combat Missions |
|---|---|---|---|
| BLUE 2 | 1800 | 1200 | 55-60 |

Comments on this Encounter

BLUE 2 believed that, due to extensive damage to his aircraft the MIG (or MIGs) considered it unnecessary to follow him further. He stated that he did not receive a MIG warning from any source. Thought there should be aircraft particularly designed for the TARCAP mission, as well as strike. This was due in part to the fact that in multi-mission aircraft the pilot must be proficient in too many areas and is not therefore good enough in any one. It was felt that the communication difficulty was enhanced by the fact that the controllers on the ships did not understand what was going on.

Comments from Overall Experience

BLUE 2 felt that a better gunsight would be desirable on the F-8, and would prefer more ammunition per gun. Would like some indication from the radar when within gun-firing range. In two-place aircraft feels, "RIO as opposed to pilot is better for second crew. Also a RIO is necessary on all-weather aircraft."

## 11. DATA SOURCES

Project Interviews: BLUE 2, 17 January 1967

Messages, Reports:

| | | | | |
|---|---|---|---|---|
| CTG 77.6 | OPREP-5 | 051956Z | September 66 | |
| CTG 77.6 | OPREP-3 | 051130Z | September 66 | |
| CTG 77.6 | OPREP-3 | 080722Z | September 66 | CH-3 |
| CTG 77.6 | OPREP-3 | 051046Z | September 66 | |
| CTG 77.6 | OPREP-3 | 051708Z | September 66 | CH-2 |

## 12. NARRATIVE DESCRIPTION

BLUE flight was scheduled as an element for a TARCAP. However, the mission was changed at the last moment because a train had been sighted between Nam Dinh and Phu-Ly, about 20°30'N/160°00'E. The A-4 aircraft were dispatched to strike the train with four F-8s flying TARCAP. The first element (pair) of TARCAP was to fly in and orbit over the karst area almost directly south of Phu Ly while the second section was to remain offshore to the south of the mouth of the rivers, E-NE of Thanh Hoa. As the first element neared BINGO fuel, it was to fly outbound and the second element, BLUE 1 and 2, was to relieve the first. The first element reached BINGO fuel after orbiting approximately 20 min, at which time BLUE 1 and 2 flew inbound at about 20°00'N/106°30'E and proceeded along the karst, which runs from SE to NW until the position S of Nho Quan was reached. At this point, BLUE 1 and 2 turned north. The inbound flight was executed between 3000 ft and 5000 ft while jinking. BLUE 1 and 2 held south of Phu Ly and performed right-hand circles with random turns in a loose-deuce tactical formation. There were low clouds in the area with ceilings close to the ridge which at one place reached 2530 ft. Some of the cloud formations had buildups as high as 7000-7500 ft. This cloud cover required BLUE 2 frequently to fly to rear of BLUE 1 to keep him in sight.

After several minutes on station, fuel level was observed approaching BINGO and decision made to depart the area. High-power settings had been maintained to hold about 450 kt in tight turns. At times, BLUE 2 slowed to as low as 350 kt, which though not desirable, became necessary because of the clouds and tight turns involved. BLUE 2 had called BLUE 1 to report that fuel was getting low, but he did not receive an answer from BLUE 1. BLUE 2 assumed that BLUE 1 was monitoring other transmissions; however, later it was believed that BLUE 2's transmitter had failed.

As both aircraft reached a southerly heading at about 4000-4500 ft and turning right, BLUE 2 started to pass behind BLUE 1. At this time, BLUE 2 observed tracers passing to the left of his cockpit. BLUE 2 was then a maximum of 200 ft behind BLUE 1 and possibly 40-50 ft stepped down and at BLUE 1's 5 o'clock position. BLUE 2 called BLUE 1 and said, "We are taking fire from 6 o'clock," at which time a shell struck BLUE 2's canopy. As the shell hit, BLUE 2 observed that BLUE 1 made what appeared to be a negative "g" right turn into a cloud to the right and ahead. BLUE 2 did not observe any hits on BLUE 1 nor any debris. At this time BLUE 2 did not believe that BLUE 1 had been hit.

BLUE 2 observed another cloud buildup to his left and turned hard into it. As he entered the cloud, he turned left to see if there were any aircraft behind but saw nothing. He then turned hard right and at the same time noticed his fuel was down to about 2500 pounds and that his hydraulic warning light was on. BLUE 2 looked to the right again and noticed that a large section of the right wing was gone. A shell had gone through the canopy, and as a result, the noise level was quite high. BLUE 2 had difficulty hearing radio transmissions. BLUE 2 called BLUE 1, reported the hit, was also having hydraulic problems, and now heading "for the beach." At this time, BLUE 2 thought that he heard BLUE 1 make a call of some kind but he could not tell what it was. BLUE 2 was positive that is was

[redacted]

the voice of BLUE 1 pilot. BLUE 2 considered turning back, but due to the damage to his aircraft decided to continue toward the beach. BLUE 2 does not believe that BLUE 1 had been hit as he entered the clouds, but felt that BLUE 1 flew into the karst. BLUE 2 also believed that the aircraft that were firing on them broke off as soon as he had been hit because his right wing was severely damaged and fuel was streaming out rapidly. BLUE 2 flew out to sea and at this time discovered beyond doubt that his transmitter was not operating. At no time did BLUE 2 receive a MIG warning. It is unknown whether or not his guard receiver was malfunctioning or turned off. BLUE 2 thought he heard a beeper from BLUE 1 at one time. No enemy aircraft were seen by BLUE 2, and he did not observe any ground fire. BLUE 2 had no idea that MIGs had been launched. In view of the angle at which BLUE 2 was hit, it was concluded that it was not ground fire. It is believed that the MIGs were under excellent GCI control. BLUE 2 believed that the MIGs must have been under the clouds and caught BLUE 1 and 2 just as BLUE 2 passed under and behind BLUE 1. BLUE 2 believed that had the action occurred 30 sec earlier or later, BLUE 1 and 2 might have seen the MIGs first. On the way out, BLUE 2 turned on his IFF when he was over the beach.

[redacted]



Aircraft Involved: Four F-4Cs vs one MIG-21
Result: No damage
Vicinity of Encounter: 21°10'N/106°00'E
Route Package VI

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 Sep 1966/1655H

Four F-4Cs on ROLLING THUNDER mission.

2. MISSION ROUTE

Departed Danang direct BROWN ANCHOR, to 21°13'N/107°34'E, Direct 21°18'N/107°00'E, Direct 21°12'N/106°19'E, Direct 21°10'N/106°00'E. Egress generally the same route.

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

4 - SPARROW (AIM-7)
4 - SIDEWINDER (AIM-9)
4 - Mk-82 (500-lb bombs)

MIG-21 MIG 1

Not given

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Cloud cover not given, reduced visibility in haze.

| | BLUE 1 | 2 | 3 | 4 | MIG 1 |
|---|---|---|---|---|---|
| Altitude: | -----11,000 ft----- | | | | 6000 ft |
| Heading: | -------330°------- | | | | 120° |
| Speed: | ------510 kt------- | | | | Unknown |
| Fuel State: | ------Unknown------ | | | | Unknown |
| Flight Formation: | --Normal tactical-- | | | | |

5. INITIAL DETECTION

Flight was flying 330°, level. BLUE 1 sighted a MIG 4 mi away descending through 6000 ft. No MIG warnings given.

6. ACTION INITIATED

BLUE 1 dropped ordnance (four Mk-82s) and started toward MIG.

7. SITUATION DEVELOPMENT

MIG was lost in haze.

8. ORDNANCE

None fired.

9. EQUIPMENT PROBLEMS

Not available

10. AIRCREW COMMENTS

None interviewed.

11. DATA SOURCES

Project Interviews: None available
Messages, Reports:

35 TFW DCOI FASTEL 522 141455Z Sept 66

35 TFW DCOI FASTEL 518 141144Z Sept 66

12. NARRATIVE DESCRIPTION

BLUE flight was flying toward target Da Cau bypass railroad bridge in Route Package VI A heading 330°, 11,000 ft and 510 kt. At 1655H approximately 21°10'N/106°00'E BLUE 1 sighted MIG-21 4 mi away descending through approximately 6000 ft on a heading of 120°. BLUE 1 jettisoned four Mk-82s and turned toward the MIG, but lost him in the haze at approximately 4000 ft. At no time did the MIG get closer than 4 mi, nor was a hostile intent indicated. Throughout the incident the flight encountered intense 57/85mm AA.

[redacted]

[redacted] [redacted]

EVENT I-45

Aircraft Involved: Three F-4Cs vs four MIG-17s*

Result: 1 F-4C probably lost; 1 MIG destroyed

Vicinity of Encounter: 21°00'N/106°00'E Route Package VI

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 Sept 1966/1020H

Three F-4C aircraft (BLUE flight 1, 3 and 4) were to strike JCS Target 16 IV, Dap Cau RR and Highway Bridge (21°12'11"N/106°05'44"E), and convert to air superiority mission if MIGs were encountered. F-4 and F-105 strikes in vicinity with 5 min intervals between strikes. BLUE flight was third flight to target with several flights following. See Volume II for MIG encounters of strike flights. EC-121 BIG EYE on station 2000/10700 and SILVER DAWN on station, IRON HAND flight in area.

## 2. MISSION ROUTE

Departed from Ubon Air Base, Thailand. Refueled at 18,000 ft off east coast of South Vietnam - proceeded up coast at 25,000-ft altitude to in-point (Cam Pha Mines area). Let down to 10,000 ft. in delta area, then along ridge line and back out into delta area at 5000 ft.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 3, 4

- 4 - SIDEWINDER (AIM-9B)
- 4 - SPARROW (AIM-7)
- 2 - 370-gal wing tanks
- 4 - 750-lb bombs on centerline
- Camouflage
- No ECM equipment

MIG-17 MIG 1, 2, 3, 4

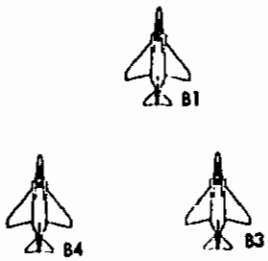
- Cannon
- Silver color - one with red star, others unmarked.

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 13,000-ft scattered clouds, 3- to 5-mi visibility in haze.

| | BLUE 1 3 4 |
|---|---|
| Altitude (AGL): | ---5000 ft---- |
| Heading: | Approximately due W |
| Speed: | ----500 kt----- |
| Fuel State: | --12,000 lb---. external wing tanks empty |

Flight Formation




## 5. INITIAL DETECTION

Four MIGs sighted at 2 o'clock at approximately 2 mi by BLUE 1, location 21°10'30"N/106°23'00"E. Received BIG EYE MIG warnings, and MIG calls from retreating F-105 flights. SAM calls from IRON HAND flight.

## 6. ACTION INITIATED

BLUE flight immediately decided to engage MIGs and entered right hand turn to gain 6 o'clock on MIGs. BLUE flight ordered to drop external tanks, ordnance, centerline MER at approximately 21°03'N/106°23'E. BLUE 4 did not drop ordnance or tanks and could not stay with BLUE 1 during turn.

*While at least four MIGs were initially seen, the numerous attacks by MIGs could have indicated that there were more in the area. BLUE 1 estimated up to eight MIGs.

[redacted] [redacted]

7. SITUATION DEVELOPMENT EVENT I-45

After sighting MIGs, BLUE flight turned right with BLUE 1 climbing and BLUE 3 and BLUE 4 remaining essentially at 5000 ft. After first 360° turn, situation developed into three separate engagements.

BLUE 1 was in climbing and diving right-hand turns, slowing to 300 kt at 10,000-ft altitude and accelerating to 600 kt at 2,000-ft altitude. BLUE 1 observed MIGs firing on BLUE 3 and BLUE 4 and called warnings. BLUE 1 fired three SIDEWINDERS and two SPARROWS unsuccessfully.

BLUE 4, after wide right turn and MIG warning, split-S to ground to escape MIG. BLUE 4 departed and returned to area, passed MIG head on, but without sufficient time to fire a SPARROW. Turned, acquired another MIG, fired two SIDEWINDERS. Did not observe flight of missiles due to attack by another MIG. BLUE 4 then initiated evasive maneuver of split-S to ground, turned and observed debris and parachute in vicinity of previous SIDEWINDER firing.

BLUE 3 was last observed with element of two MIGs in 5 to 6 o'clock position. BLUE 3 did not return from mission.

8. ORDNANCE

| | (No. fired/No. hits) SPARROW AIM-7E | SIDEWINDER AIM-9 | MIG 23mm 37mm Cannon | Remarks |
|---|---|---|---|---|
| BLUE 1 | 2/0 | 3/0 | | #1 SIDEWINDER fired and was unsuccessful. |
| | | | | #2 SIDEWINDER fired and was unsuccessful. |
| | | | | #3 SIDEWINDER fired in radar mode and was unsuccessful. |
| | | | | #4 SIDEWINDER did not fire. |
| | | | | 2 SPARROWS fired with full system lock-on with radar interlocks in, dot almost centered. First missile did not guide. Second missile guided but MIG turned hard right and missile passed without detonating, 500 to 1000 ft behind MIG. |
| BLUE 3 | Unknown | | | Lost in engagement. |
| BLUE 4 | | 2/1 | | 2 SIDEWINDERS fired within 5 sec of each other with good tone about 1 mi range. Both missiles appeared to guide. Did not observe missile flight since it was necessary to evade another MIG. |
| MIGs | | | 23mm cannon | |

9. EQUIPMENT PROBLEMS

BLUE 1

One SIDEWINDER did not check out and did not fire. Centerline MER did not jettison, therefore two SPARROWS could not be launched. One SPARROW missile did not appear to guide, despite apparent lock-on.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | 3500 | 800 | Unknown | Background all tactical aviation. Began combat tour in September 1966. |
| BLUE 4 | | | | |
| Front | ------Not reported--------- | | | In F-4s since pilot training. 3 yr in back. 150 hr in front. Had fired three SPARROWS and four SIDEWINDERS before going to theater. |

[redacted]



Comments on this Encounter

BLUE 1 (Front)

Basic tactic of MIG to operate at altitude to maximize turn advantage over F-4.

MIG pilots noted as aggressive.

Visual identification of MIGs was simplified since MIGs were silver and U.S. aircraft camouflaged.

Communication not very active but still at times not intelligible.

Air-to-air weapon with close range required, down to 1500 to 1000 ft. Could have used a gun in several instances.

Requirement to launch SIDEWINDER under g condition of 2 or less is restrictive in visual maneuvering combat.

Aircrew of two valid in GCI environment only. Distracting in visual engagement, because must think about back seat. Coordination difficult if radio garbled.

Procedures for air-to-air weapon launch required head in cockpit for weapon control and head out for visual scan in order to maintain contact with air-to-air situation. Procedure is inefficient and "heads-up" display is mandatory.

Ordnance jettison procedures on F-4 time-consuming and difficult, due to switchology.

F-4s and F-105s were not compatible for intermixed strikes without exact spacing.

F-4s should go to area with full missile and fuel load so they can mix it up with the MIGs and keep them off the strike force.

Missile lock-on should be automated to enable pilot to keep head out of cockpit and attention on situation.

There were so many MIGs, acquired MIGs in most favorable position were the only ones attacked. Many others were seen.

BLUE 4 (Front)

Felt that three-aircraft flight was undesirable because it forced one man to fight singly.

Could have used a gun in several specific places (e.g., $T_7$). Must have a computing gun-sight with it.

Missile-firing envelope should be expanded in g and range.

Future fighter aircraft should be more maneuverable.

Need improved visibility to rear and down.

Had switchology problem.

Likes pilot in back seat for ACM situations.

## 11. DATA SOURCES

Project Interviews: BLUE 1 - Front - 9 January 1967
BLUE 4 - Front - 14 March 1967
Letter from BLUE 1 - Back

Messages, Reports:

7AF OPREP-3 162321Z Sept 66 DOCO 25594
7AF MSG 162356Z Sept 66 DIO 30456
7AF OPREP-3 170835Z Sept 66 DOCO FASTEL NR122
7AF OPREP-3 161947Z Sept 66, DOCO 25603
USAF Fighter Weapons School CAD Bulletin No. 7
7AF OPREP-4 161724Z Sept 66 DOCO 25604

## 12. NARRATIVE DESCRIPTION

On 16 September 1966, BLUE flight of four F-4C aircraft departed from Ubon Air Base in Thailand on a strike mission (with MIGCAP backup mission) against JCS Target 16 IV, Dap Cau Railroad and Highway Bridge. Refueling took place off the east coast of South Vietnam at 18,000 ft and was uneventful except that BLUE 2 external tanks were not feeding after refueling operation. BLUE 2 returned to base. Flight of three F-4s continued to target in V formation with BLUE 4 flying left wing on BLUE 1 and BLUE 3 an element of a single aircraft. BLUE flight was the third strike group with several strike of F-4s and F-105s following at 5-min intervals.

BLUE flight entered North Vietnam at the Cam Pha Mines area at 25,000-ft altitude. Let down to 10,000-ft altitude as delta area was approached, then along the ridge line, departed the ridge line into delta target area at 5000-ft altitude. On the way in, several SAM warnings were given, and with each one, the flight broke down to ground level.

BLUE flight was alerted to MIG threat in area, and had experienced MIG sightings on previous two days.

As BLUE flight proceeded at 5000-ft altitude, on a westerly heading, approximately 10 to 15 mi from the target, a MIG warning was received from an F-105 strike leaving the

[redacted]

target. BLUE 1 detected a flight of two elements of two MIG-17s, at 2 o'clock position at a range of 2 mi. BLUE 1 called MIG warning to flight and ordered "Drop ordnance."

BLUE 1 ignited afterburner, called "afterburner" and entered a climbing hard right turn. MIGs also entered right-hand turn. While in turn BLUE 1 observed a MIG firing and called "Break" to BLUE 4, who broke and left area.

After BLUE flight entered hard right turn the event developed into three separate engagements. The details of BLUE 1's encounter will be described followed by BLUE 4's encounter.

BLUE 3 is assumed to have been lost in the engagement. BLUE 3 was last observed by BLUE 4 with an element of MIGs approaching 6 o'clock position and firing.

BLUE 1 continued to operate in right turns climbing to 10,000-ft altitude and slowing to 300 kt, followed by a dive to 2000 ft and accelerating to 600 kt. MIGs also continued right-hand turns, but level at 5000-ft altitude. While in turn BLUE 1 observed MIG firing and called "Break" to BLUE 3, who did not acknowledge. Radio reception was garbled at that time.

During initial three turns BLUE 1 fired three SIDEWINDER missiles. MIGs generally presented a plan view and missile "tone" was not optimum. The fourth SIDEWINDER did not launch. BLUE 1 felt that firing should be attempted even if the situation is non-optimum since the engagement time is limited because of fuel.

After completion of another right turn BLUE 1 acquired a MIG and fired two SPARROW missiles without success. In both cases acquisition was complete with full system lock-on and interlocks in. At firing BLUE 1's altitude was 10,000 ft, and the MIG was at 7000 ft, going away and in a slight turn. The first SPARROW that was launched did not appear to guide. The second SPARROW appeared to guide toward the MIG; however, the MIG broke as the missile was half-way to the target and it passed the MIG's 6 o'clock position at 500 to 1000 ft. No detonation was observed.

BLUE 1 observed another MIG and attempted to fire last two SPARROWS. The missiles did not launch since the MER was still on.

BLUE 1 gained 6 o'clock position at 600 ft from MIG and again attempted to launch remaining SPARROW and SIDEWINDER missiles without success.

After the initial MIG warning from BLUE 1, BLUE 4 entered a right-hand turn, generally level, and attempted to jettison ordnance and tanks, but missed the switch. Due to heavier load, BLUE 4 could not hold turn with leader. BLUE 4 received a warning from BLUE 1 that a MIG was closing at 6 o'clock and firing. BLUE 4 responded with a hard break to the left away from the turn and a split-S to within 50 feet of the ground. Afterburner was ignited at this time. BLUE 4 proceeded in a northeasterly direction toward ridge line and made additional hard-breaking maneuvers. At this time the ordnance and tanks were jettisoned. BLUE 4 entered the ridges and maneuvered in the ridge line. After evading the MIG, BLUE 4 returned to the engagement (out of afterburner). While at 4000 to 5000 ft, BLUE 4 acquired a MIG dead ahead and approaching 3-to 4-mi range, but was unable to acquire with radar for a SPARROW launch. Boresight firing attempted but SPARROW not launched. BLUE 4 passed MIG with approximately 500-ft separation. At this time BLUE 4 ignited afterburner, made a hard turn, in attempt to catch MIG. BLUE 4 observed another MIG at 12 o'clock - going away, at 2-mi range. In afterburner, BLUE 4 closed on MIG and prepared to launch SIDEWINDER. With strong SIDEWINDER tone, BLUE 4 launched two missiles and both appeared to guide to MIG.

At this time a MIG was observed rolling on over the top in BLUE 4's 6 o'clock position. BLUE 4 made a hard left and then a hard right turn. As BLUE 4 came back to location of SIDEWINDER firings, he observed debris and a parachute. The attacking MIG was still following and BLUE 4 rolled into a split-S to the ground and proceeded to ridge line, making hard maneuvers. Fuel was low and BLUE 4 exited the area.

On exiting, BLUE 4 closed to within 2 or 3 mi of a flight of four F-105s, when he observed a single aircraft on the south side of the ridge line closing on the F-105s. Since identification could not be made, BLUE 4 turned to engage. BLUE 4 was on SPARROW position on the missile panel and the back seater locked on. On closing the aircraft turned out to be BLUE 1.

BLUE 4 then joined on BLUE 1, with about 5 min of fuel remaining, so BLUE 1 and BLUE 4 exited south of Cam Pha Mines and started to climb, to cruise altitude, receiving pretty heavy and accurate 85mm fire. BLUE flight (two aircraft) maneuvered through this and BLUE 4 started emergency squawk on IFF and SIF. BLUE flight then rendezvoused with the BROWN ANCHOR tanker through ADF and, after refueling, proceeded to Udorn.

BLUE 4 commented that the BLUE 3 aircraft seemed to be a little underpowered since during climb and SAM evasion on way to the target BLUE 3 had trouble staying with the other flight members. BLUE 3 also was flying at a single-plane element in this flight.

EVENT I-45 SUMMARY

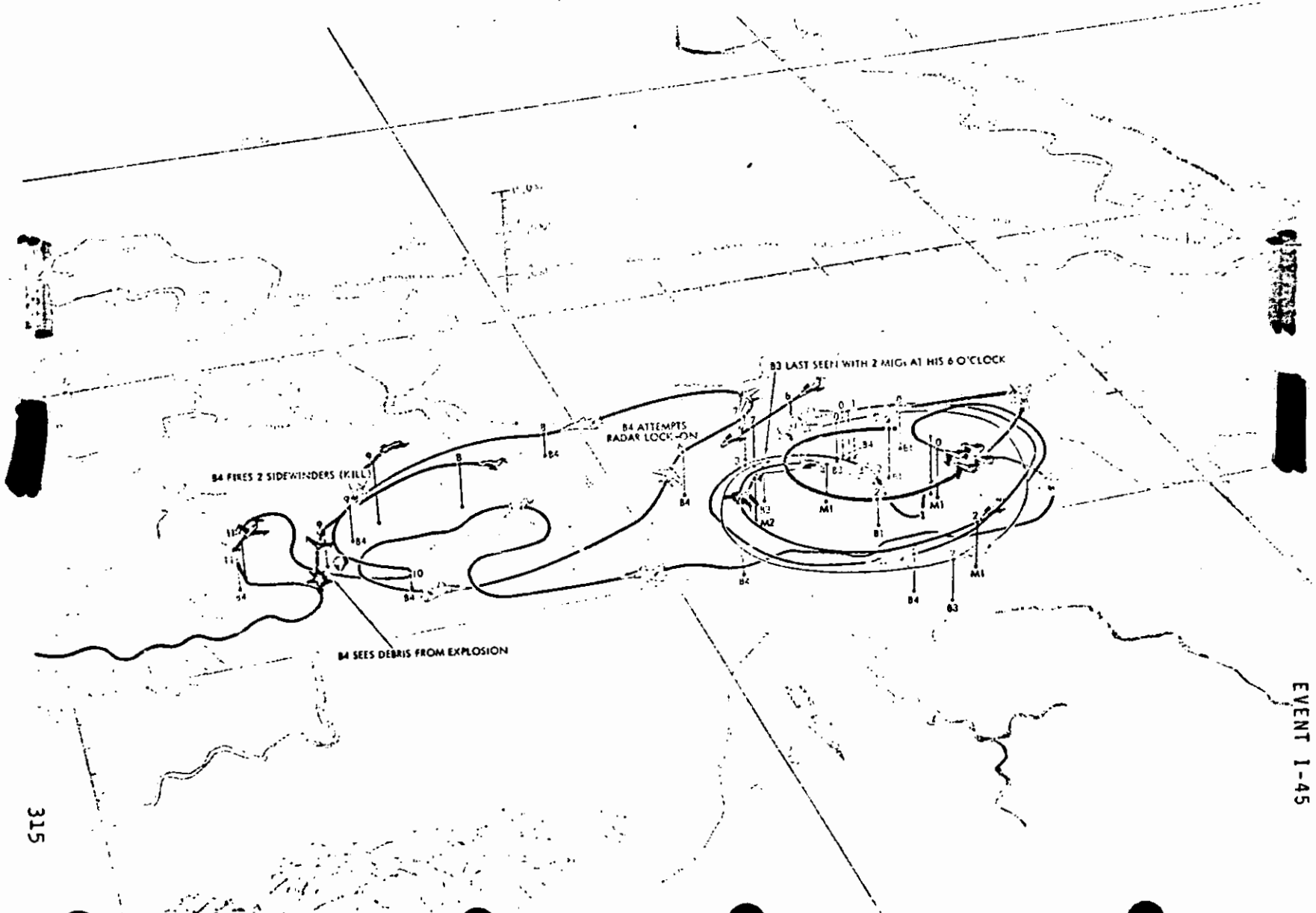
| Time Mark | Action Aircraft (BLUE 1) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2, 3, 4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{0A}$ | Fuel 12,000 lb, 500 kt, 5000-ft altitude.<br>2 wing tanks<br>4 750 GP bombs<br>4 SPARROWS<br>4 SIDEWINDERS | B1 initially sights four MIGs 2 o'clock, 2 mi. Calls MIG sighting. | V formation in trail to target, B1 in lead, 5000-ft altitude, 500-kt speed, heading W to target. Status same as B1. B4 wing for B1. B3 single aircraft element. | B1 calls MIG warning--"MIG-17s at 2 o'clock." F-105 (IRON HAND) flight coming off target also calls "MIGs." | Flight of two element of two MIG-17s each, heading SE, 4500-ft altitude. Elements are 1500 to 2000 ft in trail. (Possibly three elements of two MIGs each.) | B2 previously aborted at refueling. BLUE flight part of strike forces composed of F-105s and F-4s with five minutes TOT separation. BLUE flight third flight in strike force with several flights behind. |
| $T_{1A}$ | | Jettisoned ordnance, tanks dropped; center MER did not eject; AB ignited. Began hard right-hand climbing turn to 10,000 ft and came back down. | | B1 calls "Ordnance off"--afterburner. | MIGs at approx 5000 ft stayed level in hard right turns. | Immediate decision to engage MIGs, procedures for jettisoning complex. |
| $T_{4A}$ | Altitude 6000 ft, speed 500 kt. | Sees MIGs' cannon puff, loses visual contact with B3 & 4, continues three hard right 360° turns in vertical plane, climbing to 10,000 ft and 300 kt and diving to 2000 ft and 600 kt. | For B3 & 4 activities, see B4 event summary. | B1 called break to B4. | Firing on BLUE flight. MIGs making level turns. | After the call of break, the flight became completely separated, operating as three separate aircraft. |
| | | In and out of afterburner in turns; used burner to close on target. In the turns attempted to fire SIDEWINDERS--three fired, but no hits; one SIDEWINDER hung. At one time a MIG approached from 4 o'clock and an overshoot was forced by a high-speed yo-yo. After this, the third SIDEWINDER was fired. | | | A lot of MIGs in a turn, but seen singly, in plain view. | Used burner to close on target. B1 tried to pick up MIGs within missile parameters. The tone on firing was marginal. During the turns, MIGs are never a threat to B1--never sees detonation of any missile. One SIDEWINDER was fired at a MIG who was close behind an |

EVENT I-45 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{4A}$ | After $T_4$ the time/event marks are no longer synchronized between B1 and B4. | | | | | F-105. MIGs acquired at about a mile, and by the time an attack was established & set up, the range was about 2500 ft. By time position reached where he was tracking and had g profile regulated so g could be relaxed and still keep MIG in reticle & SIDEWINDER g envelope, range was about 2000 to 1500 ft. |
| $T_{5A}$ | Altitude 10000 ft; speed 600 kt. | Sees MIG at 5 o'clock.. Sees MIG ahead. | F-105s coming out from target also engage MIGs. See Volume II. | Called break for B3, but not sure MIG firing at B3. No acknowledgement. | MIG at 5 o'clock firing cannon. MIG at 7000 ft altitude going away in a slight right turn. | |
| $T_{6A}$ | 10,000 ft lookdown aspect on MIG--almost straight and level. | Locks on and fires, full system two SPARROWS--interlocks in. Does not see detonation of second missile. | No contact. See B4 Time/Event Chart. | | MIG heading NW 7000 ft. MIG broke right when missile halfway there and second SPARROW passed 6 o'clock position 500 to 1000 ft from MIG. | MIG initially in parameters. First SPARROW did not guide. Firings with full system lockon-interlocks in. |
| $T_{7A}$ | 8000 ft. | B1 up to 10,000 ft and left. Lost sight and concern for MIG. | | | | |

EVENT I-45 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{8A}$ | 10,000 ft. | Picked another MIG. Attempts to fire last two SPARROWS in bore-sight. No lockons -- no fire. | | | MIG 11 o'clock heading SE. | |
| $T_{9A}$ | 10,000 ft. | Gained 6 o'clock at 600 ft from MIG -- able to track left turn 1/2 to 1 min -- broke off as energy dissipated. Tries SPARROW & SIDE-WINDER. No firing. | | | Initial slight left turn, then rolled out MIG at 12 o'clock. | No tone on SIDE-WINDER firing attempt. |
| $T_{10A}$ | 6000 lb fuel. 15,000 ft. | Picked up B4 and headed E. Refueled on way out. | | B1 gives "BINGO" call. Calls B4-- join up. | | |
| | | | | | | |


B3 LAST SEEN WITH 2 MIGs AT HIS 6 O'CLOCK
B4 ATTEMPTS RADAR LOCK-ON
B4 FIRES 2 SIDEWINDERS (KILL)
B4 SEES DEBRIS FROM EXPLOSION

EVENT I-45

EVENT I-45 SUMMARY (Continued)

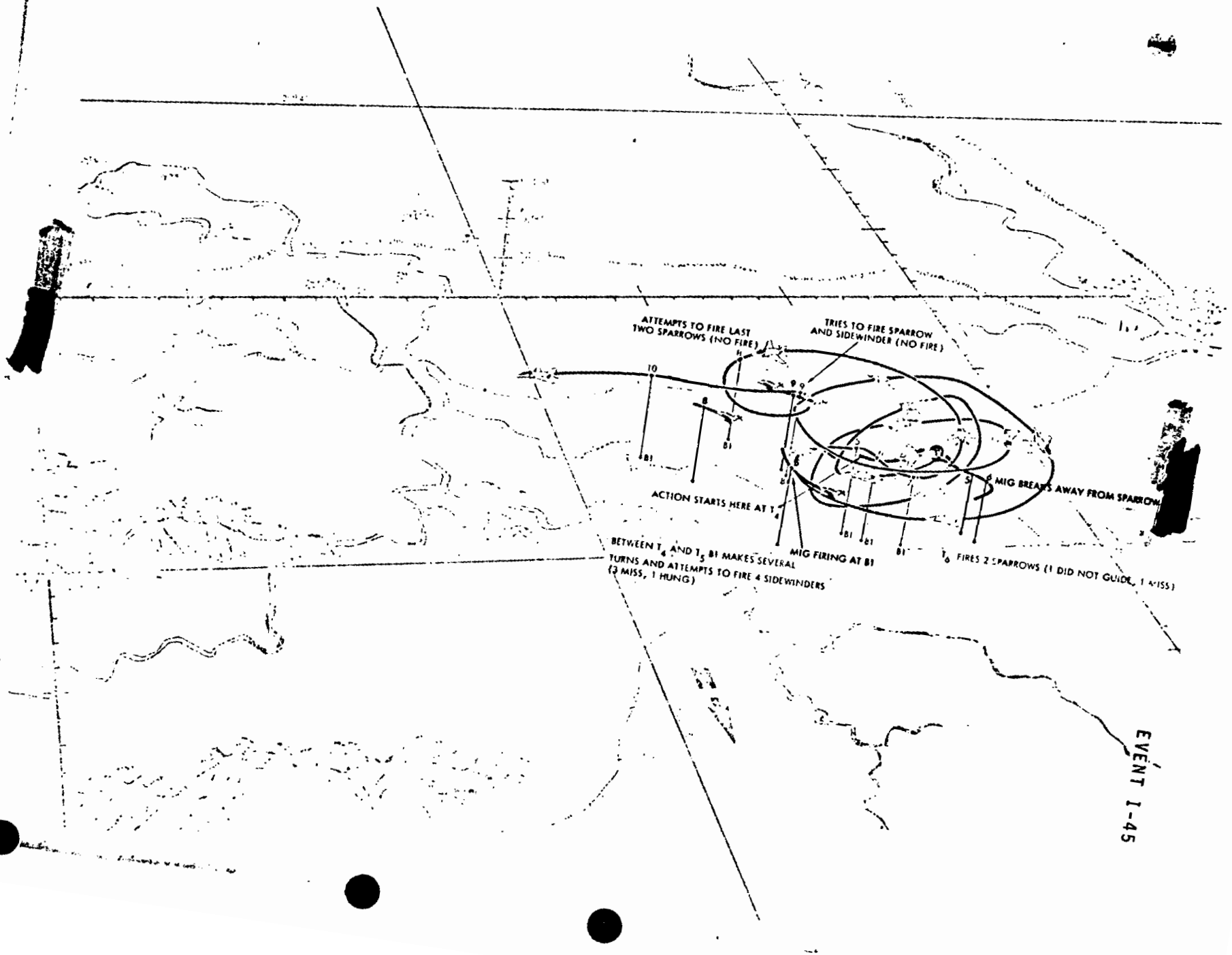
| Time Mark | Action Aircraft (BLUE 4) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2, 3, 4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{0B}$ | Fuel 12,000 lb; 500 kt; 4500 ft altitude; MRT.<br>2 Wing Tanks, 457 lb<br>4 750 GP bombs<br>4 SPARROWS<br>4 SIDEWINDERS | B4 sees three 2-aircraft elements. | See B1. | See B1. | See B1. | See B1. |
| $T_{1B}$ | 4500 ft altitude; 500 kt TAS. | Turned right to attack MIGs. Lost sight of last two elements of MIGs. Passed attack against lead elements. | | B1 message "Jettison ordnance and tanks." | MIGs approx 5000 ft stayed level in hard right turns. | B4 not able to jettison tanks and ordnance--missed the switches. |
| $T_{2B}$ | 4500 ft MRT. | Turning to attack had element of MIGs in 16-unit turn. | See B1 Time/Event Sheet. B3 one-half mile out and one-half mile back in trail. | B1 called "Break"--MIG closing in rear. | Lead element of MIGs outturn B4 and gained position at 4 to 5 o'clock. | Due to ordnance load could not maintain turn. |
| $T_{3B}$ | 4000 ft MRT. | Turning right 3g. | B1 leading attack. B3 observed with element of MIGs approaching from rear. | B4 called B3 warning of MIGs. | Follows B4. | B4 lost sight of second MIG of lead element which is following him. |
| $T_{4B}$ | 2000 to 3000 ft altitude; 500 kt. | B4 broke hard left in AB with split-S to 50 ft off the ground. MIG observed to begin to follow. Reversed to right, disengaged from MIG with hard maneuvering turns and jinking, staying close to ground. | B3 observed out wide in right turn with two MIGs at 4 to 5 o'clock firing. | B1 called "Break hard." | MIG at 4 o'clock level firing at B4. Two MIGs at 6 o'clock on B4, firing | B4 realized that he had not jettisoned ordnances and tanks. |
| | Time/Event marks are not synchronized between B1 and B4 from $T_4$ on. | | | | | |

EVENT I-45 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{5B}$ | 50 ft & 500 ft AGL; 550 to 600 kt TAS; in AB. | Jettisoned wing tanks, bombs and MER. Makes hard turns to check 6 o'clock. Does not see MIG. Turns to return to engagement area, out of AB and climbs to 4000 to 5000 ft. | Lost contact with B1 and B3. | Much chatter on radio. Not intelligible. | Disengaged. | Runs to ridge line area; makes maneuvers close to ridge line dispite speed. All stores jettisoned cleanly. |
| $T_{6B}$ | 4500 ft; 500-600 kt TAS; MRT. | Sights MIG at 12 o'clock head-on, 3 to 4 mi away. Attempts radar lock-on without success. Attempts boresight firing without success. | | | MIG 4500 ft level. | Cannot get radar lock due to clutter and confusion. |
| $T_{7B}$ | 4500 ft; 550 kt; MTR. | Passes MIG head-on, 500 ft separation. Commences left turn and engages AB. Turn is 16-17 units. | | | MIG 4500 ft level. | |
| $T_{8B}$ | 2500 ft altitude; 550 kt TAS. 16-17 units of angle of attack. In AB. | Hard left turn completed. At finish of turn, sights MIG ahead in light maneuvering. Changed from SPARROW to SIDEWINDER. | | | MIG altitude 4500 ft. | |
| $T_{9B}$ | 4000 ft altitude; 550-600 kt in AB slight left bank. | Closes to within 1 mi with MIG at 6 o'clock. Fires two SIDEWINDERS. MIG sighted rolling in on B4. Hard left break down to 2000 ft altitude. Turn is 20 units. | | | Light maneuvering; shallow turns; no evasive maneuver. MIG in slight left bank. MIG attacks B4 rolling in from barrel-roll. MIG at about 6500 ft, inverted. | Fires two SIDEWINDERS within 5 sec. Both missiles appear to guide. Back sights MIG rolling as from above to attack B4. Could not follow SIDEWINDER due to evasive maneuvering. |

EVENT I-45 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 2) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{10B}$ | 2000 ft altitude; 500-600 kt in AB. | Reversed turn to hard right. Sights debris and parachute where MIG had been. Turns are 20 units. Comes back over the top. | | | | |
| $T_{11B}$ | 7000 ft altitude to 25 ft in AB; 550-650 kt; fuel state 2000 lb. | Back still sees MIG following. Rolls around into a sort of split-S to 25 ft off the deck; made some hard jinks, heads out. Runs down B1 on radar intercept, thinking B1 is hostile. Refueled on way out. | | | MIG above at 7 o'clock. | |


ATTEMPTS TO FIRE LAST TWO SPARROWS (NO FIRE)
TRIES TO FIRE SPARROW AND SIDEWINDER (NO FIRE)
10
B
B1
ACTION STARTS HERE AT $T_4$
BETWEEN $T_4$ AND $T_5$ B1 MAKES SEVERAL TURNS AND ATTEMPTS TO FIRE 4 SIDEWINDERS (3 MISS, 1 HUNG)
MIG FIRING AT B1
$T_6$ FIRES 2 SPARROWS (1 DID NOT GUIDE, 1 MISS)
MIG BREAKS AWAY FROM SPARROW

EVENT I-45

[redacted]

EVENT I-46

Aircraft Involved: Three F-4Cs vs two MIG-17s

Result: One F-4C lost

Vicinity of Encounter: 21°13'N/106°28'E
Route Package VIA

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 Sep 1966/0920H

Strike on JCS-16 primary mission, back-up mission, MIGCAP. Flight of three F-4Cs proceeding to Route Package VI A (fourth returned to base due to refueling difficulty). Two minutes out from target area the F-105s over target reported MIG attack. F-4s jettisoned ordnance and proceeded at high speed into the delta just east of the target.

## 2. MISSION ROUTE

Proceeded west from Gulf of Tonkin, north of the ridge line, north of Haiphong; during engagement turned toward Haiphong and egressed generally over inbound route.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3

4 - CBU-24 (B1)
4 - 750-lb bombs on centerline (B2 & B3)
2 - 370-gal tanks
4 - SIDEWINDER (AIM-9) on inboard station
4 - SPARROW (AIM-7)
Radar, TACAN, IFF operating

MIG-17 MIG 1, 2

Guns
Camouflage

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear, 5 mi in haze.

| | BLUE 1 | 2 | 3 |
|---|---|---|---|
| Altitude: | -------4500 ft------- | | |
| Speed: | ------450 knots------ | | |
| Fuel State: | Full internal (some still in wing tanks) 11,500-12,000 lb | | |

Flight Formation:

Relative to BLUE 1: BLUE 2 - 30° cone behind BLUE 1 and 1500 ft out to right
BLUE 3 - 20°-30° back and flying high and 4000 ft to left

## 5. INITIAL DETECTION

Flight was inbound to target when MIG alert was called by RB-66 aircraft. At the same time warning was given when F-105s were engaged by MIGs. MIGs were initially acquired visually. They were seen climbing up "out of the terrain" at 6 o'clock position. Flight leader (BLUE 1) reported seeing three MIGs; BLUE 2 noted two MIGs. Range at contact approximately 1500 ft.

## 6. ACTION INITIATED

BLUE 2 and 3 jettisoned the 4 750-lb bombs carried on centerline station at MIG alarm. BLUE 3 jettisoned fuel tanks; BLUE 2 did not. MIG 1 fired cannon at BLUE 2 "intermittently." MIGs at BLUE 2's 3, 9, and 7 o'clock positions. BLUE 3 maneuvered into position to attack MIG 2.

## 7. SITUATION DEVELOPMENT

After MIG 1 made cannon attack on BLUE 2, BLUE 2 was instructed to break hard left and egress the area. Although there was no immediate indication that BLUE 2 had been hit by gunfire, he had received four or five probable aircraft cannon hits. BLUE 2's left engine exploded en route to the Gulf of Tonkin. Later the right engine flamed-out from fuel starvation and BLUE 2 ejected. BLUE 3 sighted second MIG at 9 o'clock and positioned to fire SIDEWINDERS at MIG 2. BLUE 1 maneuvered into MIG 2's 6 o'clock position and fired both SIDEWINDERS and SPARROWS at MIG 2.

MIG 2 did not turn back to fight, but maneuvered violently to avoid the missiles fired at him while following a general heading toward Haiphong. On anticipated low-altitude engagements, BLUE Flight had prepared to use SIDEWINDERS.

[redacted]

[redacted]

8. ORDNANCE



| | SPARROW AIM-7 | SIDEWINDER AIM-9 | Cannon | Remarks |
|---|---|---|---|---|
| | (No. fired/No. hits) | | | |
| BLUE 1 | | 3/0 | | Good tone before firing; firing against blue sky background. Later opinion range was below minimum; missiles did not guide.<br>One missile known to be inoperative and was not fired; launch of the second missile judged to be within range and g-force limits. Tracked enemy in AB; missile detonated behind violently maneuvering aircraft.<br>First 2 fired in boresight mode at 500- to 1000-ft altitude. 5-6000-ft range. Detonation not observed.<br>Of second 2, one missile hung up on launcher; one tracked and detonated in vicinity of aircraft. |
| BLUE 2 | 0/0 | 0/0 | | No remarks. |
| BLUE 3 | | 3/0 | | Fired singly. Opinion that missile launch was inside minimum range. No tone. Missiles did not guide. |
| MIG 1 | | | 1/0 | Sporadic firing of guns observed. |

9. EQUIPMENT PROBLEMS

BLUE 1 - One SIDEWINDER inoperative before take off, one SPARROW malfunction during encounter.
BLUE 2 - (Back) radio and intercom out when stores jettisoned. Survival raft inflated with difficulty. BLUE 2 pilot's raft did not inflate.
BLUE 3 - 1 SIDEWINDER inoperative. Maintenance personnel reported no previous history of problems with missiles fired, but BLUE 1 APA-157 launch computer failed postflight check.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 (Front) | 2450 | 800 | 75 | 5-1/2 years F-100, 3-1/2 years F-4C - instructor, test work; extensive gun/missile experience, AF Fighter Weapons School, Nellis Air Force Base. |
| BLUE 2 (Front) | 430 | 200 | 62 | No gunnery or missile firing experience. |
| BLUE 3 (Back) | 3100 | 350 | 20-30 | Had fired SIDEWINDERS and cannon from F-100. Fired 1 SPARROW from F-4 prior to event. |

Comments on this Encounter

BLUE 1 (Front) - Believed MIGs have developed tactics to defeat missiles. Would like to have gun -- feels would have more control. Need range information or device to indicate "in range," and in firing envelope. On each firing, observed MIG to fly a continuing hard "S-ing" maneuver and toward lower altitudes.
BLUE 2 (Front) - MIGs broke off because BLUE 2 outran them, reaching Mach 1.2-1.3. There is about a 40° cone in the F-4 where you cannot see a thing and the back must pull himself around to see behind. MIG seemed radar vectored.
BLUE 3 (Back) - Guns would have killed MIG. Struggled to open range for missile envelope. Aircraft performance adequate for engagement.

Comments from Overall Experience

BLUE 1 - Firm believer in two-man crew. Prefers second man be a pilot.
BLUE 2 - Advantage of back seater on night missions -- simply keep pilot informed of altitude when pulling up from run under flares helps to keep from running out of airspeed.
BLUE 3 - Suggests varying frequency tone to give indication of all parameters satisfied. This would permit watching MIG and not taking eyes off target "to look at pipper." Prefers navigator -- radar specialist, not pilot, but should have instrument training for night bombing. Weaponwise -- pilot required to throw too many switches.



[redacted]

[redacted] [redacted]



## 11. DATA SOURCES

Project Interviews:

BLUE 1(Front)- 8 Jan 1967
BLUE 2(Front)- 9 Feb 1967
BLUE 3(Back)- 8 Mar 1967

Messages, Reports:

7AF MSG/211124Z Sept 1966 DOCO 25829
7AF OPREP-3/221544Z Sept 1966 DOCO 25906
35TFW MSG FASTEL 795 Sept 1966 210940Z Sept 1966
35TFW MSG FASTEL 804 Sept 1966 211415Z Sept 1966
35TFW MSG FASTEL 780 Sept 1966 210515Z Sept 1966
35TFW MSG FASTEL 778 Sept 1966 210442Z Sept 1966
7AF MSG 212352Z Sept 1966 DIO 30492

## 12. NARRATIVE DESCRIPTION

A flight of three F-4Cs was flying west at 4500-ft altitude to provide MIGCAP for F-105s reported under attack in the target area. The F-4s jettisoned ordnance and proceeded to the target area at high speed, BLUE 2 was about 1500 ft out and 30° behind BLUE 1. BLUE 3 was 20°-30° back and high behind BLUE 1. BLUE 2 was right wing, BLUE 3 was left wing. The flight was engaged by two or three MIG-17s (BLUE 1 called three; BLUE 3 reported two MIGs) who climbed up from below and to the rear of the formation; apparently under GCI. BLUE 3 sighted the attacking MIGs approaching from the 4, 5, and 6 o'clock positions. BLUE 1 and 3 broke right, into the MIGs. MIG 1 maneuvered into firing position on BLUE 2. When BLUE 2 turned left MIG 1 followed a pursuit course firing on BLUE 2, intermittently. While BLUE 2 was turning left he was hit by "four or five" aircraft cannon rounds (reported "thumps"). BLUE 2 continued a hard diving left turn, completing two 360° turns. MIG 1 broke away to the right and was not seen again. BLUE 2 egressed the area at low level and a high rate of speed and subsequently ejected over the Gulf of Tonkin after the left engine exploded as a result of the hits sustained from MIG 1 and the right engine flamed-out from fuel starvation.

BLUE 3 observed one MIG (MIG 2) in the 9 o'clock position. BLUE 3 maneuvered in behind MIG 2 and was followed by BLUE 1. BLUE 3 could not obtain a "tone" but decided to fire SIDEWINDERS "visually". The first two missiles were fired inside minimum range and did not guide. The MIG either outmaneuvered the third missile or the missile did not guide.

BLUE 1 then took the lead and released three SIDEWINDER and three SPARROW missiles. The first two launches were probably inside minimum range. The third SIDEWINDER was within the envelope with good tone and the MIG was in afterburner, but the MIG appeared to outmaneuver the missile. BLUE 1 went boresight, put the MIG under the pipper and fired the first two SPARROWS with inter-locks-in. When the SPARROWS were released, the MIG dove for the ground. Two more SPARROWS were fired, one hung up and the other detonated close to the MIG. The SPARROWS appeared to guide but the MIG was able to see them coming and outmaneuvered them. BLUE Flight was near BINGO fuel and the engagement was moving close to Haiphong so they broke off to the left and the MIG continued on toward Haiphong.

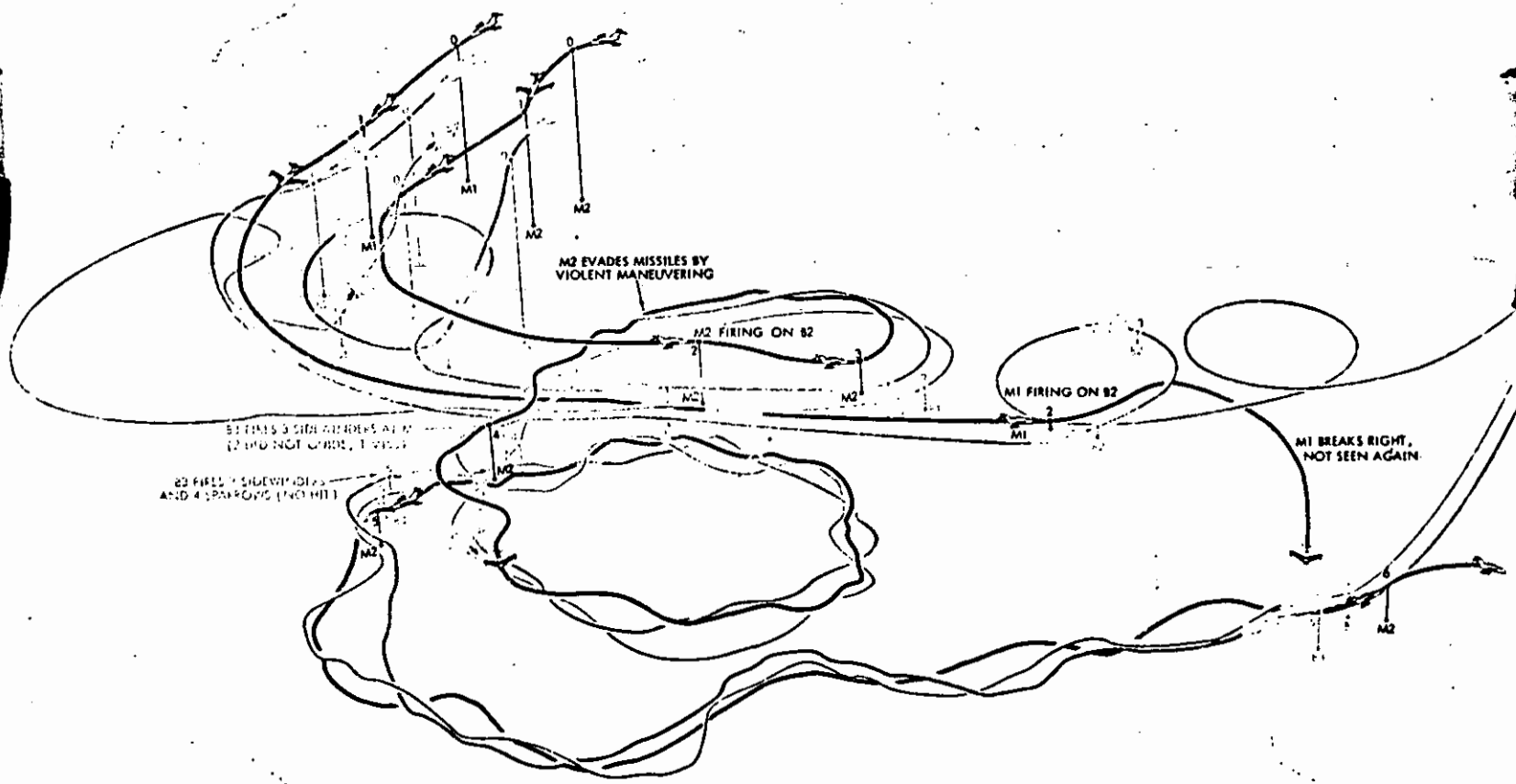
[redacted] [redacted]

EVENT I-46 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2, 3) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | Bombs jettisoned in preparation for MIG engagement. B1 retained tanks, B2&3 jettisoned tanks | Inbound to the target (JCS-16) | Heading west altitude 4500-6000 ft, tactical formation - B2 right wing 1500 ft out; B3 left wing 4000 ft out and high | F-105s called MIGs attacking in the target area. B3 sights and calls "MIGs 3, 9 & 7 o'clock low" | MiGs coming in and up from 6 o'clock to 3 o'clock position | |
| $T_1$ | | B1 broke down and into MIGs, reversed to the left. B2 unable to stay in turn, breaks off to left. B3 continues hard right diving turn 270°- 360°. | BLUE flight is split up. B1&3 400 ft reversing left in climbing turn. B2 turning left, B3 continues right turn to about 270°. | B2 rear seat sights MIGs during turn, calls them out, but intercom is not transmitting. | M1 drops in behind B2. M2 probably followed M1 in the left turn going high. | 3 MIGs sighted. 2 MIGs engaged. |
| $T_2$ | Same | B1 after completing reverse sees MIG shooting at B2. B3 sees 2 MIGs, 1 shooting at B2 and the second at 9 or 10 o'clock. B2 starts a diving left turn | M1 at B2's 6 o'clock. B1 is 1000-2000 ft behind M1 and B3 is 2500 ft behind B1. | B1 called B2 to break left. B3 called "MIG 9 o'clock" | M1 shooting at B2. M2 is at 9 o'clock to B2. | |
| $T_3$ | B1 same B3 idle and speed brakes | B3 turns into M2 and B1 follows B3 around the turn, B2 is turning left at high speed and very low level completes two 360° turns and departs the area for the poststrike tanker | B3 in a left turn very close to M2, B1 behind them | | M1 broke off B2 in the turn and left the area. M2 is turning left with B3 very close behind him | B3 too close to MIG and attempts to back-off to shoot SIDEWINDER. |

EVENT I-46 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2, 3) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_4$ | | B3 behind M2 trying to back off to get within the SIDEWINDER firing envelope. B1 pulled into B3 6 o'clock and thence around to his 9 o'clock.<br><br>BLUE 3 fires three SIDEWINDERS at M2 | B2 on his way out of the area. B3&1 behind M2 | | M1 has departed area. M2 is in a series of diving, climbing turns avoiding SIDEWINDERS | B3 fired 2 SIDEWINDERS inside the minimum range. They did not appear to guide. The third SIDEWINDER seemed to guide but the MIG saw it and out-turned the missile causing it to miss. |
| $T_5$ | | B1 took over lead and fired 4 SPARROWS and 3 SIDEWINDERS. B3 flew fighting wing on B1. | BLUE flight now in normal fighting formation with B1 in the lead | | M2 employing dives and zoom and hard turns in an effort to evade the missiles. M2 in afterburner most of the time. | B1 fired 3 SIDEWINDERS (1 missile defective and not fired.) Also fired 4 SPARROWS, but one hung up on the rail. B1 believed to be within the minimum launch range with 2 SIDEWINDERS but did not guide. Other SIDEWINDER seemed to guide well. The MIG was able to out maneuver missiles by taking extreme evasive action when missiles were launched. |
| $T_6$ | B1 ordnance expended. B3 has 4 SPARROWS, BINGO fuel. | Engagement ended at this time. BLUE flight was BINGO fuel. B3 still had 4 SPARROWS, but had lost MIG in the haze and unable to regain contact. | B1&3 broke off to return to base. | B1 asked B3 to fire any ordnance but B3 was BINGO fuel and had lost visual contact with the target. | M2 successfully evaded all the missiles and was flying toward Haiphong at low level. | |


M2 EVADES MISSILES BY
VIOLENT MANEUVERING
M2 FIRING ON B2
M1 FIRING ON B2
M1 BREAKS RIGHT,
NOT SEEN AGAIN
M1
M2

EVENT I-46

[redacted]

EVENT I-47

Aircraft Involved: Two F-4Cs vs two MIG-21Cs

Result: No damage

Vicinity of Encounter: 21°20'N/106°47'E
Route Package VI

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 Sept 1966/1121H

Strike against JCS target 16.00 (Dap Cau Hwy/RR Bridge). After strike to remain in area as MIGCAP until fuel BINGO reached. F-105s striking the same target. BLUE flight was scheduled to be the third or fourth flight on the target that day. MIGs were engaging F-105s.

2. MISSION ROUTE

From Danang over water to 21°11'N/107°30'E, then west to 21°36'N/106°09'E and return by the same route. Refueled en route on BROWN TRACK, at 22,000 ft.

3. AIRCRAFT CONFIGURATION

F-4C BLUE 1 and 2

4 - SPARROW (AIM-7)
4 - SIDEWINDER (AIM-9)
6 - Mk 82 (250-lb bombs)
2 - 370-gal external fuel tanks
1 - 600-gal external fuel tank
Camouflage colors.

MIG-21 MIG 1, 2

Atoll missiles
Cannon
Silver color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

| | |
|---|---|
| Weather: | Light haze (not considered a factor by BLUE 1) |
| Altitude: | 17,000-ft MSL |
| Heading: | 260° |
| Speed: | 450-kt TAS |
| Fuel State: | Not indicated |
| Flight Formation: | Loose deuce |

5. INITIAL DETECTION

While recovering from a SAM break at 5000-ft MSL, BLUE 2 observed MIG-21 at 6 o'clock on BLUE 1(L).

6. ACTION INITIATED

BLUE 2 called MIGs at 6 o'clock several times, jettisoned ordnance and external fuel tanks.

7. SITUATION DEVELOPMENT

MIG 1 fired one Atoll missile and apparently fired out his cannon on BLUE 1 as latter climbed back to 15,000 ft. BLUE 1 did not hear BLUE 2's MIG calls until he reached 15,000 ft, at which time BLUE 1 jettisoned ordnance and external fuel tanks, broke right and descended to the deck to evade MIG 1. (MIG 1 apparently did not attempt to follow.) During climb back to 15,000 ft, MIG 2 was on BLUE 2's tail. MIG 2 fired one Atoll missile and cannon, but broke off the attack before reaching 15,000 ft. BLUE 1 and 2 attempted to re-engage MIGs after their separation maneuver, but were unable to locate the MIGs. No damage to any of aircraft involved.

8. ORDNANCE

| | (No. fired/No. hits) Atoll | Cannon | Remarks |
|---|---|---|---|
| BLUE 1 - No missiles fired | | | |
| BLUE 2 - No missiles fired | | | |
| MIG 1 | 1/0 | ?/0 | Passed high and to right of BLUE 1 (unknown miss distance) |
| MIG 2 | 1/0 | ?/0 | Passed high and to the right of BLUE 2 approximately 100 ft |



[redacted]

[redacted]



9. EQUIPMENT PROBLEMS

None

10. AIRCREW COMMENTS[1]

Comments on this Encounter

BLUE 1(L), Front

"Due to excessive amount of radio chatter, did not hear BLUE 2's numerous calls warning that MIG 1 was at my 6 o'clock." This allowed MIG 1 to fire out before BLUE 1 knew he was in danger. BLUE 1 (Back) had not seen MIG 1. Communication situation also hampered front- to rear-seat communications.

BLUE 1 (Front) felt that his flight has been subjected to a coordinated MIG/SAM attack. He felt that the two unidentified aircraft that he saw on reciprocal heading before the SAMs were fired were the MIGs that later jumped him. In essence, the enemy plan of attack appeared to have been the following: The SAMs were fired knowing that if the F-4s saw them, they would break down. This would put the F-4s co-altitude with the MIGs. It would require accurate timing. However, the MIGs in conjunction with the SAM firing could have made a 180° turn and arrived in position of the F-4s as they bottomed out of the SAM break.

BLUE 2, Front

Due to all flights operating on the same frequency, radio communication was almost impossible. This lack of radio communications made any coordinated defensive or offensive action impossible.

The lack of an internal gun and lead computing sight denied the flight the short-range, accurate weapon that was needed to turn a near defeat into victory.

Comments from Overall Experience

BLUE 1, Front

MIGs have a great respect for the F-4.

MIG-21 has a real problem in disengaging from the F-4. The only chance MIG-21 has is to get down to the treetops where it is difficult to acquire him either in a SIDEWINDER or SPARROW shot.

The F-4 has no problem turning with the MIG-21 below 15,000 ft at about Mach 0.9.

The F-4 should have a gun but not at the expense of the existing missile capability, i.e., a gun in addition to the missiles to give it a close-in capability.

As to the utilization of the back seater during an engagement, he wants the back seater to lock his eyes on an identified MIG. He does not want him to look away until relieved by the front seater.

The F-4 should get every MIG that gets on his tail.

11. DATA SOURCES

Project Interview: BLUE 1 -(Front) 28 Jan 67 .
Messages, Reports: Letter - BLUE 2 (Front), (undated, approx 15 Feb 67)
35th TFW, OPREP-3, 210440Z Sept 66 FASTEL 777
35th TFW, OPREP-3, 210745Z Sept 66 FASTEL 787
7th AF, OPREP-3 211433Z Sept 66 DOC 25843

12. NARRATIVE DESCRIPTION

On 21 September 1966 BLUE flight of four F-4Cs was scheduled for a strike mission against JCS Target 16.00 (Dap Cau Hwy/RR Bridge) and to function as MIGCAP after the strike mission. Two of the F-4Cs aborted and the other two, BLUE 1 and 2, proceeded on the mission as planned. Each F-4C carried six Mk 82 (250-lb general-purpose bombs), four SIDEWINDER missiles and four SPARROW missiles in addition to two 370-gal fuel tanks.

$T_0$ At about 1120 (local time) while at 17,000 ft on heading 260°, BLUE 1(L) observed two unidentified aircraft pass under the flight on a reciprocal heading. He assumed them to be F-105s departing the area. BLUE flight was scheduled as the third or fourth flight to hit the target that day.

$T_1$ At 1121 (local) BLUE 2 called SAMs at 12 o'clock. BLUE 1 also observed the SAMs, waited for the proper time, and called the SAM break. The two SAMS, when picked up, were at 8000 ft on a heading of 80° with a 20° climb angle heading directly toward BLUE flight. SAMs were about 1000 ft apart in trail. BLUE flight was in a loose-deuce formation with BLUE 2 on the left.

At "SAM break" BLUE 1 and 2 rolled almost inverted (i.e., about 45° from the inverted position) and headed down, keeping the SAMs in sight with the idea of making a 4g pull-up as the SAMs started to maneuver downward. The SAMs continued on the original path with no attempt to track.

[1] Aircrew experience data not obtained.

[redacted]

$T_2$ As BLUE 1(L), while on heading about 170° and at 5000 ft, started pull up to the right to return to original altitude and heading, BLUE 2 on heading 180° observed a MIG-21 at BLUE 1's 6 o'clock and firing at BLUE 1. MIG was at BLUE 2's 4 o'clock position about 800 ft away. BLUE 2 called MIGs at 6 o'clock and jettisoned bombs and external fuel tanks. However, due to the saturation of radio communications on the assigned frequency, BLUE 1 did not hear this call and continued his climb to 15,000 ft.

$T_2$ MIG 1 fired one Atoll missile from about 500-ft range which missed BLUE 1(L) high and to the right. MIG 1 continued to fire cannon, apparently firing out during the period. BLUE 1 did not realize he had a MIG at his 6 o'clock. Neither Front nor Back BLUE 1 observed the MIG.

$T_3$ About the time he jettisoned his ordnance, BLUE 2 observed a second MIG (MIG 2) at his 6 o'clock. MIG 2 fired one Atoll missile, which passed 100 ft and to the right of BLUE 2. MIG 2 then fired cannon, after which he broke off the engagement.

After several attempts to alert BLUE 1 of his situation, BLUE 2 was finally able to get through the communication clutter as BLUE 1 reached 15,000 ft. BLUE 2 advised BLUE 1 to jettison his ordnance, which he did, and then BLUE 1 heard BLUE 2 calling "You have a MIG on your tail, take it down."

$T_4$ At this time BLUE 1 broke right and down, unloaded the aircraft, and accelerated past Mach 1. BLUE 2 followed.

$T_5$ After about 45 sec in afterburner at low altitude BLUE flight reversed course to reengage, but was unable to regain visual or radar contact. MIG 1 apparently disengaged about the time BLUE 1 broke.

BLUE flight remained on MIGCAP until BINGO fuel was reached and then returned to Danang.

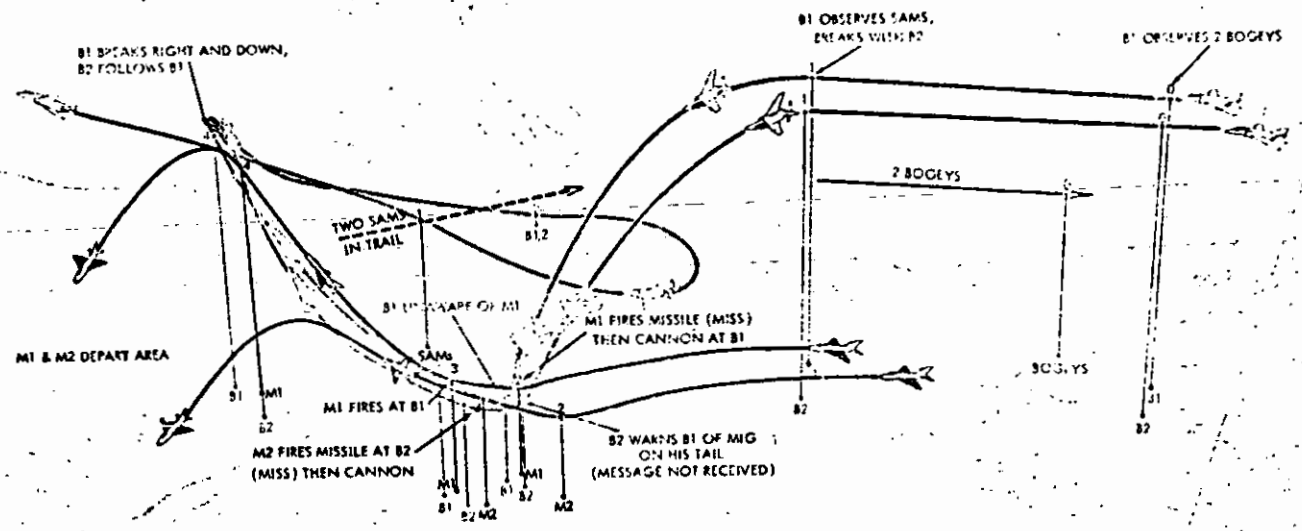
BLUE flight had not fired any missiles and received no damage from the MIG-21C attack.

EVENT 1-47 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1 and 2) Status | Action | Other Friendlies | Communications | Enemy Actions (MIG 1 and 2) | Remarks |
|---|---|---|---|---|---|---|
| $T_3$ | Climbing to 15,000 ft 450-500-kt TAS | B1 continues climb unaware of MIG firing at him (right turn).<br>B2 observes a MIG (M2) at his 6 o'clock firing. | | B2 continues to transmit warnings to B1. | M1 still firing at B1.<br>M2 fires Atoll at B2 which passes high and right about 100 ft. M2 then fires cannon at B2 and disengages. | |
| $T_4$ | 15,000-ft<br>AB<br>Mach 1.+<br>500 ft | B1(L) hears B2 jettison call and jettisons bombs and external fuel tanks.<br>B1 breaks right and down to the deck in AB.<br>B2 follows B1. | | B2 tells B1 to jettison ordnance.<br>B2 tells B1 that he has a MIG on his tail and to take it down.<br>B1 hears. | M1 probably disengages as B1 breaks. | |
| $T_5$ | 500 ft<br>AB<br>Mach 1.2 | After about 45 sec in AB BLUE flight reverses course to the right in an attempt to re-engage but cannot sight the MIGs.<br>B1 and B2 take up MIGCAP station until reaching BINGO fuel and then return to Danang without further incident. | | | M1 and M2 have apparently departed the area. | |

EVENT I-47 SUMMARY

| Time Mark | Action Aircraft (BLUE 1 and 2) Status | Action | Other Friendlies | Communications | Enemy Actions (MIG 1 and 2) | Remarks |
|---|---|---|---|---|---|---|
| $T_0$ | 17,000-ft MSL<br>450-500-kt TAS<br>Hdg 260° | B1(L) observes two unidentified aircraft pass beneath him on opposite heading.<br><br>B2 on left of B1 flying loose-deuce formation. | | | | B1 assumes the aircraft are F-105s departing the target area. |
| $T_1$ | SAMS at 12 o'clock<br>80° HDG 20° climb angle | B1 observes SAMs and waits for proper time to break.<br><br>B1&2 roll almost inverted (to within 45° of inverted) and head down watching the SAMs to see if they follow. | | B2 calls "SAMs at 12 o'clock."<br><br>B1 calls SAM break. | SAMs do not follow - continue on same flight path. | |
| $T_2$ | 5000-ft MSL<br>4g<br>B1(L) Hdg 170°<br>B2 Hdg 180° | B1 bottoms out of SAM break and starts right climbing turn to original altitude and heading.<br><br>B2 observs MIG-21 (M1) at B1's 6 o'clock and firing. M1 is 4 o'clock, 800 ft from B2.<br><br>B2 jettisons ordnance and fuel tanks and attempts to position on M1. | | B2 calls several times telling B1 he has a MIG on his tail. | At about 500-ft range M1 fired Atoll missile at B1. Missile passed high and right, unknown distance. M1 then fired cannon at B1. | B1 does not hear B2's MIG warning because of extreme saturation of the communications. All flights are on the same UHF channel. |


B1 BREAKS RIGHT AND DOWN,
B2 FOLLOWS B1
TWO SAMS
IN TRAIL
B1,2
M1 & M2 DEPART AREA
B1
M1
B2
SAMs
3
M1 FIRES AT B1
M2 FIRES MISSILE AT B2
(MISS) THEN CANNON
B1
B2 M2
M1
B2
M2
M1 FIRES MISSILE (MISS)
THEN CANNON AT B1
B2 WARNS B1 OF MIG
ON HIS TAIL
(MESSAGE NOT RECEIVED)
B1 OBSERVES SAMS,
BREAKS WITH B2
2 BOGEYS
B2
B1 OBSERVES 2 BOGEYS
B1
B2

EVENT I-47

[redacted]



Aircraft Involved: Two F-4Cs, one EB-66 vs four MIG-17s

Result: Sighting only

Vicinity of Encounter: 21°42'N/104°50'E Route Package V

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 23 Sep 1966/0800H

Two F-4C airplanes (BLUE flight) escorting an EB-66 (GREEN flight). Two BLUE aircraft were ground aborts, a third was an airborne abort. Orbit point for GREEN flight was approximately 21°30'N/104°50'E. Numerous F-105 flights were conducting strikes in the same area.

2. MISSION ROUTE

BLUE flight departed Danang. The route of flight to the orbit point is unknown.

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2

4 - SPARROW (AIM-7E)
4 - SIDEWINDER (AIM-9B)
2 - 370-gal wing tanks
1 - 600-gal centerline tank
IFF and TACAN operable but off, camouflage paint

EB-66 GREEN 1

Not given

MIG 17 MIG 1, 2, 3, 4

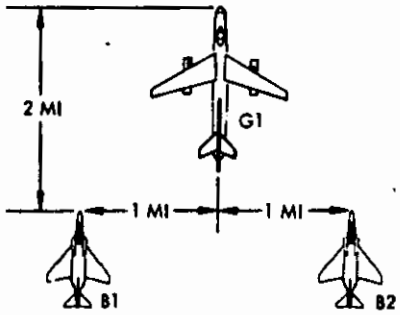
Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: A very thin, low, scattered layer; clear, visibility unlimited elsewhere.

| | BLUE 1 | BLUE 2 | GREEN 1 |
|---|---|---|---|
| Altitude: | 30,000 ft | | 31,000 ft |
| Heading: | 360° | | 360° |
| Speed: | 0.8 Mach | | 0.8 Mach |
| Fuel State: | 9000 lb | | Unknown |

Flight Formation:




5. INITIAL DETECTION

BLUE 2 Front and Back simultaneously sighted a flight of four MIG-17 airplanes at 3 o'clock, 5000 ft, heading 250°, in direction of F-105 flights, about 2 mi E of Yen Bay. BLUE flight was passing over Yen Bay at this time and was observing F-105 flights making strikes directly below them.

6. ACTION INITIATED

None. BLUE 2 was unable to communicate to BLUE 1 due to excessive radio chatter by the F-105 flights. BLUE 1 never sighted MIGs.

7. SITUATION DEVELOPMENT

BLUE flight maintained its escort position in orbit until scheduled return time.

[redacted]



[redacted]

8. ORDNANCE

None expended

9. EQUIPMENT PROBLEMS

BLUE 1 - None
BLUE 2 - None

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions |
|---|---|---|---|
| BLUE 1 - Front | ---------- | Unknown | ---------- |
| BLUE 2 - Back | 800 | 500 | 100 |

Comments on this Encounter

BLUE 1 - Front

Excessive radio chatter by F-105 flights.

BLUE 2 - Back

Pilot thought it would have been very simple to dive down on the MIG flight and shoot down at least one before the MIGs knew he was there. He said he would have closed to 1 to 2-1/2 mi astern and then started firing SIDEWINDERS.

11. DATA SOURCES

Project Interviews: BLUE 1 (Front), 29 Jan 67
BLUE 2 (Back), 17 Mar 67
Messages, Reports: 35TFW 220305Z Sep 66

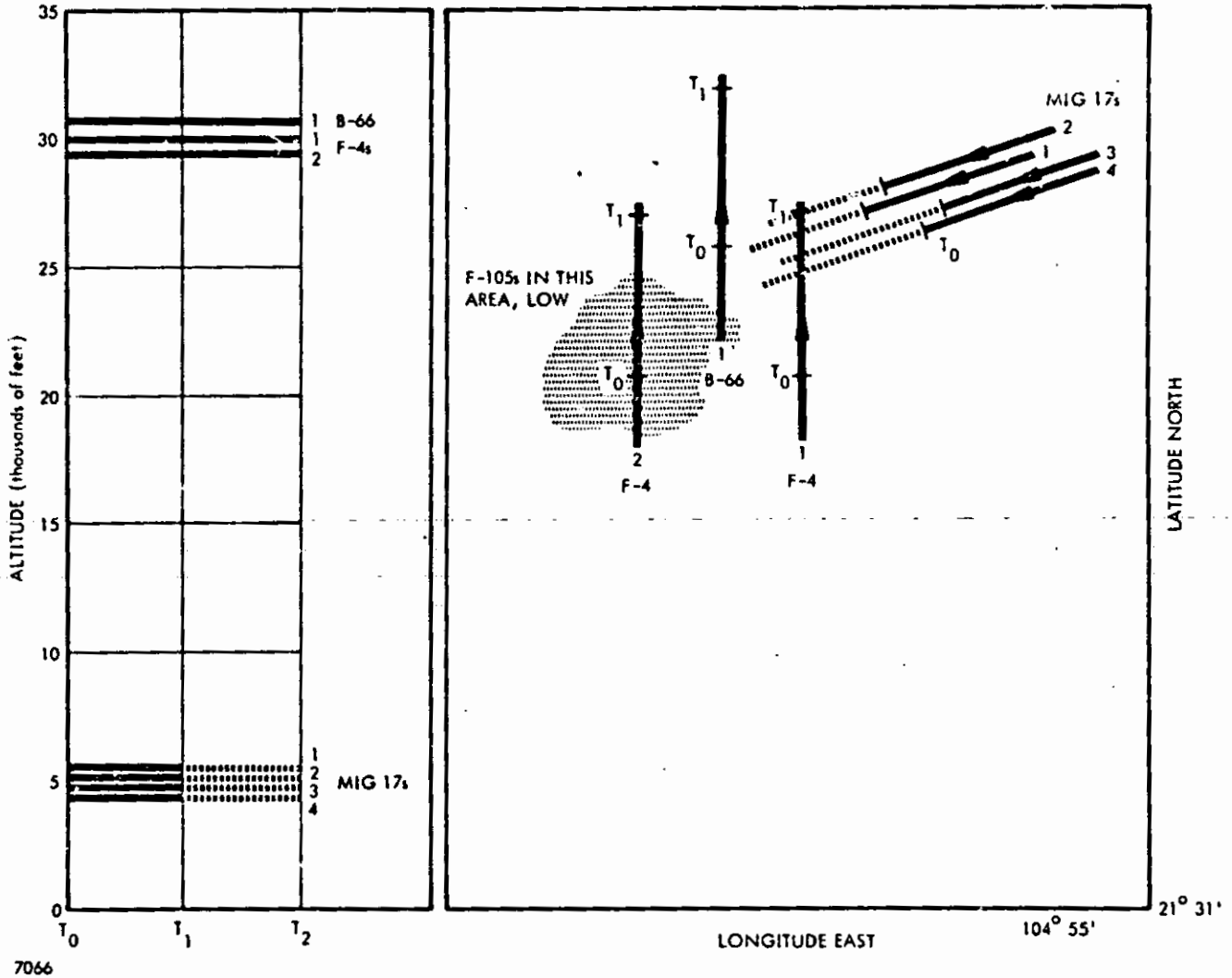
12. NARRATIVE DESCRIPTION

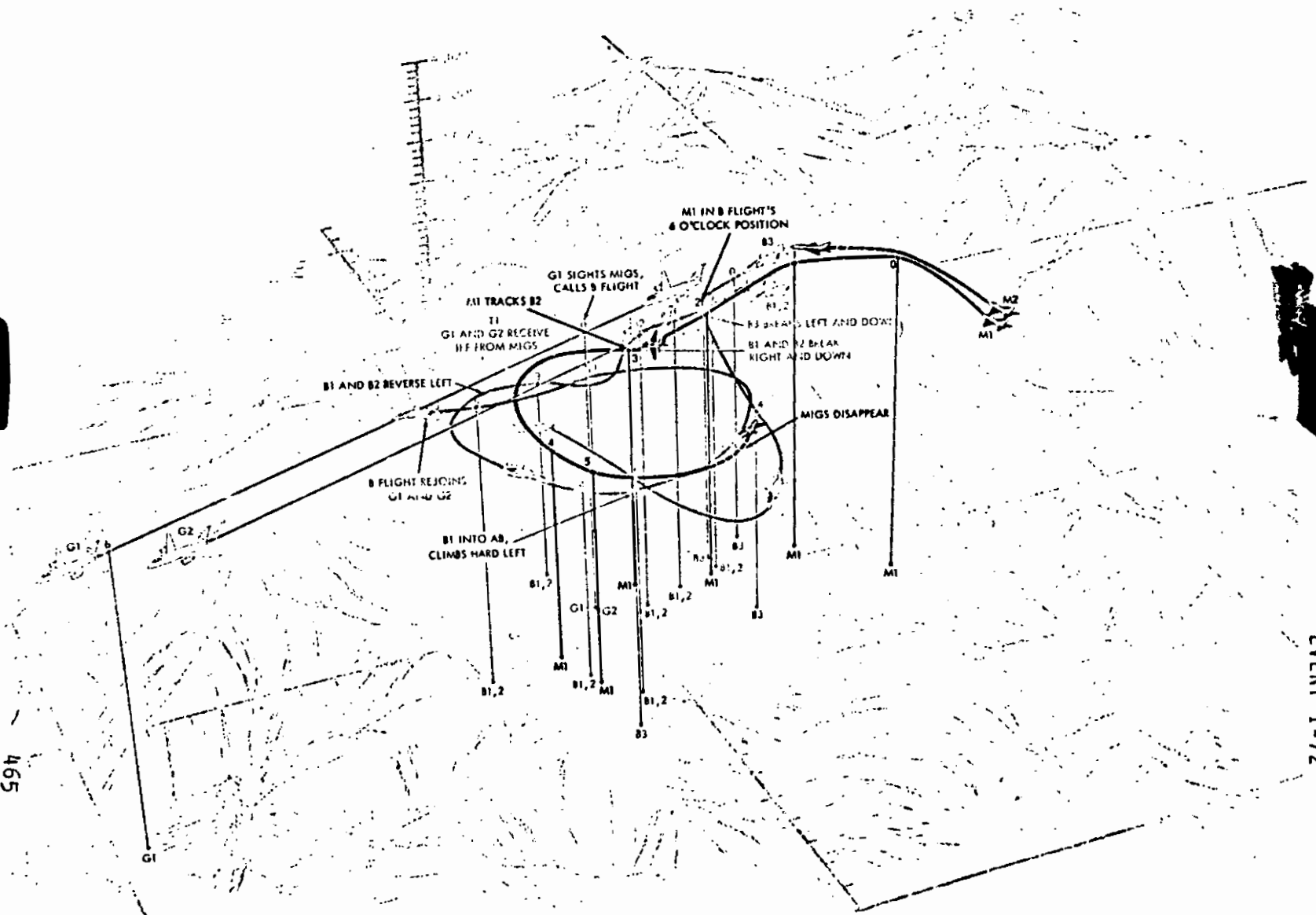
BLUE flight launched from Danang as a scheduled four-plane escort of an EB-66; however, only two F-4C aircraft actually made the flight. BLUE 1 and 2 proceeded to the tanker, then north to Yen Bay to the prescribed orbit point. Where GREEN 1 joined the flight is unknown. GREEN 1 established a left orbit oriented N-S, escorted by BLUE 1 and 2.

After approximately one orbit, heading 360°, BLUE 2 Front and Back simultaneously sighted a flight of four MIG-17 aircraft at 3 o'clock, very low (approximately 5000 ft) heading 250°. Because of excessive radio chatter BLUE 2 was unable to inform BLUE 1 of the MIGs or to warn several flights of F-105s directly below BLUE flight making strikes. The MIGs continued 250° on an intercept course for the F-105s, who very shortly called out that they were being attacked by MIGs. BLUE 2 finally contacted BLUE 1 but BLUE 1 decided to maintain position on the EB-66. GREEN 1 continued in his orbit approximately 20 min and then egressed with BLUE flight.

EVENT I-48 SUMMARY

| Time Mark | Action Aircraft (BLUE 1,2) | | Friendly Aircraft (GREEN 1) | Communications | Enemy Actions (MIG 1, 2, 3, 4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | B and 2 at 30,000 ft, Mach 0.8, Heading 360°, 9000 lb of fuel, 2 mi in trail of G1 | B2 sights a flight of 4 MIG-17s | G1 at 31,000 ft, Mach 0.8, Heading 360° Several flights of F-105s directly below BLUE flight making attacks | B2 attempts to call B1, but radio is completely satuated by F-105s | Four MIG-17s at approximately 5000 ft, Heading 250° in direction of F105 flights | |
| $T_1$ | Unchanged | BLUE flight continues on escort mission | | B2 finally informs B1 of MIGs | | MIGs seen only by B2 |


ALTITUDE (thousands of feet)
35
30
25
20
15
10
5
0
1 B-66
1 F-4s
2
1
2
3
4
MIG 17s
$T_0$
$T_1$
$T_2$
7066
F-105s IN THIS AREA, LOW
$T_1$
$T_0$
1
B-66
2
F-4
1
F-4
MIG 17s
2
1
3
4
LATITUDE NORTH
21° 31'
LONGITUDE EAST
104° 55'


M1 IN B FLIGHT'S
6 O'CLOCK POSITION
G1 SIGHTS MIGS,
CALLS B FLIGHT
M1 TRACKS B2
T1
G1 AND G2 RECEIVE
HF FROM MIGS
B1 AND B2 REVERSE LEFT
B FLIGHT REJOINS
G1 AND G2
B1 INTO AB,
CLIMBS HARD LEFT
B1 AND B2 BREAK
RIGHT AND DOWN
MIGS DISAPPEAR
G1
G2
B1,2
M1
B3
M2

EVENT I-72

[redacted]

EVENT I-73

Aircraft Involved: Four F-4Cs vs three MIG-21s
Result: Sighting Only
Vicinity of Encounter: 21°30'N/104°55'E
Route Package V

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 Jan 1967/1545H

11. DATA SOURCES

PACAF Command Post No. 27 listed on Project MIG Incident Summary

12. NARRATIVE DESCRIPTION

None

[redacted]



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[redacted]

EVENT I-74

Aircraft Involved: Four F-4Cs and four F-105s vs two MIG-17s

Result: No damage

Vicinity of Encounter: 22°N/104°E Route Package V

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 17 Jan 1967/0807H

Four F-4C aircraft (BLUE flight) inbound to target area to provide escort (MIGCAP) for four F-105 IRON HAND (GREEN flight) and twelve F-105 strike aircraft.

2. MISSION ROUTE

Departed Danang for WHITE ANCHOR (Laotian refueling route) to target area and recovered Danang via WHITE ANCHOR (poststrike refueling).

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

4 - SPARROW (AIM-7)
4 - SIDEWINDER (AIM-9)
2 - 370-gal tanks
1 - 600-gal tank

F-105 GREEN 1, 2, 3, 4

2 - 450-gal tanks
1 - QRC-160 pod
Ordnance had been expended at time of encounter.

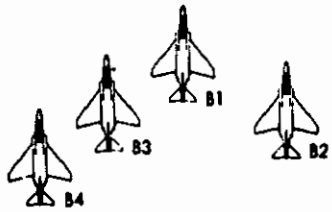
MIG-17 MIG 1, 2

Drop tanks
Silver color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear, visibility in haze 2-3 mi into sun; 3-5 mi away from sun.

| | BLUE | GREEN |
|---|---|---|
| Altitude: | 12,000 ft | 5000 (estimated) |
| Heading: | 130° True | 310° True |
| Speed: | 450-kt IAS | As fast as possible |
| Fuel State: | 13,000 lb | Unknown |
| Flight Formation: | | |




5. INITIAL DETECTION

B-1 (back) called MIGs to BLUE Lead on interphone and BLUE 3 called "Strangers 6 o'clock" to F-105s. Two MIGs were 3 o'clock low at 1-3 mi heading in opposite direction to BLUE flight and 1 mi in trail with a flight of four F-105s (GREEN flight). MIGs were picked up visually. No prior warning was received.

6. ACTION INITIATED

BLUE Lead called "break right" and BLUE flight initiated a descending right break into the MIG-17s.

7. SITUATION DEVELOPMENT

The MIGs were not able to maintain relative position or overtake GREEN flight. MIGs apparently had BLUE flight in sight because as BLUE flight broke towards them, the MIGs jettisoned tanks and initiated a right climbing turn into BLUE flight. Approximately 20° into turn, BLUE flight jettisoned tanks. The MIGs then reversed their turn back left and disappeared into heavy haze. BLUE flight was unable to reestablish contact so continued with fragged mission. BLUE flight's radar was on 50-mi scan.

No information on the number of g's used or turn radius of MIGs or BLUE flight. Also no indication as to who was in the most advantageous position or gaining advantage and no information on relative positions when contact was lost. Interviewed BLUE Lead only.

[redacted]

[redacted]



8. ORDNANCE

No ordnance expended by friendlies or enemy.

9. EQUIPMENT PROBLEMS

None

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 Front | --------- Unknown ---------- | | | All tactical fighter background. |

Comments on this Encounter

BLUE 1 - Look-down capability of radar is bad. Described MIGs as light in color with swept wings and round wing tips.

11. DATA SOURCES

Project Interviews: BLUE 1 (Lead) - Front

Messages, Reports:

366 TFW OPREP-3 170500Z Jan 67 No. 003

12. NARRATIVE DESCRIPTION

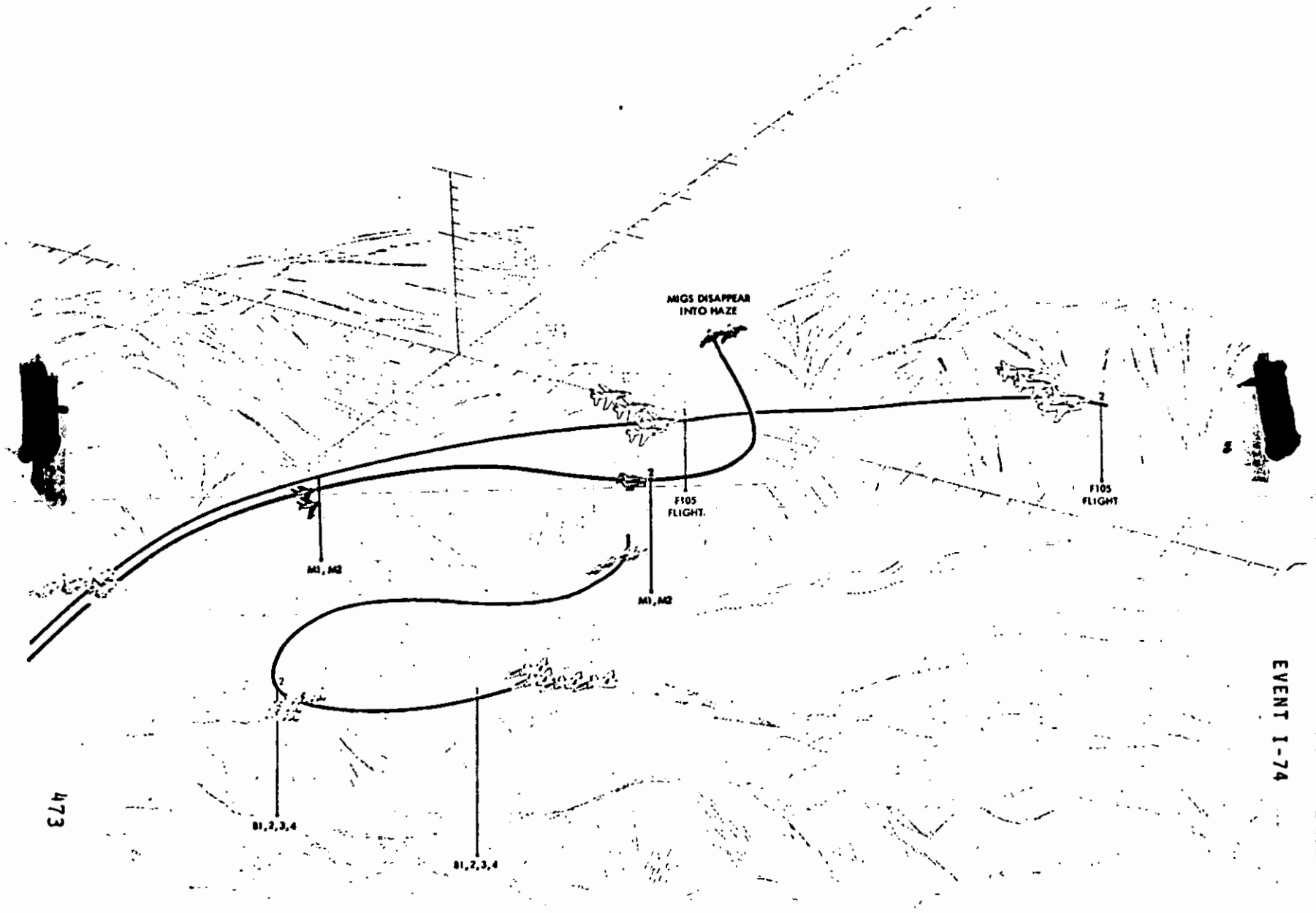
BLUE flight (four F-4s) on escort/MIGCAP mission, was inbound to target area heading 130° at 12,000 ft, 450-kt IAS, in spread formation when they sighted GREEN flight (four F-105s) below them at 3 o'clock, 5000 ft in QRC formation exiting target area heading in opposite direction with two strangers 1 mi in trail and falling behind. BLUE flight broke right and down towards the now identified MIG-17s and jettisoned fuel tanks. At the same time, the MIGs jettisoned tanks and started a right climbing turn into BLUE flight. The MIGs then reversed their turn and disappeared into heavy haze. BLUE flight was unable to reestablish contact so continued with their fragged mission.

Six of the eight personnel involved observed the enemy aircraft. BLUE flight had all ordnance systems armed and working. GREEN had QRC-160 in operation.

[redacted]

EVENT 1-74 SUMMARY

| Time Mark | Action Aircraft (BLUE 1,2,3,4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | 12,000 ft<br>450-kt IAS<br>13,000 lb<br><br>4 SPARROWS<br>4 SIDEWINDERS<br>1 QRC-160 | Some F-105s were exiting<br>Flight of F-4s were exiting to the SW then turned NW<br>F-105s in QRC formation<br>All systems armed and operating<br>All working | Escorting F-105s<br>Four F-105s IRON HAND<br>Twelve F-105s strike aircraft | B1 Back called MIGs to lead over interphone<br>B3 called "Strangers 6 o'clock" to F-105s | Two MIG-17s were in trail about 1 mi behind F-105s at about 5000 ft<br>MIGs were not able to keep up with F-105s--were losing out | Weather clear, but hazy. Visibility into sun 2-3 mi; away from sun 3-5 mi<br>Picked up MIGs visually at about 1 to 1-1/2 mi<br>No MIG warnings |
| $T_1$ | | | BLUE flight jettisoned tanks | Lead called break right | MIGs started turn up toward BLUE flight--got about 20° into turn--at this time F-4s jettisoned tanks | Radar on 50-mi scale |
| $T_2$ | | | BLUE flight lost sight of MIGs | | MIGs reversed and headed into haze<br>MIGs were swept wing, silver color | Look-down capability on radar is poor |
| | | | | | | |


MIGS DISAPPEAR
INTO HAZE
F105
FLIGHT
F105
FLIGHT
M1, M2
M1, M2
B1,2,3,4
B1,2,3,4

EVENT I-74

[redacted]

EVENT I-75

Aircraft Involved: Three F-4Cs vs one MIG-17D

Result: No damage

Vicinity of Encounter: 21°10'N/104°50'E
Route Package V

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 Jan 1967/0855H

Three F-4C aircraft following an F-105 IRON HAND flight.

2. MISSION ROUTE

Departed Danang and flew directly to the ORANGE ANCHOR refueling orbit. After refueling, the flight proceeded to the area of the encounter.

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3

4 - SPARROW (AIM-7E)
4 - SIDEWINDER (AIM-9B)
QRC-160 pod
Avionics, tank configuration, camouflage, etc., unknown

MIG-17D

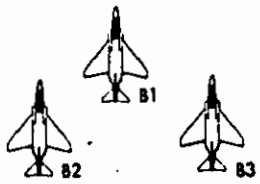
Guns only
Silver in color
Scan-ODD radar

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered clouds at 2000 ft. Visibility into the sun was 3 mi and in other quadrants was 10 mi.

| | BLUE 1 | BLUE 2 | BLUE 3 | MIG 1 |
|---|---|---|---|---|
| Altitude: | 16,000 | | | 30,000 |
| Heading: | 050° | | | 180° |
| Speed: | 480-kt CAS | | | Unknown |
| Fuel State: | Full internal plus some fuel in the external tanks | | | Unknown |

Flight Formation:




5. INITIAL DETECTION

Flight was in formation shown above when BLUE 3 sighted a stranger at 10 o'clock high. Shortly thereafter he called "MIG 12 o'clock high."

6. ACTION INITIATED

BLUE flight continued straight ahead until the MIG was in the 6 o'clock position-co-altitude and about 4000 ft back. BLUE 3 called a MIG break, and the flight executed a hard right descending turn as BLUE 3 jettisoned his tanks.

7. SITUATION DEVELOPMENT

After BLUE flight broke down and right, the MIG disengaged and departed the area. BLUE flight did not sight the MIG again.

8. ORDNANCE

No ordnance was expended by any of the airplanes involved.

9. EQUIPMENT PROBLEMS

BLUE 1 - No problems
BLUE 2 - No problems
BLUE 3 - Had indications (both a red and a green light) that his QRC pod was only partially effective.

[redacted]

## 10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 Front | ---------Not Obtained------- | | | Not interviewed. |
| Back | ↓ | ↓ | ↓ | ↓ |
| BLUE 2 Front | | | | |
| Back | | | | |
| BLUE 3 Front | | | | First mission in N. Vietnam. |
| Back | | | | Not interviewed. |

Comments on this Encounter

BLUE 3 front felt that he was not properly trained or mentally prepared for this encounter, particularly since it occurred in an area where MIG attacks were not expected. Also, it was his first mission and he was quite surprised to encounter a MIG. BLUE 3 later believed that in the same situation he could have reached a firing position on the MIG and would not have called a break-away which resulted in losing sight of the MIG.

## 11. DATA SOURCES

Project Interviews: BLUE 3 (Front), 28 Jan 1967

Message Reports:

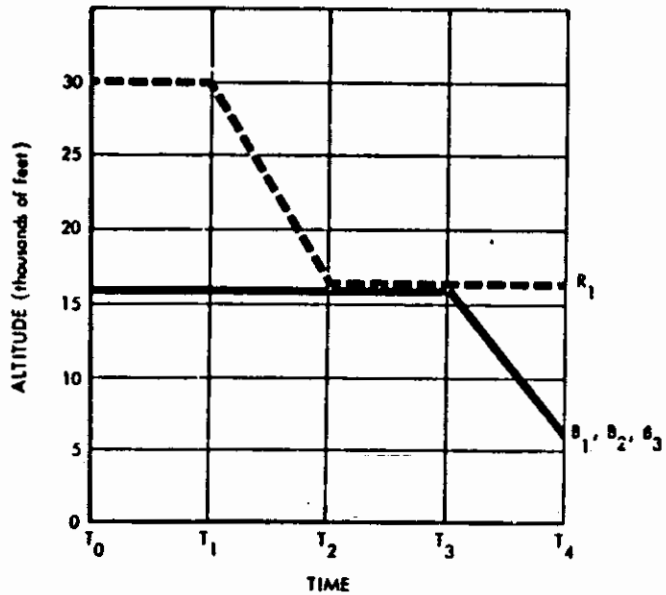
366TFW 210608Z Jan 67

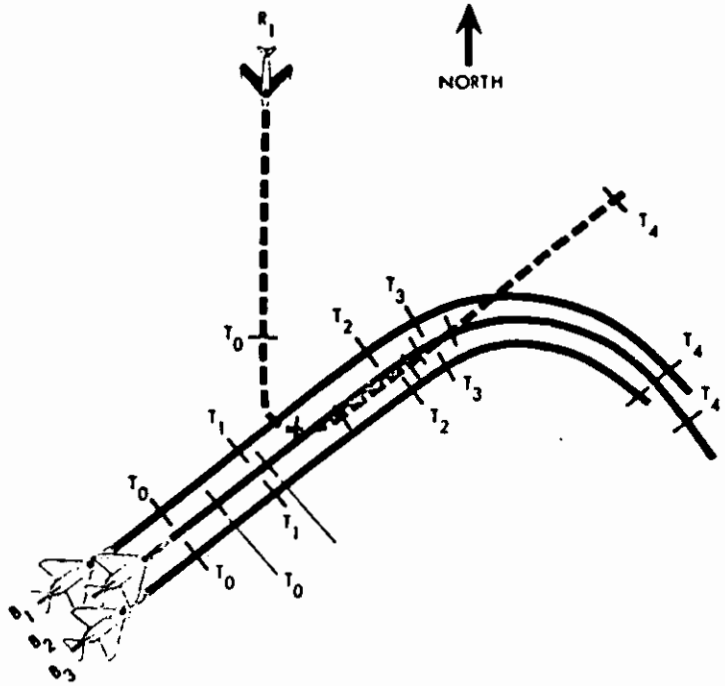
## 12. NARRATIVE DESCRIPTION

BLUE flight was in a loose finger tip formation at 16,000 ft indicating 480-kt CAS and heading 050° when BLUE 3 sighted a stranger at 10 o'clock high heading 180°. As the bogey came overhead, it maneuvered down and into trail with BLUE flight. BLUE 3 identified the bogey as a MIG-17D. When the MIG had maneuvered to 4000 ft at 6 o'clock, BLUE 3 called a break. The flight broke down and right as BLUE 3 jettisoned his tanks. At this time the MIG disengaged and was not seen again.

EVENT 1-75 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2, 3) | | Other Friendly | Communications | Enemy Actions (MIG 1) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | Loose finger tip formation at 16,000 ft, 480-kt CAS, heading 050° | B3 sights a bogey at 10 o'clock high | 3 F-4Cs following an F-105 IRON HAND flight | B3 sights bogey and calls it out. B1 replied "No Joy." | Bogey continued toward BLUE flight | |
| $T_1$ | Same | B3 identifies bogey, now at 12 o'clock high rolling in, as a MIG | | B3 calls MIG rolling in | M1 came overhead and maneuvered down and in trail with BLUE flight | B3 identified bogey as probably a MIG-17D |
| $T_2$ | Same | B3 observes M1 at 6 o'clock to the flight | | B3 calls "He's at 6 o'clock." | M1 now closing in the 6 o'clock position | |
| $T_3$ | Same | B3 observes M1 4000 ft at 6 o'clock to the flight | | B3 calls MIG break | M1 closed to 4000 ft at 6 o'clock | |
| $T_4$ | Same | BLUE flight breaks right and down to 6000 ft. B3 jettisons tanks. B1 and B2 retained tanks. | | | M1 disengages | BLUE flight after recovering from the break, does not sight the MIG again.<br>B3 feels that he muffed the event and that given the same chance again he would have been able to handle the engagement better. |


ALTITUDE (thousands of feet)
30
25
20
15
10
5
0
$T_0$
$T_1$
$T_2$
$T_3$
$T_4$
TIME
$R_1$
$B_1, B_2, B_3$


$R_1$
NORTH
$T_0$
$T_1$
$T_2$
$T_3$
$T_4$
$B_1$
$B_2$
$B_3$

EVENT I-75

[redacted]

EVENT I-76

Aircraft Invol... | ...s and four F-105s ...

Result: No da...

Vicinity of Ba... | ...'N/105°43'E

... MISSION AND ... | ...N | ... Package VI

Time: 22 Jan ...

...-4Cs (BLUE fl... | ...nsive support o... | Target 18.33.
...D flight (... | ...erating in the ... | ...e time.

... ROUTE

...ed Danang ... | ...DR refueling ... | ...nned route to orbit
...ver JCS 16... | ...n of mission ... | ...eeded to WHITE
poststrike ... | ...l recovery a...

...FT CONFIGURATI...

1, 2, 3, 4

...ARROW (AIM-...

...EWINDER (AI...

...0-gal wing ...

...0-gal center...

...I TACAN work... | operational

...N 1, 2, 3, -

...ven

1, 2

...olor

... CONDITIONS PR...

...lear, visibili...

| | BLUE | GREEN |
|---|---|---|
| | 1, 2, ... | ..., 2, 3, 4 |
| | 11,... | ...t reported |
| | 139° | 190° |
| | 500-... | ...t reported |
| ...1 | Full ... | ...t reported |
| | some ... | |
| | nal tank... | |
| ... | QRC-16... | ...t reported ... ...ven |

...L DETECTION

...flight receiver... | ...out MIGs in the ... | ...while proceeding
...N/104°10'E (... | ... Two MIG aircra... | ...d at 11 o'clock
...t approx 6 mi... | ...ove and close ... | ... flight of F-105s
...nt). BLUE fl... | ...ll external fuel ... | ...terburners and
...d the MIGs.

... INITIATED

...e flight began ... | ...k the MIGs becam... | ...UE flight and turned
...ng of 210° and ... | ... lowest possible | ...escape.

...ION DEVELOPMENT

...flight pursued ... | ...ut lost sight of ... | ...hey ducked around
...n in the vicin... | ...35°41'E. BLUE fl... | ...have an opportunity
...BLUE flight b... | ...ement and climbe... | ...nsive orbit.

...CE

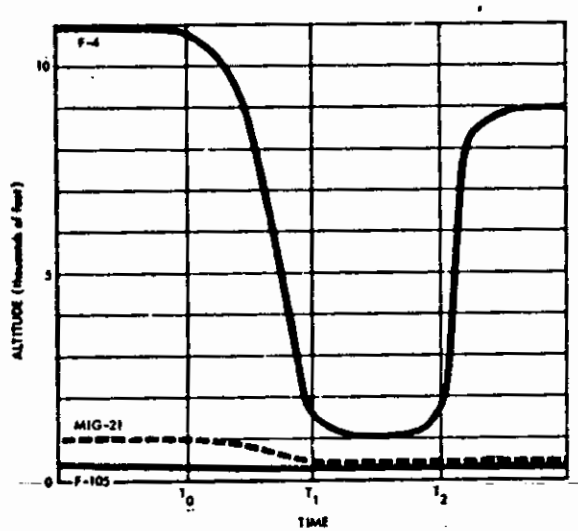
| | | ...its) | |
|---|---|---|---|
| | BE... AI... | ...et AAM | ...cks |
| 3, 4 | ... | Re... te... | ...e. No suitable |

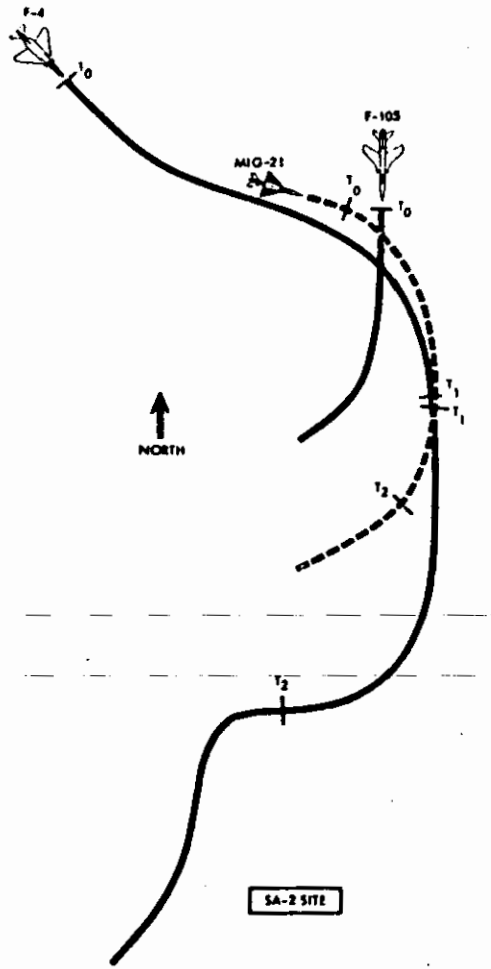
...0

[redacted]

EVENT 1-76 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly (GREEN 1, 2, 3, 4) | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | Heading 135° 11,000 ft 500-kt CAS Flight all had [illegible] | Saw F-105s and MIGs at about 6-mi range. Jettisoned all external fuel tanks. | Flight of F-105s (IRON HAND) heading 190° | B4 called MIGs (claimed he saw plain view of 21) | SAW two MIGs at about 1000 ft. Appeared to be [illegible] | Weather clear with 10-mi visibility. [illegible] flight of [illegible] |
| [illegible] | | [illegible] to about 2 mi | | | [illegible] ing right turn around hill | [illegible] lost sight of MIGs |
| $T_2$ | | Went into SAM break to left | | B2 Back called "BLUE flight, SAM 9 o'clock." | B2 Back saw SAM fired from 9 o'clock | Lead did not see SAM. Total time 3 min or less. |


F-4
MIG-21
F-105
10
5
0
ALTITUDE (thousands of feet)
$T_0$
$T_1$
$T_2$
TIME


F-4
F-105
MIG-21
NORTH
SA-2 SITE
$T_0$
$T_1$
$T_2$

EVENT I-76

[redacted]

EVENT I-77

Aircraft Involved: Twelve F-4Cs

Result: One F-4C lost and one damaged by SAMs

Vicinity of Encounter: Northern end of Thud Ridge and Yen Bai

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 23 Jan 1967/_ _ _ _

The mission was a planned fighter sweep consisting of three flights of F-4Cs (BLUE, GREEN, BROWN). The mission, called BOLO II, was initiated because of the success of an earlier fighter sweep called BOLO I (EVENT I-68). In addition to the F-4 flights at least four F-105 IRON HAND flights in the area, two of which preceded the F-4s. To assist in the planned deception, the first two F-4 flights were to simulate the F-105's flight profile.

## 2. MISSION ROUTE

BLUE flight was the lead flight, and after take-off from Ubon proceeded to RED ANCHOR for air-to-air refueling, then to 20°33'N/105°10'E, then to 20°50'N/105°20'E.

GREEN flight was spaced 3 min behind BLUE. They were to parallel the Red River until the second turning point and then make a 090° track to Phuc Yen. After take-off from Ubon, and refuel at ORANGE ANCHOR, GREEN flight proceeded to 20°56'N/104°07'E direct to 21°31'N/105°00'E direct to 21°12'N/105°20'E direct to 21°10'N/105°37'E at which point GREEN flight broke off and egressed the area.

BROWN flight originated at the same base and followed the preceding flights to the vicinity of Yen Bai.

## 3. AIRCRAFT CONFIGURATIONS

| F-4C | BLUE | GREEN | BROWN |
|---|---|---|---|
| | 4 - SPARROW (AIM-7E)<br>4 - SIDEWINDER (AIM-9B)<br>1 - QRC-160 pod<br>1 - 370-gal wing tank<br>1 600-gal centerline tank<br>Exact type of RHAW gear unknown<br>Camouflage paint<br>Radar on<br>Status of TACAN, IFF unknown | Same as BLUE except that one aircraft had an ALQ-71 pod instead of the QRC-160 pod.<br>APR-25 | Probably same as BLUE.<br>1 - QRC-160 pod<br>No RHAW gear |

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Overcast at 18,000 ft, solid layer at about 7000 ft, visibility unlimited.

| | BLUE | GREEN 1 | GREEN 2 | GREEN 3 | GREEN 4 | BROWN 1,2,3,4 |
|---|---|---|---|---|---|---|
| Altitude: | Unknown | 14,000 ft | 14,000 ft | 16,000 ft | 16,000 ft | 16,000 ft |
| Heading: | Unknown | 090° | | | | Unknown |
| Speed: | Unknown | 525-kt TAS | | | | Unknown |
| Fuel State: | Unknown | Not Reported | | | | Unknown |

Flight Formation:

QRC-160 pod formation. GREEN 4 had inoperative QRC-160 pod and was close to GREEN 3.

## 5. INITIAL DETECTION

BLUE flight observed one SAM coming up in a 45° to 60° (trajectory elevation) climb with sustainer burning. Three more SAMs followed the first one.

GREEN flight saw a group of four missiles, GREEN 2 called the missiles first, at 9 o'clock, 2-1/2 mi.

BROWN saw four SAMs come out of the overcast with sustainer burning at 2:30 o'clock position, range 8 mi.

## 6. ACTION INITIATED

BLUE flight watched the initial SAM explode and then maneuvered to evade the remaining three. No warnings were given to BLUE flight. BLUE 1 and 2 had indications from activity lights but no PRF warning.

[redacted]

GREEN flight watched the SAMs to determine if they were tracking. GREEN flight heard BLUE flight's SAM call, and APR-25 was active. GREEN 3 had first launch light.

BROWN flight turned into the SAMs and watched them. They had heard the SAM call from GREEN flight as well as the IRON HAND launch indications. BROWN flight had no APR-25.

7. SITUATION DEVELOPMENT

During the maneuver to evade the SAMs, the number 2 SAM exploded near BLUE 2 damaging the number 5 fuel cell and the afterburner section. The time lapse from sighting of first SAM to final observation of the fourth SAM was 5-6 sec. The flight egressed after BLUE 2 sustained the battle damage.

GREEN 1 and 2 broke left and down while GREEN 3 and 4 broke left and up. GREEN 4 was close to GREEN 3 since GREEN 4's ECM pod was inoperative. However, GREEN 4 took a direct hit and the aircraft exploded in a large fireball. As the flight rolled to 300° heading at about 11,000 to 14,000 ft, three more SAMs were seen at 3 o'clock. The flight broke down and right as the missiles passed above and detonated harmlessly. The flight immediately left the area.

BROWN flight saw the first SAM detonate immediately after they leveled off. Shortly after, a second SAM also detonated still far away from the flight. As the remaining two closed within 4 mi, BROWN flight started to descend; at this time the third SAM detonated. The fourth SAM still appeared to be guiding on the flight so BROWN flight broke right; as they rolled out of this break, the final SAM exploded at about 3000 to 5000-ft range. The flight then egressed.

8. ORDNANCE

None

9. EQUIPMENT PROBLEMS

BLUE - None reported

GREEN 4 - QRC-160 pod inoperative

BROWN 4 - QRC-160 pod ceased operating during a break

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions |
|---|---|---|---|
| GREEN 1 - Front | 4400 | 150 | - |
| BROWN 1 - Front | 3450 | 220 | 43 |

Comments on this Encounter

GREEN 1

"Vector box" (APR-25) is useful only for X-band radar when QRC-160 is operating. The QRC-160 blanks out S-band reaction.

Since weather was not good enough to bomb, the deception was not authentic.

BROWN 1

Felt SAM batteries had altitude but not range on them due to SAM trajectories. SAM batteries appeared to be using command detonation.

SAM misses were closer than previous F-105 experience had indicated. He felt that the operators were adjusting to the ECM interference.

11. DATA SOURCES

Project Interviews: GREEN 1-Front; BROWN 1-Front (exact date unknown, in Jan-Feb of 1967).

Messages:

8TFW 230515Z Jan 67 DOI 01536

8TFW 23----Z Jan 67 DOI 01537

12. NARRATIVE DESCRIPTION

See Item #7.

GREEN flight received MIG warning 10 min after missile blast. BIG EYE reported MIGs did not take off early that day.

[redacted]

EVENT I-78

Aircraft I: ··Cs vs eight MIG-17s

Result: :e

Vicinity ·: 7'N/105°22'E

:e Package VI

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 Feb 1967/1530H

A flight of four F-4Cs (BLUE flight) while orbit · an F-105 strike encountered a total of eight MIG-17s in a brief span ·: this period some twenty F-105s were striking a target about 7 mi in a · ·. During this period some friendly aircraft were airborne in the ·.

2. MISSION ROUTE

Danang to refueling on WHITE track to TACAN chann /105°22'E, then to orbit area.

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

4 - SPARROW (AIM-7E) (Note: One F-4C, specific :d, had only three AIM-7Es)
4 - SIDEWINDER (AIM-9B)
1 - QRC-160 pod on right outboard pylon
1 - 370-gal tank on left outboard pylon
1 - 600-gal centerline tank
Radar on, IFF and TACAN not radiating
Camouflaged

MIG-17s MIG 1, 2, 3, 4, 5, 6, 7, 8

ATOLL missiles
Cannon
Silver color with solid red star on wings and :nge bar on vertical stabilizer.
External fuel tanks

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered clouds at 1000 to 3000 ft; 3 to 5- : moderate haze. Broken cloud layer at 20,000 ft.

Flight Conditions: 3000-ft altitude, 450-kt TAS, SE ..

Fuel: 13,000 lb fuel (Note: B3 & 4 were unable to · fuel from their centerline tanks--approximately 4000 lb of fuel..

Flight Formation: Close-in fluid four--about one-half · .ing.

5. INITIAL DETECTION

The flight was heading 148° when BLUE 1 (Front) · MIG (readily identified as a MIG-17) at 10 o'clock, about 1 mi distance, . ·ings level, airspeed 300-350 kt, heading about 285°. As BLUE flight made · ., a second MIG was observed in company with the first. While in the turn ·ighted two MIGs at 6 o'clock (to the southeast), less than 1 mi distance, · closing. At about the same time a flight of four more MIGs was observed . east. MIG warnings had been heard en route to the orbit area, but there ·. ·ing of this specific encounter.

6. ACTION INITIATED

Lead called out the initial MIG and told the fli · t. Flight made about a 4-g turn, going to full military power, to gai · tion.

7. SITUATION DEVELOPMENT

As BLUE flight maneuvered to attack position on ·. ·hted MIG (which was subsequently determined to be a flight of two), two ·. ·unsuccessful missile attack on BLUE lead element from 6 o'clock, apparentl ·er the one pass. Going into a hard break, BLUE 1 then observed four m ·ock, closing from about the same position as the first MIG observed. · into the flight of four, becoming separated from BLUE 3 and 4 at about · ·ght of four MIGs split into two elements and gained pursuit positions · ·s of F-4s. The encounter continued as two on two with continuous ma · apparent mutual termination with BLUE 3 and 4 commencing egress due · MIGs disappearing into the clouds. BLUE 1, 3 and 4 fired missiles, wi · ·bserved, in attempting to get MIGs off the other elements' tail, · ·f missile parameters. BLUE 4 also fired a SIDEWINDER at a MIG with good t · ·aking as the MIG entered a cloud. MIGs were observed to fire canno · A total of five SIDEWINDER and two SPARROW missiles were fired. [redacted]

Two unguided SAMs crossed in front of lead element as they pursued a MIG, detonating more than a mile away.

8. ORDNANCE

(No. fired/No. hits)

| | SPARROW AIM-7E | SIDEWINDER AIM-9B | Cannon | Soviet AAM | Remarks |
|---|---|---|---|---|---|
| BLUE 1 | 0/0 | 2/0 | | | Fired both missiles in salvo, knowingly out of parameters, and with unresolved tone, in successful attempt to divert MIGs from attack on other element. No bursts observed. |
| BLUE 2 | 0/0 | 0/0 | | | |
| BLUE 3 | 2/0 | 2/0 | | | Fired two SIDEWINDERS, knowingly out of parameters, and with no aural signal, in attempt to divert MIGs from attack on other element. Fired two SPARROWS without lock-on (due to ground clutter). No bursts observed. |
| BLUE 4 | 1/0 | 1/0 | | | Fired SPARROW with no lock-on in attempt to divert MIGs from attack on other element. No burst. Fired SIDEWINDER from good position, good tone. Missile guided, following MIG into clouds. No burst observed. |
| MIGs | | | 1/0 | 2/0 | Lead observed missile firing in his direction; flight broke hard. Missiles passed considerable distance from flight; unable to determine whether or not they guided. Two MIGs (other than the ones firing missiles) both observed to fire a 3- to 5-sec burst at BLUE 3 & 4 at about the same time. |

9. EQUIPMENT PROBLEMS

BLUE 3 & 4 were unable to jettison their centerline tanks and could not feed fuel from them.

While no abnormal equipment problems were experienced in missile firings, it is noteworthy that the tactical situation dictated out-of-parameter launch of seven of the eight missiles.

10. AIRCREW COMMENTS

Experience

Not known. BLUE 1, 2 & 3 aircraft commanders were grade of major; BLUE 4 was a captain; all back seaters were 1st Lt.

Comments on this Encounter

BLUE 1 Front

The orbit area for this mission was between a river and a 3500-ft mountain ridge. The area was selected because of its nearness to the target and because the terrain masking permitted the flight to keep a lookout for MIGs without being concerned about SAMs. Even though QRC-160 pods were carried, flight traied not to rely on them.

The MIGs' tactics seemed to consist of a single firing pass and breakoff.

Never had the opportunity to set up for an attack--there was always another MIG or two positioning themselves for attack at the same time.

It was about a constant 4- to 6-g maneuvering encounter, with the best pass BLUE 1 could ever get on a MIG being about 85° off the tail.

Element integrity was maintained throughout the encounter.

It is not believed that the final MIG was coordinated with the SAMs in an attempt to draw the F-4s into SAM range.

If the F-4s had carried guns, they could have undoubtedly gotten off some reasonable gun attacks.

The whole engagement took place at such low altitudes and close ranges that lock on was not possible.

BLUE 1 tried to draw the MIGs up to a higher altitude--at one point, with MIGs at 6 o'clock pulling up to 8000 ft and reversing turn--but they wouldn't follow.

It appeared that the first two MIGs were decoys to attract the F-4s' attention while others positioned for an attack--If you see two, there's going to be two more around, was the normal expectancy.

Radar was in a boresight mode the entire time.

The Back was so confused by all of the aircraft in the vicinity that he wasn't interested in the radar.

The Back and his extra set of eyeballs helped "immeasurably."

The MIGs did not maintain element integrity after an initial pass.

A tighter turn capability and more maneuverability in general would have been very helpful.

## 11. DATA SOURCES

Project Interviews: BLUE Lead Front, 12 Mar 67

Messages, Reports:

366TFW, OPREP-3, 051055Z, FASTEL 113, Feb 67

366TFW, Change 1 to OPREP-3, 051630Z, FASTEL 121, Feb 67

366TFW, Change 2 to OPREP-3, 061140Z, FASTEL 147, Feb 67

## 12. NARRATIVE DESCRIPTION

BLUE flight of four F-4Cs took off from Danang, refueled on WHITE track, proceeded to TACAN channel 97 and then to an orbit area where they were to provide MIGCAP for an F-105 strike. The orbit was between a river and a mountain ridge in the vicinity of 21°03'N/105°22'E; the F-105 strike, involving about 20 aircraft, took place some 7 mi to the E.

The average elevation of the mountain ridge was approximately 3500 ft. The orbit had been selected in this area because of its nearness to the target and because the terrain masking afforded by the mountains allowed the flight to keep a lookout for MIGs without being too concerned about SAMs.

Each aircraft was carrying a QRC-160 ECM pod and the flight maintained a close-in (about one-half normal spacing) fluid-four formation. Altitude and speed in the orbit were about 3000 ft AGL and 450-kt TAS.

The F-4 fuel management switches for these aircraft had been modified in order to permit a setting which would force the external wing tanks to feed before the wing internal fuel. In this setting, the fuel from the wing external tank would be used first, thereby reducing the asymmetric fuel load as soon as possible. This was a field modification for the squadron to permit operation with full missile load and the QRC-160 pod.

$T_0$ Just after establishing the orbit and while on a southeasterly heading, BLUE 1 Front observed a single, readily identified, MIG-17 at 10 o'clock, 1000 ft above heading about 285°. He called out the MIG and told the flight to break right, going into a 4-g turn and full military power.

$T_1$ As the flight rolled out on a northerly heading to set up an attack, the MIG was observed by BLUE 1 to be entering a low cloud formation about 2 to 3 mi ahead and was now also observed to be a flight of two. At about this time, BLUE 1 Back sighted two more MIGs closing from 6 o'clock, low. BLUE 1 Front then looked back and saw them at about 3 to 4000-ft distance, 5 to 6 o'clock, in a tracking situation. At about the same instant Front observed two missiles released by the lead MIG, apparently fired at BLUE 1 or 2. The MIGs then broke down and left. The flight continued a hard (4 to 4-1/2g) right climbing turn. The two missiles were observed to pass low and behind BLUE flight, 2000-ft distant, with no determination as to whether or not they had guided. At about the same time BLUE 1 had seen the two MIGs closing from behind, BLUE 3 or 4 observed four more MIGs closing from the east.

$T_2$ It was apparently just after this break in response to the missile firings that the elements became separated. In the turn, BLUE 3 observed two MIGs splitting from the flight of four and BLUE 3 and 4 broke into them as the MIGs were turning through their 3 o'clock position and descending.

$T_3$ As BLUE 3 and 4 tightened their turn to pursue two MIGs, BLUE 1 (with BLUE 2 on his wing) rolled out on a southerly heading and jettisoned centerline tank when his Back sighted the same four MIGs to the east. The lead element (BLUE 1,2) immediately broke right.

$T_4$ It is not clear what maneuvers the MIGs executed after $T_3$, but after BLUE 3 & 4 turned through 360° and BLUE 1 & 2 assumed a northerly heading, the two elements met almost head-on with the lead element about 2000 ft above. At this time each element was pursued by two MIGs. Two MIGs were at BLUE 3 & 4's 6 o'clock position, about 4000 ft distance

[redacted]



(both MIGs firing cannon), and two MIGs were at BLUE 1 & 2's 4 o'clock position, 3000 to 4000 ft distance. Each element leader had advised the other of MIGs on his tail prior to $T_4$. BLUE 3 now fired two SIDEWINDERS with no tone in an attempt to "scare off" the two MIGs behind BLUE 1 & 2. Almost immediately, BLUE 4 fired a single SPARROW, with no lock-on, in a similar attempt. Almost simultaneously BLUE 1 made a 5°-10° diving attack on the MIGs pursuing BLUE 3 & 4, firing two SIDEWINDERS with an unresolved signal due to ground environment. No bursts were observed from any of these firings. There was no report of the missiles having guided or not.

BLUE 3 & 4 continued in a climbing right turn. BLUE 1 & 2 pulled up and continued turning.

$T_5$ After completing about 270° of turn after firing, and still turning, BLUE 3 & 4 sighted two MIGs at their 2 o'clock low position, heading east. (It is believed that these were the two diverted while attacking BLUE 1 and 2.) BLUE 3 and 4 dove into the MIGs from behind.

$T_6$ BLUE 3 fired two SPARROWS with no lock-on due to ground clutter. The MIG underfire broke right and then left. One missile passed 500 to 700 ft behind him and the other 200 ft in front. No bursts were observed. BLUE 3 then broke right and called for an egress due to his low fuel state. BLUE 4 continued following the MIGs.

BLUE 1 & 2, rolling out on a southeasterly heading, observed a single MIG-17, very low, ahead, heading east. They turned left to chase, descending and going into afterburner.

$T_7$ BLUE 4, in position behind the MIGs, and with a good aural tone, fired a single SIDEWINDER. He observed that it tracked properly and when the missile was about 400 to 500 ft from the target the MIG-17, in a diving left turn, went into the clouds at about 1000-ft altitude. No burst was observed. BLUE 4 then turned right and climbed to join BLUE 3.

BLUE 1 and 2 were pursuing a single MIG-17 when two SAMs came across in front of them from 10 o'clock to 2 o'clock. They appeared to have no guidance and posed no threat. They rose, arched to a lower altitude and detonated 1-1/2 to 2 mi away.

BLUE 3 & 4 called that they were departing. BLUE 1, knowing 3 & 4 were having fuel troubles (could not feed from or jettison their centerline tanks), decided to break off his chase and join them.

Flight joined, proceeded to refuel on WHITE track and return to base.



[redacted]

## EVENT I-78 SUMMARY

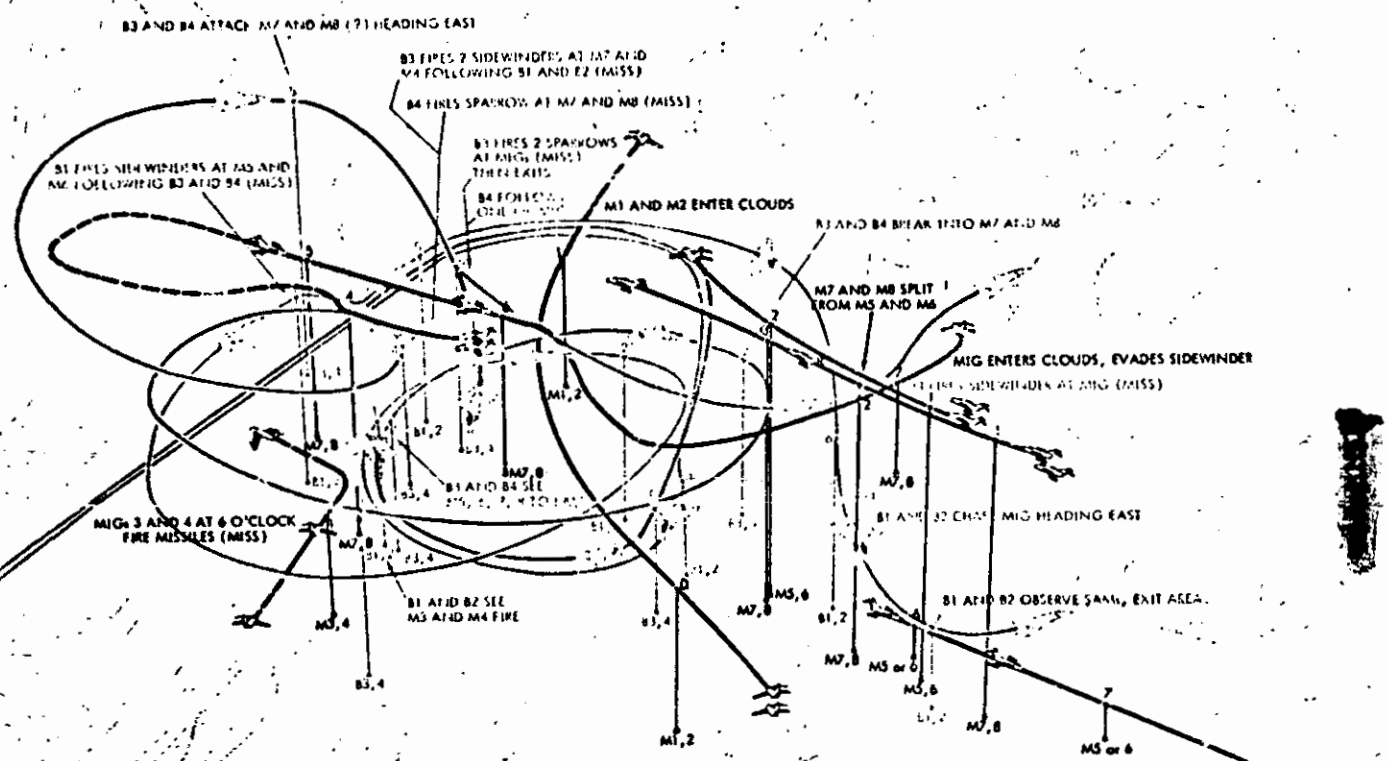
| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (8 MIGs) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | B1,2,3,4 close-in fluid-four formation, 3000-ft altitude, 450-kt TAS, heading SE, 13,000 lb fuel. | Flight breaks right, 4-g turn, full military power. | | Lead calls "MIG--break right." | Straight and level | B1 Front sees single, readily identified, MIG-17 at 10 o'clock, distance 1 mi, up 1000 ft, heading about 285°. |
| $T_1$ | Rolling out of turn, 4000-ft altitude, 500-kt TAS, northerly heading, full military power. | Continues hard right turn. | | | Initial MIGs sighted enter clouds. Lead MIG of two at 6 o'clock fires two missiles, then both break down and left. | Single MIG now observed to be flight of two. B1 Back sees two MIGs closing from 6 o'clock, low, less than 1 mi. B3 or 4 see four more MIGs closing from the E. |
| $T_2$ | In hard right turn, altitude 5000 ft, full military power | B3 & 4 break into two MIGs which are splitting from the flight of four. | | | | B3 & 4 observe two MIGs splitting from group of four to the E and descending. |
| $T_3$ | B1 & 2 rolling out on southerly heading, 6000-ft alt, 500-kt TAS, full military power. B3 &4 about same alt. | B1 jettisons centerline tank, going into right turn after sighting four MIGs. | | | | B1 Back sees four MIGs to E, close by at higher altitude. |
| $T_4$ | B1 & 2 in shallow dive, 500-kt TAS, 5000-ft altitude. | B1 & 2 make a 5°-10° diving attack on MIGs following B3 & 4; B1 fires two SIDEWINDERS at 2000 to 3000-ft range, 60° angle from head-on, unresolved tone, to divert MIGs. No bursts observed. | | Elements advise each other of MIGs on the other's tail. | Two MIGs pursuing each element of F-4s, firing cannon at B3 & 4. All break off after BLUE missile firings. | Two MIGs at B3 & 4's 6 o'clock, 4000-ft distance. Two MIGs at B1 & 2's 4 o'clock, 3000 to 4000-ft distance. BLUE elements meet almost head-on. |

EVENT I-78 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (8 MIGs) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_4$ Cont. | B3 at firing 400-kt TAS, 4000-ft altitude, 4+ g | B3 fires two SIDEWINDERS at MIGs following B1 & 2, 1500 to 2000-ft range, angle-off from head-on 90°-100°, no aural signal, to divert MIGs. No bursts observed. | | | | |
| | B4 at firing 400-kt TAS, 4000-ft altitude. | B4 then fires one SPARROW at same two MIGs, 1500 to 2000-ft range, interlocks out, radar boresight, no lock-on. No bursts observed. | | | | |
| | | B3 & 4 continue climbing right turn.<br>B1 & 2 pull up in right turn after firing. | | | | |
| $T_5$ | | B3 & 4 make diving attack on newly sighted MIGs. | | | | B3 & 4 sight two MIGs at 7 o'clock, low, heading E. (Believed to be the MIGs that had been pursuing B1 & 2.) |
| $T_6$ | B3 at firing, 400-kt TAS, 2gs. | B3 fires two SPARROWS, 3000-ft range, angle-off 20°, interlocks out, radar in boresight, but no lock-on due to ground clutter. No bursts. B3 turns right for egress; B4 follows one of the MIGs. | | After firing, B3 calls for egress due to low fuel. | MIG fired upon breaks right, then left. | One missile passed 200 ft in front of target, other 500 to 700 ft behind. |
| | B1 & 2 altitude about 5000 ft. | B1 & 2 turn to chase MIG and descend, going into afterburner. | | | | B1 & 2, rolling out on southerly heading sights a single MIG-17 ahead, very low, heading E. |

EVENT I-78 SUMMARY (Continued)

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (8 MIGs) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_7$ | B4 at firing 450-kt TAS, 3000-ft altitude, 2 gs. | B4 fires one SIDEWINDER, 2000-ft range, behind target (5°), good aural tone, 50-kt overtake. No burst observed. B4 then turns, climbs to join B3. | | | When missile is 400 to 500 ft from target, MIG, in a diving left turn, enters clouds at about 1000 ft. | Missile observed to track. |
| | B1 & 2, 2500-ft altitude. | After SAM firing, B1 & 2 break off chase, turn left to join B3 & 4. | | | Single MIG, going away from B1 & B2 | B1 & 2 observe two SAMs cross in front of them from 10 o'clock to 2 o'clock, no threat, detonate 1-1/2 to 2 mi away. |


B3 AND B4 ATTACK M7 AND M8 (?) HEADING EAST
B3 FIRES 2 SIDEWINDERS AT M7 AND M4 FOLLOWING B1 AND B2 (MISS)
B4 FIRES SPARROW AT M7 AND M8 (MISS)
B3 FIRES 2 SPARROWS AT MIGs (MISS)
B1 FIRES SIDEWINDERS AT M5 AND M6 FOLLOWING B3 AND B4 (MISS)
M1 AND M2 ENTER CLOUDS
B3 AND B4 BREAK INTO M7 AND M8
M7 AND M8 SPLIT FROM M5 AND M6
MIG ENTERS CLOUDS, EVADES SIDEWINDER
B1 AND B4 SEE
MIGs 3 AND 4 AT 6 O'CLOCK FIRE MISSILES (MISS)
B1 AND B2 SEE M5 AND M4 FIRE
B1 AND B2 CHASE MIG HEADING EAST
B1 AND B2 OBSERVE SAMs, EXIT AREA
M1,2
M7,8
M5,6
M3,4
B3,4
B1,2
M5 or 6

EVENT I-73

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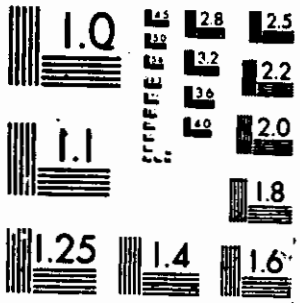


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WSEG REPORT 116

# AIR-TO-AIR ENCOUNTERS IN SOUTHEAST ASIA (U)

## Volume II: F-105 Events Prior to 1 March 1967

September 1968

Comprising
IDA REPORT R-125

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John S. Acrinello, *Project Leader*



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# AIR-TO-AIR ENCOUNTERS IN SOUTHEAST ASIA.

Volume II. F-105 Events Prior to 1 March 1967 (U)

September 1968 (12) 368p.

This report has been prepared by the Systems Evaluation Division of the Institute for Defense Analyses in response to the Weapons Systems Evaluation Group Task Order SD-DAHC15 67 C 0012-T-104A dated 6 December 1966.

(15) DAHC15-67-C-0012

In the work under this Task Order, the Institute has been assisted by military personnel assigned by WSEG.

(18) IDA/HQ, WSEG

(19) 68-9047, 116-Vol-2

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## FOREWORD

This report is a product of the Systems Evaluation Division of the Institute for Defense Analyses in conjunction with the Weapons Systems Evaluation Group in response to WSEG Task Order SD-35-T-104, as modified in a memorandum for Director, WSED, from Director, WSEG, dated 4 August 1966. The memorandum resulted from a request by the Deputy Director, Tactical Warfare Programs, ODDR&E. The Task was coordinated with the Joint Chiefs of Staff, (J-3 and J-5).

The RED BARON Project produced four volumes. Those members who made primary contribution to Volume II were as follows:

Velma M. Archer
John S. Attinello
Douglas N. Beatty
Floyd A. Friesen, Cdr., USN
Charles W. Gardner
Howard K. Hostler, Maj., USA
Ralph L. Kuster, Jr., Maj., USAF
John W. Rubino
Richard C. Stewart, Capt., USN
Earl A. Thomas
John W. Walden, Cdr., USN
David D. Young, LCol., USAF

At its inception (October 1966) the RED BARON Project team consisted of:

John S. Attinello, Project Leader
Douglas N. Beatty, Ass't Project Leader
John W. Walden, Cdr., USN, Senior Navy
Malcolm J. Agnew, LCol., USAF, Senior Air Force

Phillip J. Conley, Jr., LCol., USAF, and Thomas J. Hughes, Capt., USN, also worked part time on the project from its inception, primarily acting as an interview-debrief team. LCol. Agnew and Cdr. Walden were the other team.

In November John Rubino, Charles Tiffin, William Eason, Capt., USN, and Charles R. Shaw, Col., USA, joined the project.

In December, Robert J. Lynch, Jr., Col., USMC, joined, and Philip Brooks, Col., USAF, became Senior Air Force representative. Richard C. Stewart, Capt., USN, was assigned in February 1967. These later military arrivals shared their time with other WSEG projects.

While developing interview methods and techniques, the project was valuably assisted by two psychologists from IDA/RESD, W. Sinaiko and W. Richard Kite.

For interviews in the U.S., teams consisting of military and civilian project members supplemented the two teams designated initially to collect data in the combat theater. In the SEA theater, two Navy-Air Force teams (Conley-Hughes and Agnew-Walden) conducted the interviews. LCol. Agnew and Cdr. Walden also interviewed SEA returnees at European bases.

As interviews were conducted, it became apparent that much more data were being collected than had been initially estimated from official reports. Therefore, a rapid increase in qualified personnel was needed to collate the data for publication.

Roy G. Anderson, Rear Admiral, USN, Senior Navy Member of WSEG, through appropriate channels, obtained the services of four Navy fighter pilots for a period of two weeks. The assistance to the RED BARON Project of the following Navy pilots is acknowledged:

Dennis E. Becker, Lt., USN
Benjamin Cloud, LCdr., USN
Samuel C. Flynn, LCdr., USN
William D. Kiper, LCdr., USN

A. J. Beck, Major General, USAF, Senior Air Force Member of WSEG, with the cooperation of Headquarters, USAF, obtained the services of nine tactical fighter pilots for a thirty-day period. The assistance to the RED BARON Project of the following Air Force pilots is acknowledged:

Thomas H. Curtis, Maj., USAF
Leslie C. Long, Capt., USAF
Robert S. Maxwell, Capt., USAF
R. P. Moore, Maj., USAF
Sam P. Morgan, Jr., Capt., USAF
Michael G. Pennacchio, Capt., USAF
William P. Robinson, Maj., USAF
Ronald W. Scott, Capt., USAF
Ronald J. Ward, Maj., USAF

The project also acknowledges the assistance of the following individuals who assisted the interview teams in the data collection phase:

J. J. Berkow, Col., USAF, ARPA R&D Field Unit, Bangkok, Thailand
R. Hiller, Assistant for Operations Analysis, CINCPACAF Staff
E. Kapos, OEG Representative, CINCPACFLT Staff
G. Koyiades, COMNAVOCEANO
R. Linsenmeyer, Chief, Scientific Research Advisory Group, CINCPAC Staff
J. V. Patterson, Col., USAF, ARPA R&D Field Unit, Saigon, Vietnam
B. Powers, OEG Representative, CINCPACFLT Staff
H. L. Wood, Col., USAF, Headquarters, 7th AF
D. G. Lynch, LCol, USMC, OPNAV

The commands, whose cooperation made it possible to reach the participants of air-to-air engagements, are also acknowledged.

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Commander-in-Chief, U.S. Pacific Fleet

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Commander, Task Force Seventy-Seven

Deputy Commander, 7/13th Air Forces, Udorn Airfield, Thailand

Commander, 8th Tactical Fighter Wing (TFW), Ubon Airfield, Thailand

Commander, 366th TFW, Danang AB, Vietnam

Commander, 355th TFW, Takhli AB, Thailand

Commander, 388th TFW, Korat AB, Thailand

Commander, 432nd Tactical Reconnaissance Wing, Udorn Airfield, Thailand

Commanding Officer, USS KITTY HAWK (CVA-63)

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Commander, Seventeenth Air Force, Ramstein AB, Germany

Commander, 81st TFW RAF, Bentwaters, England

Commander, 36th TFW, Bitburg AB, Germany

Commander, 50th TFW, Hahn AB, Germany

Commander, Naval Air Forces, U.S. Pacific Fleet

Commander, Fleet Air, Miramar, California

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# I. INTRODUCTION

At the request of the Director of Defense Research and Engineering, the Weapons Systems Evaluation Group has undertaken a study of air-to-air encounters in Southeast Asia. The project code name is RED BARON. Data that have been collected on approximately 400 such encounters through 1 August 1967 will be analyzed primarily to assist in the selection of suitable research and development programs for future high-performance fighter aircraft. A secondary purpose of the study was to provide data for use by the military services and of the scientific community. This volume is a partial documentation for the secondary purpose.

## A. DATA SOURCES

Data contained in this report were taken from two sources: the official reporting media and personal interviews with participants. Past IDA/WSEG experience in collecting combat data[1,2] has shown that the official reporting media, which are designed primarily for military operational and statistical needs, are inadequate for many analytic purposes. The project groups conducting these earlier studies found that personal interviews with participants were necessary for R&D analyses. In Project RED BARON, interviews were considered the primary data source, supplemented, where available, by official reports.

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[1]WSEG Staff Study 134, Adequacy of Data from Southeast Asia Combat Air Operations for Research and Development Analyses of Aircraft Losses and Damages (U), SECRET, February 1967.

[2]WSEG Report 101, Requirements of Defense R&D Agencies for Data from Combat Air Operations in Southeast Asia, SECRET, August 1966.



[redacted]

For purposes of this study, encounters that were investigated were defined to include the following types:

- Sighting of enemy aircraft (either visually or by radar),
- Either U.S. or enemy aircraft initiating hostile or evasive maneuvers,
- Either U.S. or enemy aircraft expending ordnance, and
- Loss or damage in combat of either U.S. or enemy aircraft.

During the data collection phase, an effort was made to assure the exhaustiveness of the information contained in this report. However, it was established that certain aspects of air-to-air combat could not be included. For example, during the conduct of CAP and escort missions, frequently it was necessary for the fighter force to intercept radar contacts which proved to be friendly aircraft. Also, during the course of missions, aircraft sighted were initially identified and called as enemy, only to be recognized later as friendly. These occurrances were not reported and therefore are not documented in this volume.

While numerous sightings of enemy aircraft are contained in this volume, it is believed that there are many other sightings which were not documented (and therefore not included). This is partially substantiated by the numerous instances which were mentioned during interviews for which no date or location was recalled and which were not correlated with reported sightings.

The first type was considered in detail only if the sighting was of R&D interest, e.g., if a U.S. aircraft made no attempt to engage enemy aircraft because of inferior or malfunctioning U.S. equipment. Where no R&D implications were indicated, sightings were noted to record the information collected for potential use for other analyses.

Since "test type" instrumentation does not exist on most combat aircraft, the validity and quality of data are limited to the tolerances of human senses and recollections (aided where possible by official and personal records, notes, tapes, etc.). A detailed account of the precautions taken to insure the validity and quality of data gathered in such interviews is presented in Section II.

Originally the data sample consisted of 248 encounters through 1 March 1967. However, from this date through 22 May, 65 more encounters were identified (not including "sightings"). In the 23-month period from first encounter to 1 March, 47 "confirmed plus probable" MIG kills were reported. In the six-week period in April-May 1967, the 65 engagements resulted in 37 "confirmed plus probable" MIG kills.[1]

## B. DATA PRESENTATION

Though the analyses to be conducted in the RED BARON study were to be limited to exposing problems for R&D considerations, interest in the basic data was expressed in many areas of the military and scientific communities. To satisfy these needs the data have been formalized and are published in three volumes as follows:

Volume I: Account of F-4 and F-8 Events Prior to 1 March 1967 (U) (WSEG Log No. 126571)

| U.S. Aircraft Involved | No. of Encounters to 1 March 1967 |
|---|---|
| F-4B | 13 |
| F-4C | 55 |
| F-8 | 8 |
| F-104 | 1 |
| U-2 | 1 |
| Total Events Reported Volume I | 78 |

[1]Concurrently, there was a shift in targeting policy (NVN airfields were bombed by U.S. aircraft from 23 April) and the introduction of new equipment (e.g., SUU-16A guns installed in some F-4C aircraft). Because of these factors the additional engagements were included in the RED BARON data base.

[redacted]

Volume II: Account of F-105 Events Prior to 1 March 1967 (U)

| U.S. Aircraft Involved | No. of Encounters to 1 March 1967 |
|---|---|
| F-105 | 151 |

Volume III: Account of Air-to-Air Events from 1 March 1967 to 1 August 1967, and All Miscellaneous Events (U)

For ease of study and analysis, the available information has been summarized under the following headings:

- Primary Mission and Tactical Situation
- Mission Route
- Aircraft Configurations
- Flight Conditions Prior to Encounter
- Initial Detection
- Action Initiated
- Situation Development
- Ordnance
- Equipment Problems
- Aircrew Comments
- Data Sources

Following the above, an edited narrative is presented which integrates all the information sources pertaining to the designated air-to-air engagement. Wherever an air-to-air engagement proved to be of sufficient complexity that a perspective drawing aided in its understanding, such a representation was developed.

Although every precaution has been taken to depict the engagements accurately, the artists' representations serve only as guides to the reader in following through the complex series of situations and should not be interpreted as the precise flight paths of the aircraft involved.

The perspective representations of the air-to-air engagements were developed by the SED Graphics Department employing the Illustromat 1100 Analog Computer at the Ballistic Research



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Laboratory, Aberdeen Proving Ground, Maryland with the aid of maps and overlays developed during interviews of the air crews. Artists then added perspective views of aircraft in approximate attitudes and positions indicated in the Event Summary charts.

The names and official call signs of the participants have been replaced by standardized nomenclature to give anonymity to the interviewees. This precaution was followed throughout to encourage frank and honest answers to all questions posed by the interview teams.

## II. DATA DEFINITION AND COLLECTION

### A. BACKGROUND - GOALS AND LIMITATIONS

The broad goal formulated for the data definition/collection effort was to obtain sufficient data to enable reconstruction of the various air-to-air encounters in appropriate detail with maximum accuracy and completeness ("reconstruction" being the key word).

The scope and degree of detail was not simply defined. It revolved around the needs of the R&D community and the limitations of the available data. The primary limitation was human ability to sense and recall. There were no recording devices in U.S. aircraft, and, therefore, with few exceptions (such as taped communications and photographs), all data had to be extracted from the minds of participants and observers.

There was also the question of the adequacy, for event reconstruction, of data reported from Southeast Asia through the standard reporting systems. IDA/WSEG experience[1] showed that while these systems offered certain worthwhile information for R&D purposes, they were far from adequate for the purposes of this specific study.

It was decided that IDA/WSEG would interview participants in air-to-air encounters as the principal source of data.

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[1] WSEG Report 101, Requirements of Defense R&D Agencies for Data from Combat Air Operations in Southeast Asia (U), July 1966, (SECRET). WSEG Staff Study 134, Adequacy of Data from Southeast Asia Combat Air Operations for Research and Development Analyses of Aircraft Loss and Damage (U), February 1967, (SECRET).

B. APPROACH

The data collection program involved several interrelated areas of operations. They were:

1. Identification of air-to-air encounters and the participants.

2. Development of more specific data needs and resolution of needs with limitations.

3. Collection of appropriate documentary information on Southeast Asia air-to-air encounters.

4. Development of optimum interview techniques.

5. Location of and arrangements for interviewing participants.

These operations were not necessarily sequential and were continued throughout the data collection phase.

Items 1 and 3 initially were interrelated, i.e., the means of identifying encounters was through search of existing documentation -- various formally and informally maintained "box scores" and other files.

Early information was gained from the Office of the Chief of Naval Operations and the USAF Air Staff. Additional basic documentation came from the USAF Tactical Fighter Weapons Center, CINCPACFLT, CINCPACAF, COMNAVAIRPAC, and the Commander, 7th Air Force. It was quickly determined that the various "box scores" did not agree. This was attributed to a variance in definition of what constituted an air-to-air encounter/engagement and possibly administrative or communications failures within the commands.

Additionally, early in the study, the CNO and the Chief of Staff, USAF, were advised of Project RED BARON and requested to provide reference to appropriate documentation. Numerous replies were received from various offices within the Services.

Gradually, sources of documented information were increased until they included: standard reporting system (OPREPs, COACT, Navy 3480 Reports, Guided Missile Performance Reports); various reports of associated studies made by OEG representatives and other analytical groups; letters from pilots who could not be interviewed; various records kept at all levels of command; gun-camera films; tapes of communications made by pilots; and miscellaneous message traffic among military commands.

Identification of participants was a particular problem since there is no existing mechanism for providing this information. With a relatively few exceptions, names of participants were not included in reports. However, names were gradually acquired through informal communications with USN and USAF pilots and, as the interview program proceeded, other persons were identified by the interviewees.

Some specific items of data desired were defined by visits to various Service R&D and training organizations and through meetings with representatives of various industrial organizations concerned with components of U.S. fighter weapons systems. (These visits and conferences also provided information on the technical and operational aspects of the weapons systems concerned.) Eventually, a categorized list of data specifically desired from each encounter was formulated.

Having established the data requirements, an interview program was desired which would:

- Allow the greatest number of interviews, while
- Maximizing the quality, depth, and scope of information obtained from each interview.

There were uncertainties about the interview program, however. They involved such considerations as the human ability to recall stressful incidents and the effect of elapsed time between the event and attempt to recount it. Large numbers

of people throughout the world had to be interviewed, great quantities of interview data had to be reduced, and time and manpower had to be considered.

With the assistance of IDA psychologists, H. W. Sinaiko and W. R. Kite, basic interview concepts were delineated. These concepts stressed unhurried informality, anonymity of the interviewee, a chronological approach to the entire flight in question (not just the air-to-air encounter period of it), and much use of visual aids -- maps, sketches, airplane models -- to reconstruct events.

A systematic program was developed to interview a maximum number of participants in the combat theater and throughout CONUS and Europe. There was little chance to control the elapsed time between events and interview. As a result, the elapsed time varied from days to more than one year.

Efficiency of operation was approached in various ways. Several levels of encounter were defined according to their complexity and intensity,[1] and the basic interview procedure was somewhat expanded or abbreviated according to the level of encounter and the knowledge of the interviewee. Data formats were devised which attempted to facilitate the recording (and subsequent reduction) of information while stimulating the memory of the interviewee.

A total of ten persons were trained as interviewers. Where it was possible to communicate with a participant but not practical or possible to interview him, he was contacted by mail.

While there was the desire to interview a maximum number of pilots, it was superseded by a desire to maximize coverage over the largest number of encounters. Consequently, where a

[1] Sighting only (visual or radar); either side taking hostile or evasive action; expenditure of ordnance by either side; loss or damage by either side.

choice had to be made as to whom to interview, breadth of coverage was the first consideration.

At the start, various test interviews were conducted, their results evaluated, and improvements made before a large scale program was undertaken. Minor changes in procedure were made throughout the program.

## C. DESCRIPTION OF INTERVIEW PROCEDURE[1]

In spite of the small changes that evolved and flexibility included to accommodate each situation, the basic interview procedure remained largely constant after the early test cases.

Ideally, the interviewee was given advance notice and a general idea of what would be discussed. The interview team consisted of two persons, one a military pilot with a significant amount of flying experience and the second person a military officer or civilian. The team would meet with one crewman at a time in a closed room, with minimum distraction, and with what was intended to be more than ample time allotted for the meeting. The team attempted to create an air of relaxed informality.

The interviewee was given an explanation of the study, how it came about, what it hoped to accomplish, and what his role was. It was emphasized that his name would not appear in print and that, in general, attempts would be made to preserve the anonymity of the persons interviewed. This was done to encourage frank and honest answers. The complete interview procedure was explained in detail.

Next, the pilot was asked to give an uninterrupted narrative of the encounter in question. He was asked to start from planning for the mission and discuss all aspects through the flight's return to base. He was first given examples of the kind of detail desired. Early in the project it became standard for the interviewers to use a tape recorder for the

[1]A more detailed discussion is presented in Volume IV of this report.

narrative phase. This, of course, depended upon the interviewee's consent and he was always free to go back and erase anything he wished from the tape. He was assured that the tape was only for the use of the interviewers in gaining complete, accurate information from the meeting and its use was limited to the project.

Next, depending on the intensity and complexity of the encounter, a sketch of the action was made. Again, the sketch covered a greater part of the mission than just the air-to-air encounter, dealing with ingress and egress as well. The technique was to put a transparent paper overlay on a large scale map and trace the paths, in plan view, of the various aircraft known to have been present (as they were believed to be) relative to known geographical points. The third dimension to the picture was introduced by means of a keyed time-sequence vs. altitude plot at the top of the overlay.

With regard to time, early in the study it became clear that the air-to-air combatant rarely had any reasonable concept of the time duration of events or phases of the combat. He could, however, recall well the sequence of events. This caused the injecting of time-sequences into the interview process. The procedure was for the interviewer to "stop the action" at a point where something significant was occurring and try to elicit a detailed account of the scene at that instant -- the location and altitude of each participant; status of the interviewee's aircraft in the way of speed, g's, fuel state, avionics modes, etc.; action by the individual and his reasons therefor; communications which took place; enemy actions; etc.

After such a stop the description would continue until the next significant event occurred at which point the action would be stopped again. These stops correspond with the "T" (or "Time") marks in events and pictures. While one team member

worked with the pilot in making the sketch, the other kept notes on a specially designed note pad.

Upon completion of this step-by-step microscopic phase, the interviewers consulted their checklist on data items and asked specific questions about points which had not come out.

Finally, the interviewee was encouraged to comment on the whole range of considerations which might be of interest to the study -- comments derived from his experience in this specific encounter as well as from his overall experience.

The duration of an interview was from minutes to several hours, depending on the significance and complexity of the encounter and the knowledge of the interviewee.

## D. GENERAL COMMENTS ON DATA

The Project identified 248 air-to-air encounters that occurred prior to 1 March 1967. Participants in 164 of these encounters were interviewed, with a total of 331 interviews conducted.[1] In addition, 37 written accounts of engagements were received. In general, priority was given to the more complex encounters; events for which no interviews were conducted were usually a sighting only, with no R&D significance.

The study group found that human ability to recall the details of incidents stressful to them is sometimes quite remarkable. With regard to the validity of recall, various comparisons were made between OPREP reports of the encounter and interviews and between interviews of various participants in the same encounter. There was generally good agreement. Where significant discrepancies appeared, they could usually be traced to the confusion of a fast moving, complex situation

[1] If an individual was interviewed in connection with two or more different encounters, this would be considered as two or more interviews.

rather than memory failure or some psychological phenomena. (Discrepancies between various accounts of the same event did cause some difficulty in the final reconstruction process. In almost all cases, discrepancies were resolved through repeated study of the data, use of logical deductions, and/or reinterview.)

Intuitively, it might appear that the best information would be obtained by minimizing the time lapse between encounter and interview. However, there are opinions and illustrations which counter this. The thought cannot be proved or disproved at this time. As noted earlier, elapsed time between encounter and interview ran from a period of days to more than a year. Dates of events and interviews have been included in the published data.

The interview techniques, in general, were highly regarded by interviewees for effectiveness in stimulating accurate, detailed recall. In some cases, through the procedures used, interviewees were able to correct and clarify their conceptions of events.

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## III. EVENT RECONSTRUCTIONS

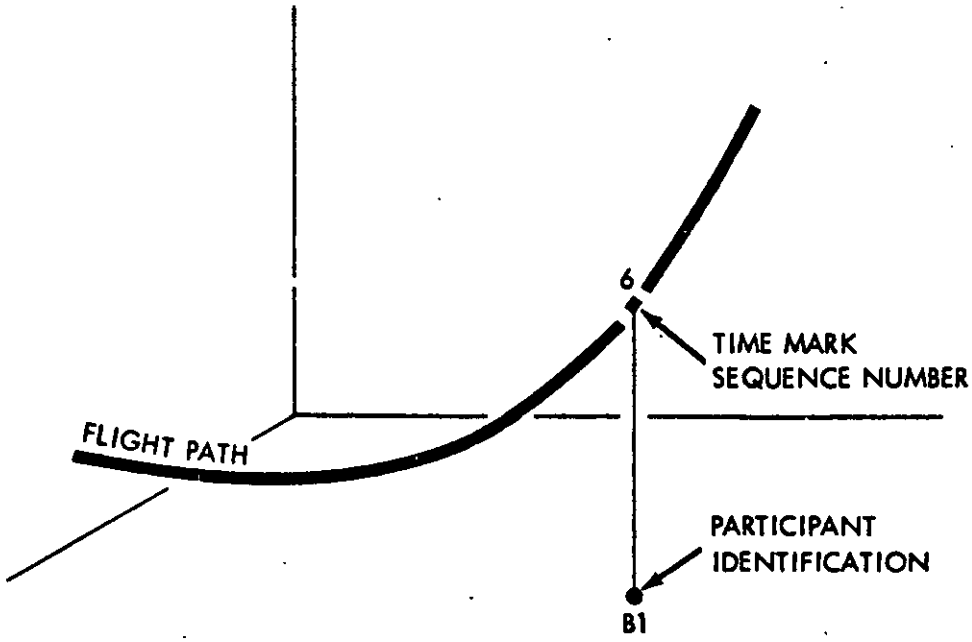
The account of each event is presented in at least two basic parts: (1) An outline which gives an abbreviated presentation of the highlights of the event, and (2) A narrative of the encounter.

All of the events contained in this Volume are summarized in Table 1. A Glossary of Terms was developed to aid in the interpretation of events and is included at the end of this report. The glossary also contains descriptions and illustrations of the more common aircraft maneuvers.

In addition, whenever an air-to-air engagement proved to be of sufficient complexity that a perspective drawing aided in its understanding, such a representation was developed. The perspective drawings were keyed by an Event Summary Chart which describes the actions of friendly aircraft (BLUE 1, 2, etc.), and enemy aircraft, as well as known communication information, at significant points in the event. As explained in Section II, these are identified by "time marks" ($T_0$, $T_1$, $T_2$, etc.), and are instants in time when significant points arose and are not intervals of seconds or minutes of clock time. In the perspective sketch, a vertical line representing altitude appears on the flight path at each of these "time marks" with the time mark sequence number printed at the top and the participant to which it referred printed at the bottom (e.g., B2, M3, etc.). The keyed flight paths presented in the sketches were color coded such that the paths of all friendly aircraft were shown in blue and those of enemy aircraft, in red.

[redacted]

[redacted]




It is recognized that precise flight paths could not be reconstructed since the participating airplanes did not carry instrumentation for recording of position. Thus, while every effort was made to depict the engagements as accurately as possible, it must be remembered that artists' representations serve only as guides to the reader in following the complex series of situations and should not be interpreted as the precise flight paths of the aircraft involved.



[redacted]

[redacted]

Table 1. LIST OF EVENTS

| Event | Date/Time | Aircraft Involved No-Type U.S. | Aircraft Involved No-Type Enemy | Results Lost/Damaged U.S. | Results Lost/Damaged Enemy |
|---|---|---|---|---|---|
| II-1 | 4 Apr'65/1215H | 4 F-105C | 4 MIG-17 | 2/0 | 0/0 |
| II-2 | 24 Jun'65/1600H | 4 F-105 | 2 MIG-15 | 0/0 | 0/0 |
| II-3 | 5 Oct'65/day | 1 F-105 | MIGS | 1/0 | 0/0 |
| II-4 | ---Oct'65/----- | 4 F-105 | 2 MIG-17 | 0/0 | 0/0 |
| II-5 | 16 Nov'65/1540H | 5 F-105 | 2 MIG-17 | 0/0 | 0/0 |
| II-6 | 28 Nov'65/1212H | 1 F-105 | 2 MIG-? | Sighting | |
| II-7 | 16 Dec'65/1630H | 4 F-105 | 5 MIG-17 | Sighting | |
| II-8 | 16 Dec'65/1625H | 3 F-105 | 2 MIG-? | Sighting | |
| II-9 | 20 Dec'65/1600H | 4 F-105 | 2 MIG-17? | 0/0 | 0/0 |
| II-10 | 16 Mar'66/1433H | 4 F-105 | 2 MIG-21 | Sighting | |
| II-11 | 23 Apr'66/1532H | 4 F-105D | 3 MIG-17 | 0/0 | 0/0 |
| II-12 | 8 May'66/1605H | 4 F-105D | 2 MIG-17 | 0/0 | 0/0 |
| II-13 | 10 May'66/1621H | 4 F-105D | 4 MIG-17 | Sighting | |
| II-14 | 10 May'66/1800H | 4 F-105 | 3 MIG-17 | Sighting | |
| II-15 | 29 Jun'66/1310H | 4 F-105 | 4 MIG-17 | 0/2 | 1/0 |
| II-16 | ---Jun'66/----- | 4 F-105 | 1 MIG-17 | Sighting | |
| II-17 | Jun-Jul'66/1500H | 2 F-105 | 2 MIG-17 | 0/0 | 0/0 |
| II-18 | 7 Jul'66/----- | 4 F-105D | 4 MIG-17 | 0/0 | 0/0 |
| II-19 | 7 Jul'66/1615H | 1 F-105D<br>1 F-105F | 2 MIG-21 | 0/0 | 0/0 |
| II-20 | 12 Jul'66/----- | 4 F-105 | 2 MIG-17 | 0/0 | 0/0 |
| II-21 | 11 Jul'66/0705Z | 1 F-105<br>1 F-105 | 2 MIG-21<br>2 MIG-21 | 0/0 | 0/0 |
| II-22 | 14 Jul'66/----- | 4 F-105 | 1 MIG-21 | Sighting | |
| II-23 | 19 Jul'66/1611H | 8 F-105 | 4 MIG-17 | 1/1 | 0/3 |
| II-24 | ---Jul'66/----- | 4 F-105 | 2 MIG-17 | 0/0 | 0/0 |
| II-25 | 20 Jul'66/0842H | 4 F-105 | 2 MIG-21 | 0/0 | 0/0 |
| II-26 | ---Jul'66/1300H | 1 F-105 | 5 MIG-17 | Sighting | |
| II-27 | 20 Jul'66/0850H | 4 F-105 | 2 Unid. | 0/0 | 0/0 |
| II-28 | 20 Jul'66/1446H | 4 F-105 | 1 MIG-21 | 0/0 | 0/0 |
| II-29 | 20 Jul'66/1602H | 4 F-105 | 1 MIG-21 | Sighting | |
| II-30 | 22 Jul'66/1630H | 4 F-105 | 3 MIG-17 | Sighting | |
| II-31 | 25 Jul'66/1020H | 4 F-105 | 2 MIG-19 | 0/0 | 0/0 |
| II-32 | 12 Aug'66/1088H | 4 F-105 | 2 MIG-17 | 0/1 | 0/1? |
| II-33 | 17 Aug'66/1516H | 2 F-105D | 1 MIG-17 | 0/0 | 0/0 |
| II-34 | 17 Aug'66/1502H | 2 F-105D | 2?MIG-17 | 0/0 | 0/0 |
| II-35 | 18 Aug'66/1528H | 2 F-105 | 2 MIG-17 | 0/1 | 1/0 |
| II-36 | 18 Aug'66/1603H | 4 F-105D | 2 MIG-17 | 0/0 | 0/0 |
| II-37 | 18 Aug'66/1603H | 2 F-105D | 3 MIG-17 | 0/0 | 0/0 |
| II-38 | 22 Aug'66/1626H | 4 F-105D | 4 MIG-17 | 0/2 | 0/0 |
| II-39 | 9 Sep'66/0900H | 1 F-105F<br>1 F-105D | 3 MIG-21 | 0/0 | 0/0 |
| II-40 | 11 Sep'66/----- | 3 F-105 | 1 Unid. | Sighting | |
| II-41 | 14 Sep'66/1643H | 4 F-105 | 2 MIG-17 | 0/0 | 0/0 |
| II-42 | 14 Sep'66/1636H | 4 F-105D | 3 MIG-17 | 0/0 | 0/0 |
| II-43 | 14 Sep'66/1638H | 4 F-105 | 2 MIG-17 | Sighting | |
| II-44 | 15 Sep'66/1555H | 3 F-105 | 2 MIG-? | Sighting | |
| II-45 | 16 Sep'66/1645H | 4 F-105 | 4 MIG-21 | Sighting | |
| II-46 | 16 Sep'66/1650H | 4 F-105D | 2 MIG-17 | 0/0 | 0/0 |
| II-47 | 16 Sep'66/1647H | 4 F-105D | 4 MIG-17 | 0/0 | 0/0 |
| II-48 | 17 Sep'66/0927H | 3 F-105 | 1 MIG-19<br>3 MIG-? | 0/0 | 0/0 |
| II-49 | 18 Sep'66/0931H | 3 F-105D | 3 MIG-17 | 0/0 | 0/0 |
| II-50 | 18 Sep'66/1648H | 2 F-105D | 4 MIG-17 | 0/0 | 0/0 |
| II-51 | 18 Sep'66/1644H | 4 F-105 | 2 MIG-17 | Sighting | |
| II-52 | 18 Sep'66/1645H | 4 F-105D | 4 MIG-17 | 0/0 | 0/0 |
| II-53 | 20 Sep'66/1645H | 11 F-105 | 4 MIG-17 | 0/0 | 0/0 |
| II-54 | 21 Sep'66/1027H | 4 F-105 | 2 MIG-21 | 0/0 | 0/0 |
| II-55 | 21 Sep'66/1015H | 4 F-105 | 1 MIG-17 | 0/0 | 0/1 |
| II-56 | 21 Sep'66/1000H | 4 F-105 | 2 MIG-17 | 0/0 | 1/0 |
| II-57 | 21 Sep'66/1015H | 4 F-105D | 2 MIG-17 | 0/0 | 1/0 |
| II-58 | 21 Sep'66/1025H | 4 F-105D | 4 MIG-17<br>2 MIG-21 | 0/0 | 0/1 |
| II-59 | 21 Sep'66/1032H | 4 F-105 | 3 MIG-17 | 0/0 | 0/1 |
| II-60 | 21 Sep'66/1030H | 2 F-105 | 4 MIG-17 | 0/0 | 0/0 |
| II-61 | 22 Sep'66/0845H | 4 F-105 | 1 MIG-? | Sighting | |
| II-62 | 28 Sep'66/----- | 4 F-105 | 1 MIG-21? | Sighting | |
| II-63 | 28 Sep'66/1725H | 4 F-105D | 4 MIG-21 | Sighting | |
| II-64 | 8 Oct'66/1545H | 4 F-105 | 2 MIG-17 | 0/0 | 0/0 |

[redacted]

[redacted]

| Event | Date/Time | Aircraft Involved No-Type U.S. | Aircraft Involved No-Type Enemy | Results Lost/Damaged U.S. | Results Lost/Damaged Enemy |
|---|---|---|---|---|---|
| II-65 | 8 Oct'66/1545H | 4 F-105 | 4 MIG-21 | 0/0 | 0/1? |
| II-66 | 8 Oct'66/1543H | 4 F-105 | 3 MIG-17<br>2 MIG-21 | 0/0 | 0/0 |
| II-67 | 8 Oct'66/1541H | 4 F-105 | 4 MIG-17 | Signting | |
| II-68 | ---Oct'66/----- | 4 F-105 | 1 MIG-19<br>1 MIG-15? | Sighting | |
| II-69 | 3 Nov'66/1556H | 4 F-105 | 2 MIG-21 | Sighting | |
| II-70 | ---Nov'66/----- | 4 F-105 | 6 MIG-17 | Sighting | |
| II-71 | ---Nov'66/----- | 4 F-105 | 1 MIG-21 | Sighting | |
| II-72 | ---Nov'66/----- | 4 F-105D | 3 MIG-21 | Sighting | |
| II-73 | ---Nov'66/----- | 4 F-105D | 1 MIG-21 | Sighting | |
| II-74 | ---Nov'66/----- | 4 F-105 | 2 MIG-17 | Sighting | |
| II-75 | 2 Dec'66/1425H | 4 F-105 | 4 MIG-21 | 0/0 | 0/0 |
| II-76 | 2 Dec'66/1430H | 4 F-105 | 1 MIG-21 | 0/0 | 0/0 |
| II-77 | 3 Dec'66/1220H | 4 F-105 | 2 MIG-21 | 0/0 | 0/0 |
| II-78 | 3 Dec'66/1240H | 4 F-105 | 2 MIG-15/17 | Sighting | |
| II-79 | 3 Dec'66/1213H | 4 F-105 | 1 MIG-21 | Sighting | |
| II-80 | 4 Dec'66/1040H | 4 F-105 | 1 MIG-17 | Sighting | |
| II-81 | 4 Dec'66/----- | 4 F-105D | 1 MIG? | Sighting | |
| II-82 | 4 Dec'66/1040H | 4 F-105 | 2 MIG? | Sighting | |
| II-83 | 4 Dec'66/1637H | 4 F-105 | 8-10 MIG-17 | 0/0 | 0/0 |
| II-84 | 4 Dec'66/1642H | 4 F-105 | 16 MIG-17 | 0/0 | 1?/0 |
| II-85 | 4 Dec'66/1645H | 4 F-105 | 2 MIG-17<br>2 MIG-21 | 0/0 | 0/0 |
| II-86 | 4 Dec'66/1706H | 4 F-105D | 4 MIG-17 | Sighting | |
| II-87 | 4 Dec'66/1705H | 4 F-105 | 4 MIG-17 | 0/0 | 1/0 |
| II-88 | 4 Dec'66/1715H | 4 F-105 | 9 MIG-17 | 0/0 | 0/0 |
| II-89 | 4 Dec'66/1713H | 4 F-105 | 2 MIG-21 | Sighting | |
| II-90 | 5 Dec'66/1012H | 4 F-105D | 2 MIG-21 | 0/0 | 0/0 |
| II-91 | 5 Dec'66/1015H | 4 F-105 | 4 MIG-21 | 0/0 | 0/0 |
| II-92 | 5 Dec'66/1530H | 3 F-105D | 1 MIG-17 | 0/0 | 0/0 |
| II-93 | 5 Dec'66/1630H | 2 F-105F<br>2 F-105D | 4 MIG-21 | 0/0 | 0/0 |
| II-94 | 5 Dec'66/1652H | 1 F-105F<br>3 F-105D | 2 MIG-17 | 1/0 | 0/0 |
| II-95 | 5 Dec'66/1655H | 4 F-105 | 8 Unid. | Sighting | |
| II-96 | 8 Dec'66/1615H | 8 F-105 | 8 MIG-21 | 0/0 | 0/0 |
| II-97 | 13 Dec'66/1610H | 4 F-105 | 1 MIG-21 | Sighting | |
| II-98 | 13 Dec'66/1600H | 16 F-105D | ? MIGS | 0/0 | 0/0 |
| II-99 | 14 Dec'66/1625H | 4 F-105D | 6 MIG-21 | 1/0 | 0/0 |
| II-100 | 14 Dec'66/1530H | 4 F-105D | 6 MIG-21<br>6 MIG-17 | 0/0 | 0/0 |
| II-101 | 14 Dec'66/1707H | 4 F-105 | 2 MIG-17 | 0/0 | 0/0 |
| II-102 | 14 Dec'66/1615H | 4 F-105 | 2 MIG-21 | 0/0 | 0/0 |
| II-103 | 14 Dec'66/1704H | 2 F-105 | 2 MIG Poss | 0/0 | 0/0 |
| II-104 | 14 Dec'66/1650H | 4 F-105 | 2 MIG-21 | Sighting | |
| II-105 | 14 Dec'66/1613H | 4 F-105 | ? MIGS | 0/0 | 0/0 |
| II-106 | 14 Dec'66/----- | 1 F-105 | 2 MIG-21 | Sighting | |
| II-107 | 19 Dec'66/1548H | 4 F-105D | 2 MIG-17<br>2 MIG-21 | 0/0 | 0/0 |
| II-108 | 19 Dec'66/1600H | 4 F-105 | 1 MIG-21C<br>4 MIG-? | Sighting | |
| II-109 | 19 Dec'66/1605H | 4 F-105D | 4 MIG-? | Sighting | |
| II-110 | 19 Dec'66/1603H | 4 F-105D | 6 MIG-17 | 0/0 | 0/0 |
| II-111 | 19 Dec'66/1600H | 4 F-105D | 4 MIG-21 | Sighting | |
| II-112 | 19 Dec'66/1603H | 4 F-105 | 2 MIG-17<br>2 MIG-? | 0/0 | 0/0 |
| II-113 | 19 Dec'66/1549H | 4 F-105D | 2 MIG-21 | 0/0 | 0/0 |
| II-114 | 19 Dec'66/1545H | 4 F-105 | 14 MIG-17 | 0/0 | 0/0 |
| II-115 | 19 Dec'66/1547H | 4 F-105D | 9 MIG-17 | Sighting | |
| II-116 | 19 Dec'66/1545H | 4 F-105D | 4 MIG-21 | 0/0 | 0/0 |
| II-117 | ---Dec'66/----- | 4 F-105D | 2 MIG-21 | 0/0 | 0/0 |
| II-118 | 2 Jan'67/1510H | 2 F-105D<br>2 F-105F | 2 MIG-21 | Sighting | |
| II-119 | 6 Jan'67/1534H | 4 F-105 | 1 MIG-21 | Sighting | |
| II-120 | 7 Jan'67/late afternoon | 4 F-105 | 4 MIG-21 | 0/0 | 0/0 |
| II-121 | 7 Jan'67/late afternoon | 4 F-105 | 4 MIG-21 | 0/0 | 0/0 |
| II-122 | 7 Jan'67/08302 | 20-F-105 | 2 MIG-21 | 0/0 | 0/0 |



[redacted]

[redacted]

| Event | Date/Time | Aircraft Involved No-Type U.S. | Aircraft Involved No-Type Enemy | Results Lost/Damaged U.S. | Results Lost/Damaged Enemy |
|---|---|---|---|---|---|
| II-123 | 8 Jan'67/0825H | 4 F-105D | 4 MIG-21 | Sighting | |
| II-124 | 15 Jan'67/1615H | 8 F-105 | 4 MIG-21 | 0/0 | 0/0 |
| II-125 | 15 Jan'67/1645H | 4 F-105D | 1 MIG-21 | Sighting | |
| II-126 | 16 Jan'67/0818H | 4 F-105 | 4?MIG-? | Sighting | |
| II-127 | 16 Jan'67/0838H | 4 F-105 | 2 MIG-21 | Sighting | |
| II-128 | 16 Jan'67/0825H | 4 F-105 | 1 MIG-21 | Sighting | |
| II-129 | 16 Jan'67/0825H | 4 F-105 | 2 MIG-21 | Sighting | |
| II-130 | 17 Jan'67/0759H | 4 F-105 | 4 MIG-21 | 0/0 | 0/0 |
| II-131 | 16 Jan'67/1538H | 4 F-105 | 1 MIG-21 | Sighting | |
| II-132 | 17 Jan'67/0838H | 4 F-105 | 2 MIG-21 | 0/0 | 0/0 |
| II-133 | 17 Jan'67/0715H | 4 F-105 | ? MIGS | 0/0 | 0/0 |
| II-134 | 17 Jan'67/1609H | 3 F-105 | 1 MIG-? | Sighting | |
| II-135 | 17 Jan'67/0820H | 4 F-105 | 2 MIG-17 | Sighting | |
| II-136 | 21 Jan'67/0844H | 4 F-105D | 4 MIG-21 | 0/0 | 0/0 |
| II-137 | 21 Jan'67/0842H | 4 F-105D | 3 MIG-21 | 0/0 | 0/0 |
| II-138 | 21 Jan'67/1605H | 4 F-105 | 8 MIG-17<br>2 MIG-21 | 0/0 | 0/0 |
| II-139 | 21 Jan'67/0844H | 4 F-105 | 1 MIG-21 | Sighting | |
| II-140 | 21 Jan'67/1525H | 4 F-105 | 2 MIG-17 | 0/0 | 0/0 |
| II-141 | 21 Jan'67/0840H | 4 F-105D | 10?MIG-21 | 0/0 | 0/0 |
| II-142 | 21 Jan'67/1522H | 4 F-105D | 5 MIG-17 | 0/0 | 0/0 |
| II-143 | 21 Jan'67/1621H | 4 F-105D | 2 MIG-19 | 0/0 | 0/0 |
| II-144 | 21 Jan'67/1620H | 4 F-105 | 5-8 MIG-17 | 0/1 | 0/0 |
| II-145 | 22 Jan'67/0936H | 4 F-105 | 4 MIG-17 | 0/0 | 0/0 |
| II-146 | 27 Jan'67/----- | 4 F-105 | 4 MIG-17 | 0/0 | 0/0 |
| II-147 | 29 Jan'67/----- | 4 F-105D | 3 MIG-21 | 0/0 | 0/0 |
| II-148 | 4 Feb'67/0848H | 4 F-105 | 4 MIG-21 | Sighting | |
| II-149 | 4 Feb'67/0730H | 4 F-105 | 6 MIG-21 | Sighting | |
| II-150 | 4 Feb'67/0859H | 4 F-105 | 3 Unid. | Sighting | |
| II-151 | 4 Feb'67/1600H | 4 F-105 | 2 MIG-17 | 0/0 | 0/0 |

[redacted]

GLOSSARY OF TERMS
(All Terms Unclassified Unless Otherwise Stated)

AA - air-to-air weapon

AAA - antiaircraft artillery

AAM - air-to-air missile

AAWC - Anti-Air-Warfare Commander

AB - afterburner

ACM - air combat maneuvering

ACT - air combat tactics

ADF - automatic direction finder

AEW - airborne early warning

AGL - above ground level

AIM-7 (D&E models) (SPARROW) - semiactive radar type, air-to-air missile

AIM-9 (B&D models) (SIDEWINDER) - passive IR type, air-to-air missile

AIM-9C (SIDEWINDER) - Radar guided air-to-air missile

AI radar - airborne intercept radar

Aircraft commander - a pilot designated pilot-in-command of a given aircraft (Air Force name for front seater in F-4)

ALKALI - Soviet air-to-air missile - radar beam rider type

ALQ-51 - Broadband deception ECM system

ALQ-71 - Noise jamming ECM pod (production model of QRC-160-1)

ANCHOR (Various colors) - see Figure 9 on page 34 - code names for specific refueling tracks

AN/APA-157 - CW radar illuminator and fire control computer for SPARROW missile system

Angle-off - angular position off the tail of the reference aircraft

APQ-72 - airborne intercept radar in F-4B aircraft

APQ-94 - airborne intercept radar in F-8E aircraft

APQ-100/109 - airborne intercept radar in F-4C/D aircraft

APR-25 - vector homing and warning system - providing 360° directional warning of threat signals in certain bands with instantaneous bearing to radiating source.

APR-26 - crystal video airborne warning receiver to detect SA-2 guidance signals

APR-27 - airborne radar warning receiver

armed reconnaissance - an air mission flown with the primary purpose of locating and attacking targets of opportunity, i.e., enemy materiel, personnel, and facilities in assigned general areas or along assigned ground communications routes, and not for the purpose of attacking specific briefed targets.

ASE circle - allowable steering error - circle on radar display provided by fire control computer.

ATOLL - Soviet air-to-air missile, infrared seeker type

autotrack - automatic tracking in which a servo mechanism keeps the radar beam trained on the target.

Back - the individual occupying the back seat of the F-4; in Navy called RIO, in Air Force called pilot or GIB.

BARCAP - Barrier combat air patrol - a MIGSCREEN for one or more missions

barrel roll - see Figure 2 (page 27) - a 360° rolling maneuver in which the flight path of the aircraft decides a about the intended direction of the flight.

BDA - bomb damage assessment

BINGO (fuel) - minimum fuel quantity reserve established for a given geographical point to permit aircraft to return safely to home base or aerial refueling point.

bogey - unidentified aircraft

boresight mode - in the boresight mode the radar antenna is aligned and locked to the roll axis of the aircraft.

break - an emergency turn in which maximum performance is desired instantly to destroy an attackers tracking solution.

break X - minimum range indication for missile launch. X appears in the radar scope at minimum range.

CAP - combat air patrol - an aircraft patrol provided over an objective area, over the force protected, over the critical area of a combat zone, or over an air defense area, for the purpose of intercepting and destroying hostile aircraft before they reach their target.

(NAVY) Condition I CAP (Standby): aircraft ready for immediate (maximum delay of two (2) minutes) takeoff. Aircraft with engine not running (starter batteries plugged in) will be positioned for take-off. Pilots in cockpit and deck drew on alert.

CAS - calibrated air speed (knots)

CBU-24 - canister dispensed air-to-ground bomblet type munition; the canister is carried externally on the aircraft and opens after release at a preset altitude.

centerline tank - a fuel tank carried externally on centerline of aircraft.

chaff - a type of confusion reflector, which consist of thin, narrow metallic strips of various lengths to provide different responses, used to create false signals on radarscope.

Channel 97 - A TACAN station located during the period of the study at 20°27'N/103°43'E used for navigational aids. (SECRET)

chandelle - a maximum performance climbing turn in which speed is converted to altitude while reversing direction.

CMR-312 (Little Ears) - aural radar warning receiver

CROWN - call-sign for rescue force commander

CRT - Combat Rated Thrust - maximum augmented thrust condition of engine

DF - direction finder

DME - distance measuring equipment

dot - (aim dot, steering dot) - electronic dot appearing in radar scope when radar is locked on providing computed steering vector information

element - Air Force term for the basic fighting unit (two aircraft)

EWO - electronic warfare officer

FANSONG - tracking radar for Soviet SA-2 surface-to-air missile system (CONFIDENTIAL)

fighting (wing) position - an area for the wingman in which optimum coverage and maneuverability is achieved in maximum performance maneuvers.

finger-four formation - see Figure 6 (page 29) - also fingertip formation - a four-plane formation in

which the aircraft occupy positions suggested by the four finger tips of either hand, the fingers being held together in a horizontal plane.

flak - antiaircraft fire

fluid element - the second or supporting element in fluid four formation, flying in a high or low element position.

fluid-four - see Figure 5 (page 29) - a tactical formation having the second element spread in both the vertical and horizontal planes to enhance maneuverability, mutual support and look-out ability.

fragged - mission directed by fragmentary operational order from higher headquarters.

Front - the individual in the front seat in the F-4 aircraft; in the Navy called the pilot, in the Air Force called the aircraft commander.

g - unit of acceleration (32.2 ft/sec$^2$)

gaggle - slang for a number of aircraft operating in close proximity, not necessarily in any semblance of formation.

GAM-83 - BULLPUP; air-to-ground guided missile

GCI - ground control intercept

GUARD - emergency UHF radio channel usually monitored by all aircraft and ground stations as a secondary frequency.

Hard turn - a planned turn in which the intensity of the turn is governed by the angle-off and range of the attacking aircraft.

HEAT - armament switch setting for using infrared missiles

hot mike intercom - intercommunication system continuously active (hot)

IAS - indicated air speed

ICS - intercommunication system

ID - identification; to make identification

IFF - identification, friend or foe; aircraft transponding beacon received by radar distinguishing friend from foe.

Immelmann - see Figure 8 (page 30) - maneuver in which the aircraft completes the first half of a loop and then rolls over to an upright position thus changing direction 180° with a simultaneous gain in altitude.

IMN - indicated Mach number

[redacted]

IP - initial point; a well-defined point, easily distinguishable visually and/or by radar, used as a starting point for a bomb run to the target.

IR missile - an infrared or heat-seeking missile

IRON HAND - a code name for a flight with special ordnance and avionics equipment whose mission is to seek and destroy enemy surface-to-air missile sites.

JCS target - a target appearing on the JCS target list

jinking - constant maneuvering in both the horizontal and vertical planes to present difficult target to enemy defenses by spoiling the tracking solution. Bank, pitch and velocity are all simultaneously changed in this maneuver.

karst - a limestone outcropping or ridge

KIAS - knots indicated air speed

kt - abbreviation for knot (nautical miles/hour)

KTAS - knots true air speed

LAU-3 - a rocket launcher adaptable to external bomb racks holding 19 2.75 inch air-to-ground folding fin rockets

LAU-17 adapters - stub pylon on F-4

loose deuce - a term to describe fighter tactics in which two to four airplanes maneuver to provide mutual support and increased fire power.

Lufberry circle - a circular tail chase, ascending or descending

M - abbreviation for Mach number

MER - multiple ejection rack

mi - nautical mile, as used in this report

MIGCAP - combat air patrol mission whose actions are directed against MIG aircraft

MIG SCREEN - mission wherein protecting fighters are placed between the threat and the protected force in a specific area

military power - maximum unaugmented thrust condition of engine

missile free - authority is granted to fire unless target is identified as friendly

missile tone - audio signal indicating AIM-9 is locked on to an IR source

MRT - military rated thrust - see military power

MSL - altitude referenced to mean sea level

OPREP - message report in joint operational reporting system

PANAMA - call sign for GCI site located near Danang

[redacted]

pipper - aircraft weapon sight indicator (a dot of light within a lighted ring)

PIRAZ - positive identification radar zone

Pod formation - A flight formation configured to maximize the jamming of Fansong radar. Slight alteration is made to provide for better defense under MIG threat. (See Fig. 9)

PRF - pulse recurrence frequency

QRC-160 - noise jamming ECM pod

RAG - replacement air group

ready light - light which indicates a particular avionics/munitions system is operating and available for use

RED CROWN - voice call for USS LONG BEACH (CLN-9)

RESCAP - rescue combat air patrol

RHAW - radar homing and warning

RIO - radar intercept officer

RO - abbreviated form of RIO

road interdiction - to prevent or hinder, by aerial means, enemy use of a road or route

ROLLING THUNDER - code name for air strikes against North Vietnam

Route Package - see Figure 9 - geographical division of North Vietnam for purposes of air strike targeting

rudder reversal - a climbing aircraft maneuver in which direction is changed by rotation around the aircraft's vertical axis

SA-2 - Soviet surface-to-air missile system

SAM - surface-to-air missile

SAR - search and rescue

scissors - See Figure 1 (page 27) - a defensive maneuver in which a series of turn reversals are executed in an attempt to achieve offensive after an overshoot by the attacker.

SCAN-ODD - MIG airborne intercept radar (CONFIDENTIAL)

section - a Navy term for a tactical element of two or more aircraft (usually two)/an Air Force term for two flights of four

SHRIKE (AGM-45) - air-to-surface radar seeking missile

SIDEWINDER - see AIM-9

SIDEWINDER tone - see missile tone

[redacted]

SIF - selective identification feature - electronic device with variable codes for identification

SILVER DAWN - a code name for an intelligence collecting aircraft (SECRET)

"S" maneuver - a weave in a horizontal plane

Snap-up - a rapid pullup to establish a climb in order to launch a weapon

SPARROW - see AIM-7

"Split-S" maneuver - see Figure 7 (page 30) - 180° rotation about the aircraft longitudinal axis followed by a 180° change of heading in a vertical plane (half loop starting from top)

STBY - standby

steering dot - see dot

Switchology - a coined word addressing the human engineering considerations of switch arrangements

TACAN - tactical air navigation - an active electronic navigational system which locates the aircraft with respect to another installation

TARCAP - target combat air patrol - aircraft assigned the air-to-air defense role in the target area

TAS - true air speed in knots

TCA - track crossing angle - the angle between flight paths measured from the tail of the reference aircraft

Thud Ridge - A nickname given to a prominent geographical feature in North Vietnam. It is a ridge running in a general NW-SE direction from 21°40'N/105°25E to 21°20'N/105°48'E.

TOT - time over target

TRACK (various colors) - see Figure 9 - code names for specific refueling tracks

TROJAN HORSE - a code name of a U-2 air reconnaissance program (SECRET)

unit (of turn) - divisions on an angle-of-attack indicator on F-4 aircraft

UHT - unit horizontal tail (applied to F-8 aircraft) - a tail design whereby the whole surface rotates about a pivot point

unloading - decreasing g's

$V_c$ - closing velocity (relative)

vector box - see APR-25

WILD WEASEL - F-105F specially equipped for locating and attacking SA-2 sites (employed on IRON HAND missions)

[redacted]

[redacted]

yo-yo - See Figures 3 and 4 (page 29)
High speed - an offensive tactic in which the attacker maneuvers through both vertical and horizontal planes to prevent an overshoot in the plane of the defender's turn.
Low speed - a dive for airspeed and a pull up for position closure.

ZUNI - five inch air-to-ground unguided rocket.



[redacted]

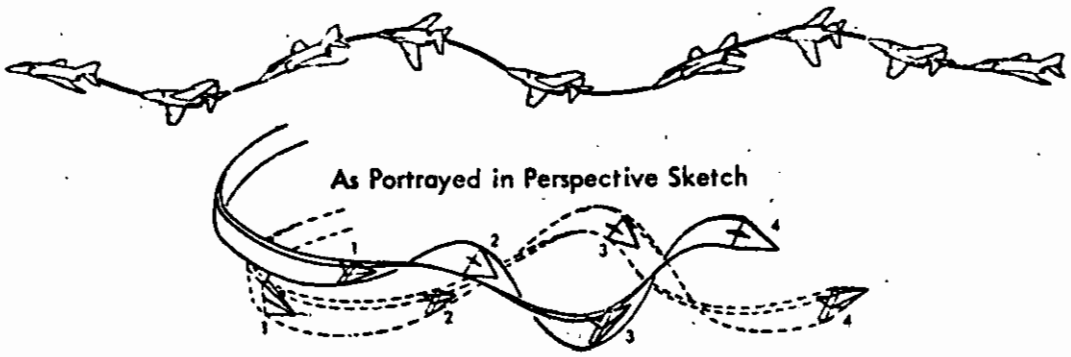



FIGURE 1. Scissors

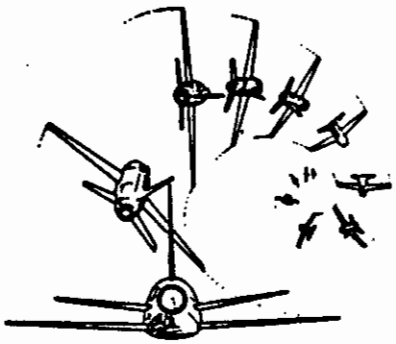


FIGURE 2. Barrel Roll

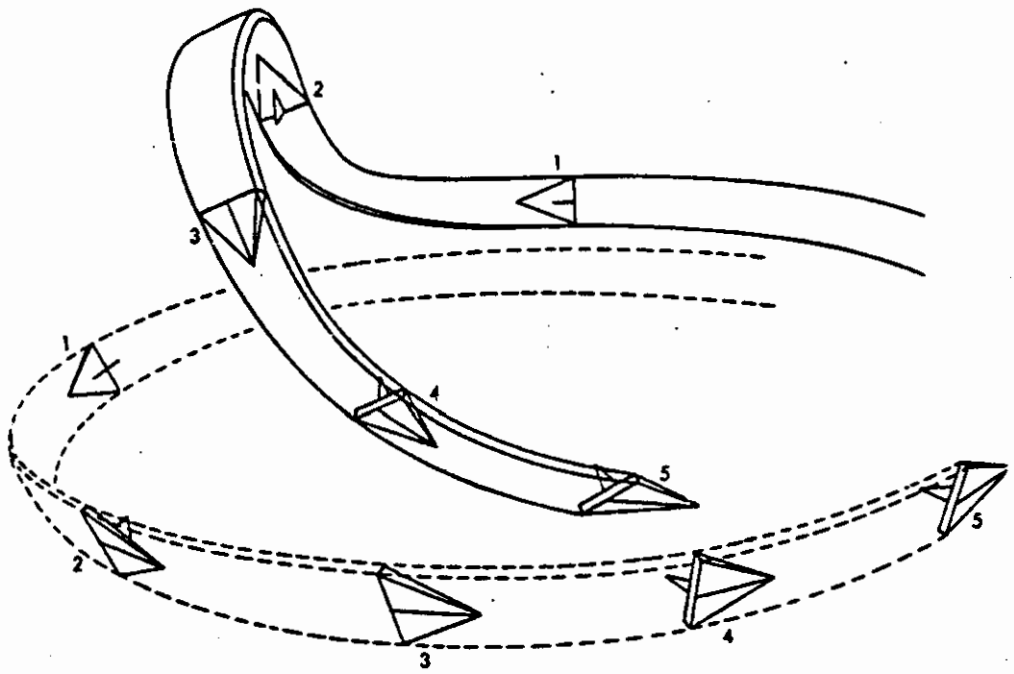



FIGURE 3. High-Speed Yo-Yo

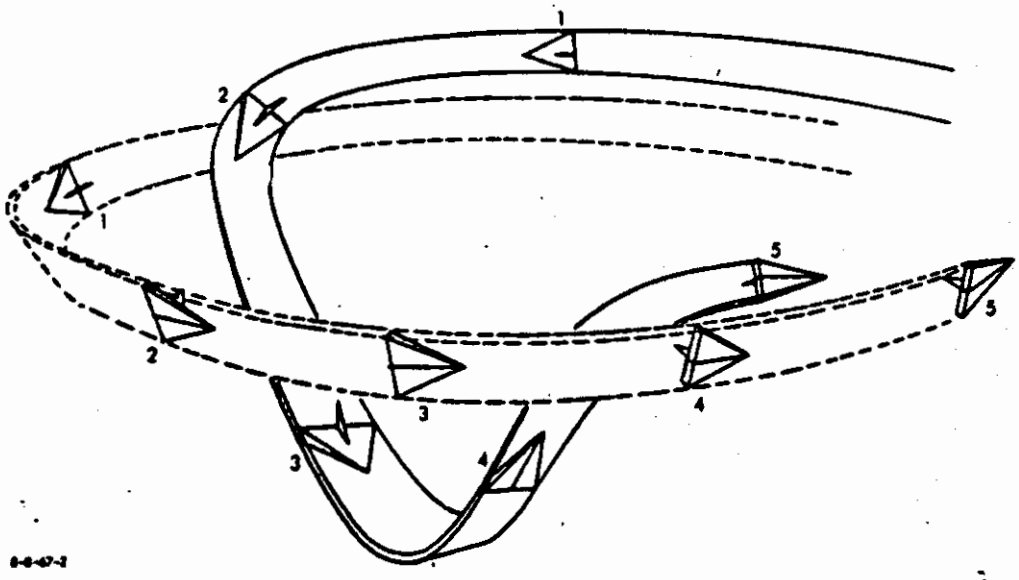



FIGURE 4. Low-Speed Yo-Yo

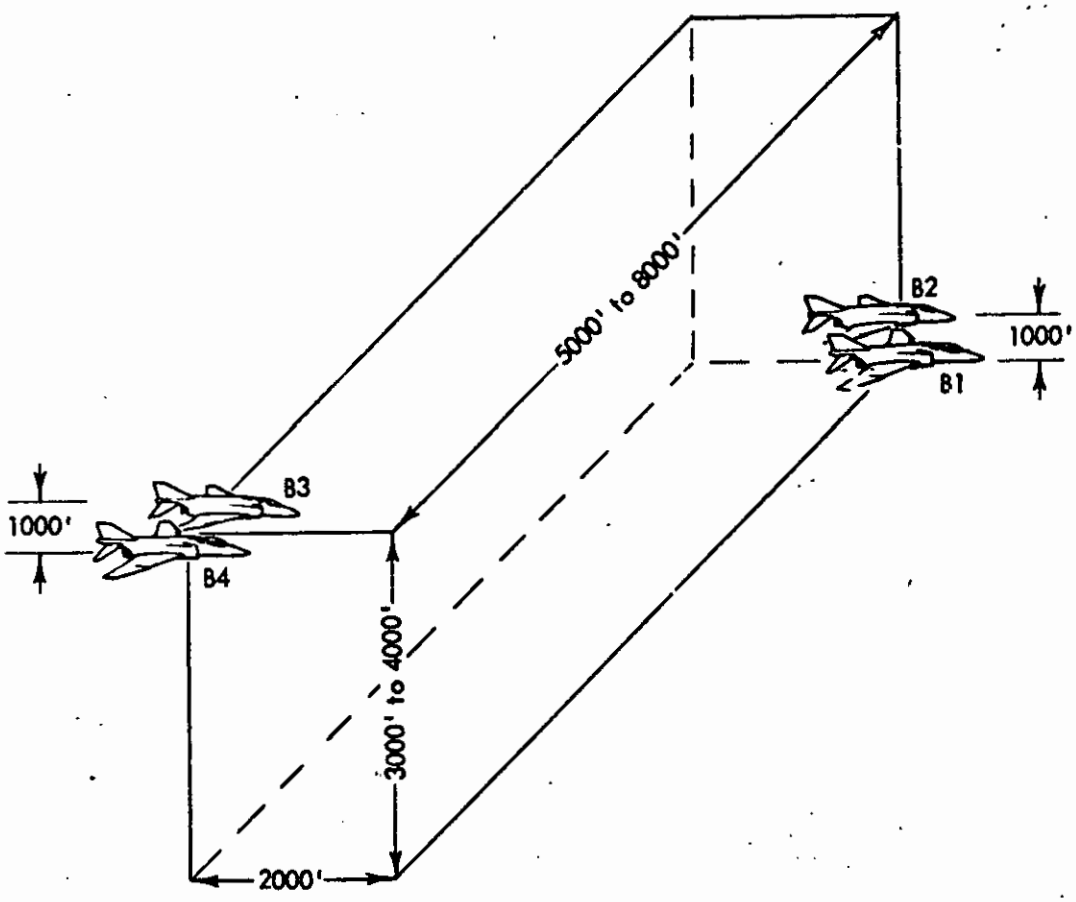



FIGURE 5. Fluid Four

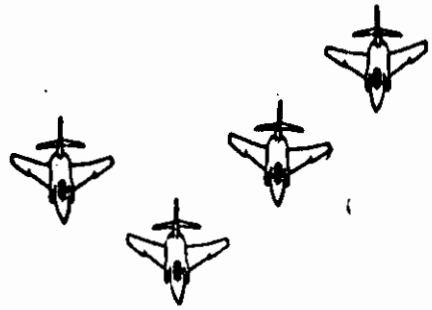


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FIGURE 6. Fingertip or Finger Four (All at Same Elevation)

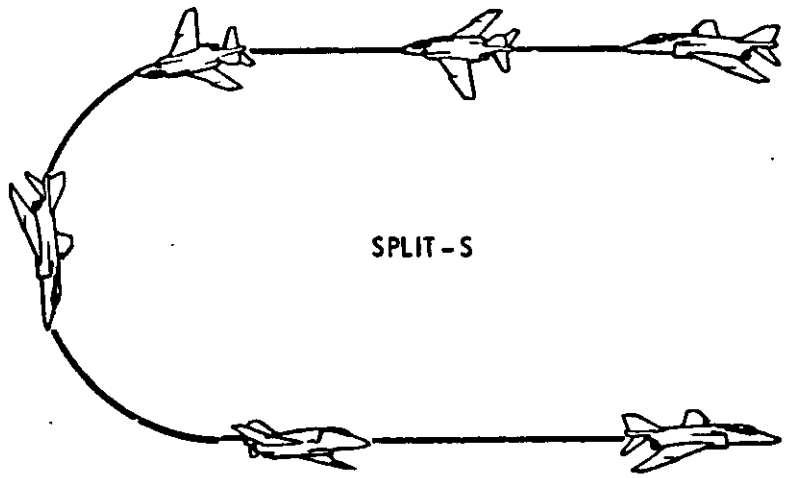



FIGURE 7. Split-S

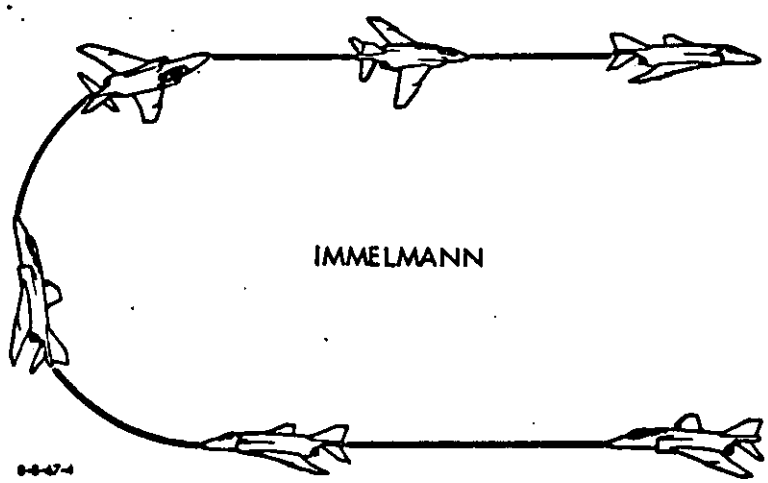



FIGURE 8. Immelmann

[redacted]

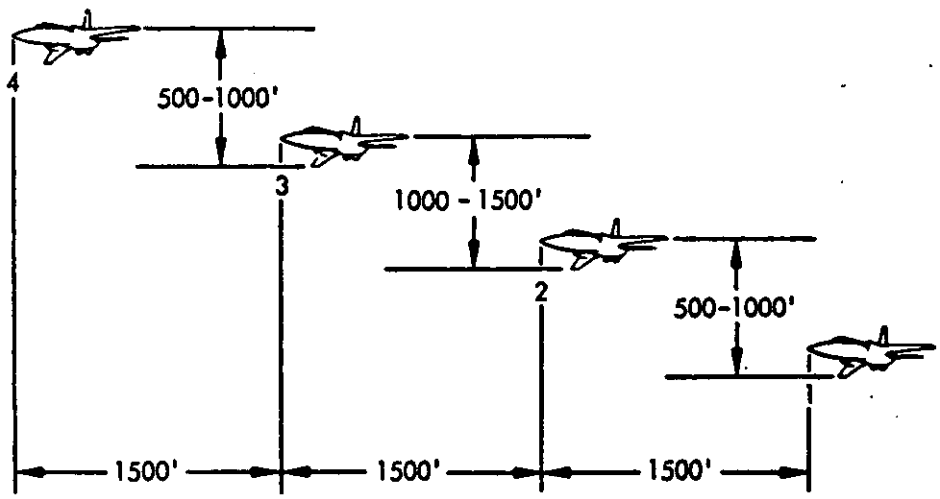



FIGURE 9 (S). Pod Formation*(U)
*Element may be on Left or Right

[redacted]

[redacted]

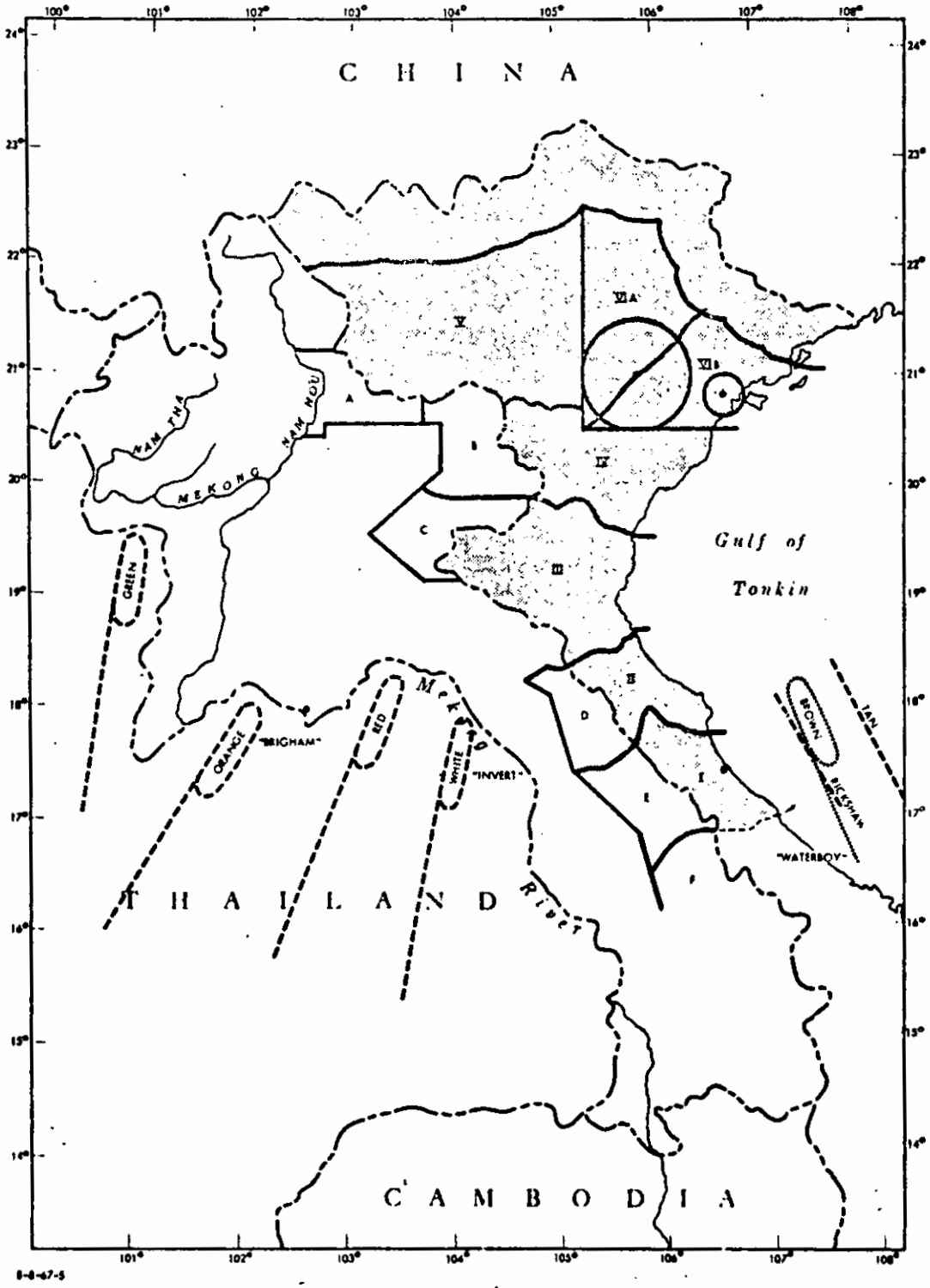



FIGURE 10. Location of Route Packages and Tanker Refuel Tracks



[redacted]

[redacted]

Event II-1

Aircraft Involved: Four F-105Ds vs four MIG-17s

Result: Two F-105s lost

Vicinity of Encounter: 10 mi south of Thanh Hoa

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 April 1965/1215H

ROLLING THUNDER 9 AX mission - Target 14 - Thanh Hoa Bridge; 48 F-105s attacking target in flights of four; 4 F-100s on MIGCAP. The flight of 4 F-105s involved in this encounter was holding at the IP prior to attacking target.

2. MISSION ROUTE

Take-off 1130H (local time) from Korat, flew northeast to tanker, refueled about 1200. Proceeded at 480 kt to IP, 10 mi south of Thanh Hoa bridge.

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1(L), 2, 3, 4

Full load 20mm cannon ammo
8 - 750-lb bombs
2 - 450-gal external wing tanks
Gross weight 49,000 lb at beginning of encounter

MIG-17 MIG 1, 2, 3, 4

Light gray, Chinese Communist marking - guns

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Haze layer - heaviest haze between 12,000-15,000 ft
Altitude: 15,000 ft
Heading: B1(L), 2, 3, 4 all beginning left-hand orbit at IP, B3 on heading of 200° at acquisition
Speed: 325-kt CAS (approximately Mach 0.63)
Fuel State: 11,000 lb
Flight Formation

5. INITIAL DETECTION

While in left-hand turn (beginning holding orbit at IP) 10° to 15° bank, B3 looked back and sighted two aircraft approaching the flight about 5000 ft away. In 1 to 2 sec he identified them as MIG-15 or 17s "coming out of the haze." Distance to MIGs when identified estimated at 3000 ft. Estimated MIG's speed at Mach 0.85. (F-105's speed approximately Mach 0.63.) When first element identified as MIGs, a second element of MIGs were sighted following first and aligned for attack on B3 and B4. B3 called MIGs; B4 followed with call when B1(L) and B2 did not react or acknowledge B3's warning.

6. ACTION INITIATED

B3 called break - B3 and B4 made hard nose-down turn into attackers, jettisoned stores, began switching to air-to-air mode. B1 and B2 continued in shallow banking left turn not reacting to warnings.

7. SITUATION DEVELOPMENT

Four heavily loaded F-105s flying a holding orbit at the IP at 15,000 to 16,000 ft altitude were attacked by four MIG-17s. The second element of F-105s (B3, B4) detected MIGs and called warnings. The warnings appeared to be unheeded by the lead element. Both F-105s in the lead element (B1 and B2) were hit by cannon fire from the first two MIGs attacking from above at the 105's 6 o'clock position. B1 and B2 jettisoned tanks after being hit. Enroute to acting RESCAP for B1, B3 was attacked by two MIGs (unknown if element of original four MIGs). B3 evaded MIG attack by executing a rapid slowdown maneuver while in a diving turn, causing MIGs to overshoot. One MIG in vertical dive near ground may not have recovered. B1 and B2 ejected.

8. ORDNANCE

| | No. Fired/No. Hits | Remarks |
|---|---|---|
| BLUE 1, 2, 3, 4 | 0/0 | |
| MIG 1 | Guns 23 or 37mm/yes on B1 | No HE flashes observed |
| MIG 2 | Guns 23 or 37mm/yes on B2 | HE flashes observed |

9. EQUIPMENT PROBLEMS

B1 and B2 did not appear to receive voice transmissions from B3 and B4 although other aircraft in area verified warnings transmitted by B3 and B4. Unknown whether equipment failure or heavy transmission traffic on strike frequency responsible for not receiving or masking warning.

[redacted]

## 10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 3 | 3000 | 400-500 | 2nd in SEA | Tactical fighter experience in F-84s and F-100s since 1957 |
| BLUE 4 | 1700 | 600 | 5th in SEA | Limited gun training. Fired 2 AIM-9s in training. |

Comments on this Encounter

Briefing to squadron, on rapid deceleration of F-105 when nose is pulled up sharply, was the maneuver employed to shake MIGs making second attack on B3. B3 had never practised this maneuver previous to this engagement.

Without radar protection (Big Eye, etc, were put into operation at a later date) the holding orbit near the target at low speed made the loaded F-105s ideal targets for the MIGs.

Communications "breakdown" between flight elements responsible for successful MIG attack on lead element of F-105s.

MIGs appeared to be GCI directed.

Comments from Overall Experience

Rapid, simple procedures for changing from ground attack to air-to-air mode without requiring pilot to look into cockpit are essential.

Air cover is inadequate and uncoordinated at this early date in war.

"Sterilizing" the target area against enemy air attack requires extraordinary coordination between GCI facility, interceptors and strike aircraft.

## 11. DATA SOURCES

Project Interviews: BLUE 3 - 4 January 1967; BLUE 4 - 4 January 1967

Messages, Reports:

PACAF Tactics/Technique Progress Bulletin No. 2 - 5 May 1965

Message from 2AD - 041437Z April 1965

Message from 2AD - 060740Z April 1965

PACAF - 052213Z April 1965

DIA Intelligence Bulletin 6 April 1965, page F-3

## 12. NARRATIVE DESCRIPTION

The following MIG encounter took place 4 April 1965 during an F-105D strike on Thanh Hoa bridge in Route Package III. The strike force consisted of 48 F-105s in flights of four. Four F-100s on MIGCAP for the strike are not part of this event (see Event III-1). The flight of four F-105s involved in this event are designated BLUE 1 (Leader), 2, 3 and 4. This flight was the fourth or fifth element in the strike force.

Because of refueling problems and consequent delays, (BLUE flight was 15 minutes behind schedule) the attacking elements were not on schedule and were "bunching up" over the target. The strike was under control of a mission commander orbiting the strike area. As BLUE flight approached the IP the mission commander instructed them to orbit over the IP, which was approximately 10 mi south of the target.

$T_0$ BLUE flight was the third flight in orbit at the IP, flying at about 15,000 ft. BLUE flight could see the second flight orbiting about 2000 ft below in the haze which hung between 12,000 and 15,000 ft. Because of the bomb and fuel load (eight 750-lb bombs; 11,000 lb fuel) the flight required military power to hold at 325-kt CAS at 15,000-ft altitude.

$T_1T_2$ As the flight completed a 180° left turn in the orbit, B3 and B4 were positioned about 800 ft above B1(L) and outward. The flight had been briefed that MIGs had been in the air the previous day, had come south to a point 30 mi off the target, made 180° turn and headed home. The flight was therefore alerted that MIGs were getting airborne and hence were hunting them. As B3 began turning inside Lead to maintain position in the turn, he looked to north for MIGs and sighted two airplanes approaching from behind in a 20° dive approximately 5000 ft behind the flight (B3 was passing thru a heading of 200° at the time). They were not identifiable for 1 or 2 sec. When at about 3000 to 4000-ft range, B3 identified the airplanes as MIGs, aligned on B1 and B2. B3 called "BLUE Lead break - you have MIGs behind you - - - BLUE Lead - Break - BLUE Lead we're being attacked." This transmission on strike frequency was followed shortly by a similar warning from B4 to B1 and B2. Neither B1 nor B2 reacted to the warnings which were heard by

other aircraft in the area. B3 reported that in addition to the 48 F-105s, 30 or more F-4Bs, F-100s, MIGCAPs, RESCAPs, as well as the mission commander, were calling on the strike frequency - "the F-4Bs were doing a bit of talking and in fact the 100s got into some sort of engagement and they were doing a bit of talking" - although the channel was cluttered, B3 and B4 felt they were close enough to override the more distant transmission and both made numerous attempts to warn Lead.

$T_3$ The lead element of MIGs coming in on a southerly heading in a slight dive (approx 20°) from above and at 6 o'clock, set up for an attack on the BLUE Lead element. Two more MIGs sighted further behind the first element were setting up to attack B3 and B4. B3 called break, B3 and B4 broke left into the attack, lowered nose, put in maximum bank and g's. The attacking MIG element passed over and behind B3 and B4 - continuing in the original attack direction. Acceleration from 325-kt CAS (~ Mach 0.65) "was too slow to put either B3 or B4 into an effective fighting position fast enough."

The lead MIG element passed in front and above B3 and B4 at high speed (Mach 0.85 or higher). They were observed to be light grey in color with Chinese Communist red-star-and-bar markings on bottom of the wings and close enough to be identified as MIG-17s. The MIG leader's guns began flashing when about 1500 ft behind B1, and B3 observed several hits ("pieces of metal coming off") in the aft section of B1's aircraft. The second MIG, flying in "almost" a fighting wing position fired on B2 "almost simultaneously." B3 observed flames on the aft section of B2s airplane (the hits on B1 did not flash). B2 called B1..."Lead you have a MIG behind you - (pause) - I've been hit." The two MIGs ceased firing at a range of approximately 700-800 ft, rolled wings level, and continued straight ahead at high speed.

$T_4$ After a time the MIGs started a slow turn to the right and were lost to sight in the haze.

B4, with extensive training in F-105 systems (as gunnery officer instructor for 3 yr) and completely familiar with F-105 switches, was unable to complete sequence to air-to-air mode in time to engage the MIGs. He was unable to activate his gun sight. While attempting to set up switches he lost sight of the MIGs. B4 broke down in a tight spiral, and left to check his 6 o'clock position (B3 was no longer there), picked up speed to 1.1 to 1.2 Mach, then climbed to join B1 and B2. B4 decided to join B2 and B3 would join B1. B4 enroute to intercept B2 was flying at 0.96 Mach and overtook B2 doing about 200 kt (at about 500-ft altitude). Because of the haze, B4 did not see B2 until about 1000 to 1500 ft behind him, hence, overshot and lost him in the weather. As B4 turned and tried to find B2, B2 announced he was going to eject.

$T_5$, $T_6$, $T_7$, $T_8$ B3 flew toward B1 to act as RESCAP. As B3 turned to look for B1, B3 saw flashes behind him as two MIGs began an attack on B3 (B3 was flying about Mach 0.64 at 10,000 ft). B3 immediately pulled more g's and lowered the nose slightly, then rolled under, reversed his turn and began climbing. During the climb he kept turning to keep the attacking MIGs in sight. B3 observed that the MIGs were closing, so he rolled to the left as if starting a split-S. The MIGs followed. B3 pulled the nose downwards to left. He pulled power to idle in the turn until nearly 3/4 turn completed when he pulled the stick back sharply, bringing the nose up (20°-30° above the horizon) and rapidly slowing to about 250-kt TAS at about 4000-ft altitude. The MIGs slid outside and ahead of the F-105. The lead MIG went by B3 on the right about 800 ft away in "almost a vertical dive" followed by the second MIG in about a 30-40° dive. (Whether the lead MIG pulled out of the dive was unknown.) B3 eased the nose over and went to full power to recover as the MIGs overshot. B3 was so low that he had to slowly ease the nose up to avoid "mushing" into the ground. He pulled out at between 500 and 1000 ft of altitude, losing sight of the MIGs in the haze.

B3 began transmitting to B1(L) and DF homing until B1 was located. B1 indicated that he could fly safely and was instructed by B3 to climb out to as high an altitude as possible. Eventually they reached 20,000-22,000 ft. B3 flew around B1 to observe the damage. He reported seeing a large hole in the bottom petal of the speed brake, some damage to the top petal and a large hole ("about a foot or so across") in the left trailing edge flap. The drag chute door was open, but the chute was still inside. The speed brake petals were in the ejector position which indicated that B1 probably had a utility system hydraulic failure. This was confirmed by Lead. B3 also noted fluid coming out around the tailpipe which appeared to be hydraulic fluid and reported this to Lead.

B4 circled the area but could not observe B2 land because of an intervening low cloud deck. He did observe what he thought was the B2 aircraft impact the water. He thought later it could be fuel tanks from the F-100 RESCAPs in the area. An HU-16 SAR conducted a search but was unsuccessful in recovering B2.

B4 joined B3, escorting B1 toward Danang. The three airplanes were 10-12 mi (TACAN radio DME) from Danang at 15,000 ft when B1 eased back on engine power to begin the descent. (The field had been alerted to the emergency landing.) B1's engine lost oil pressure and "froze".

Lead had been preparing to make a spiraling descent landing, but as the engine froze he leveled out and began flying straight ahead at about 300-320 kt. He elected to eject.

Ejection appeared normal to B3 and B4 but B1 came out of the cockpit without his helmet. B1's parachute was not observed to open. Because of intervening clouds, B1 could not be observed to the water. B4 stayed high because he was at "almost emergency condition" on fuel. B3 spiraled down looking for Lead and stayed in the area until the rescue helicopter arrived. B3 had noticed a large naval vessel (later identified as USS CANBERRA) about 10 mi to the south and he flew over it "waddling" his wing. The vessel immediately began moving to the area of the helicopter. B3 reached emergency fuel, but coordinated with the helicopter before leaving the scene. B1's body was recovered by rescue vessel, his chute had deployed but it was unknown if it had opened in time to check fall. Low on fuel, B3 and B4 made routine landings at Danang.

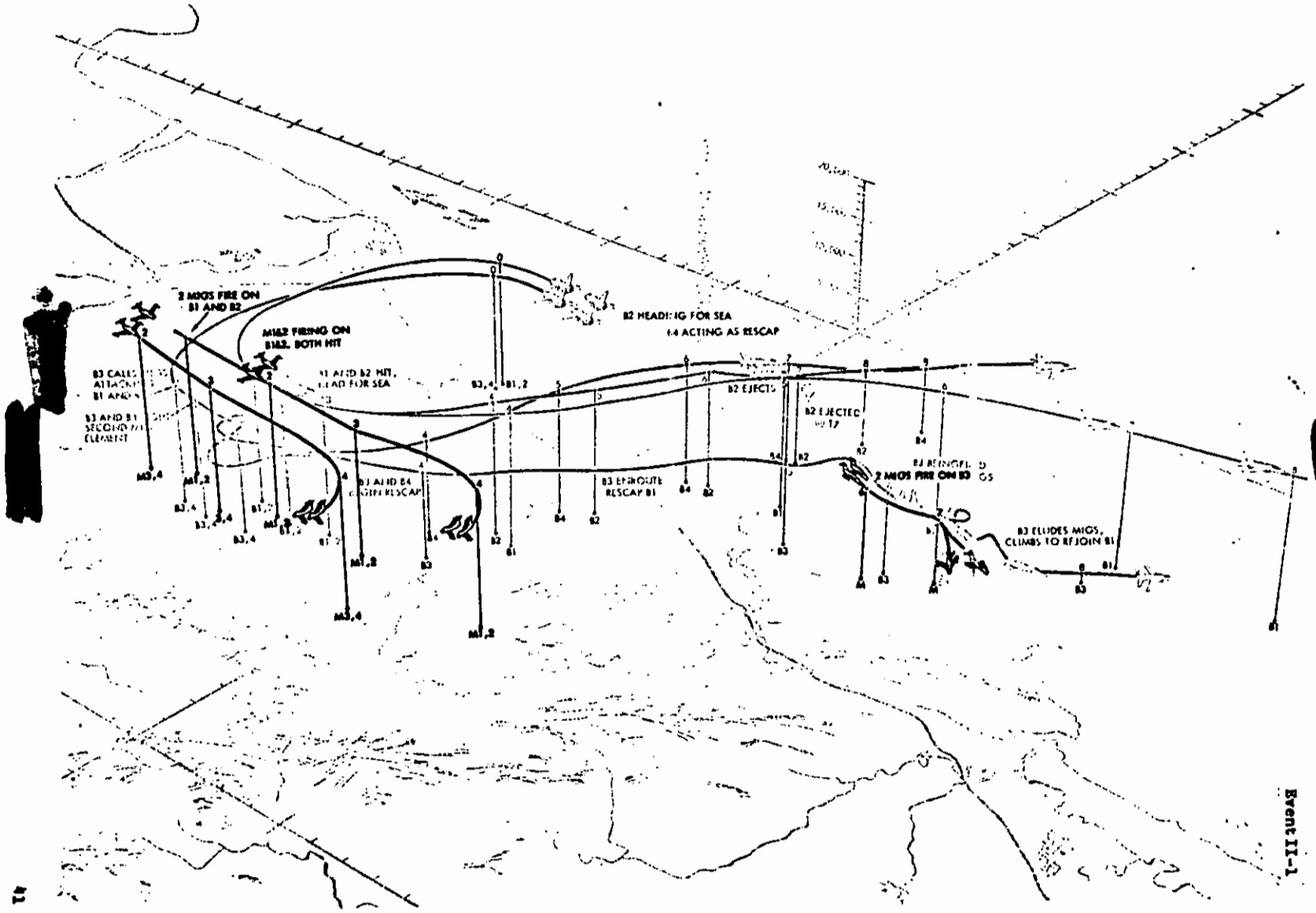
## RED BARON EVENT II-1 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2, 3, 4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | 8 - 750-lb bombs WG ≈ 49,000 lb 340-350 kt | Initiating holding orbit at IP at Mission Commander's order. B3 and B4 sliding out and under B1 and B2 as they approach 180° position of orbit | | | | Successive strikes "bunching-up" over target required several flights to hold at IP, 10 mi south of target |
| $T_1$ | Approaching southerly heading 320-kt CAS 15,000-16,000 ft | | | B3 called MIGs and | 7 o'clock high - two MIGs attacking B1 and B2 about 5000 ft behind and 1500 ft to 2000 ft above. Closing speed ≈ 200 kt | |
| $T_2$ (~10 sec)* | B3 and B4 see MIGs B1 and B2 unaware of attack (MIGs at 6 o'clock of B1 and B2) | B3 and B4 jettison bombs and begin setting up switches for air-to-air. Note second element of MIGs coming out of haze. | B1 and B2 made no change in flight position until MIGs complete firing pass. | B2 calls warning to B1 and reports being hit | M1 and M2 initiate firing about 2000-ft range. Continue to about 400 ft. | |
| $T_3$ (~5-10 sec)* | B1 and B2 jettison bombs. B2 losing power headed for sea decending slowly. B1 headed out to sea then south to Danang, | B3 and B4 broke down and left | | B2 called going over to rescue frequency. Gave RESCUE information and tones for DF steers for B4 and RESCUE. | All MIGs continued straight ahead after passes, climbed, then started to right into haze. | B3 and B4 were at low speed (320 kt) and without gun sights. Complex switching not completed - B3 to RESCAP B1, B4 to RESCAP B2 |
| $T_4$ | | | | | MIGs turning right disappear into haze | |
| $T_5$ | B2 headed for sea decending to about 5000 ft, B1 headed toward Danang climbing to 20,000-22,000 ft, B3 trying to find B1 to act RESCAP (0.8M), B4 trying to find B2 to act RESCAP (0.8M) | | | B1 reported on 165° heading, B3 homing in on transmissions on UHF/VF, B4 talking to B2 in attempt to find B2. | | B3 slowed down so as not to overshoot B1 |

*interval after last time mark

RED BARON EVENT II-1 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1, 2, 3, 4) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_6$ | B3 in left turn 10,000 ft, 400 kt AB/for short turns | Sees 2 MIGs firing. Rolls under, reverses turn and climbs | B1, 2 and 4 seperate | B2 announced he was ejecting. Reported control problems. | MIGs shooting at B3 from rear (coming from north) | |
| $T_7$ | B3 rolls as though going into split-S makes corkscrew turn to left (3/4 turn) pulls up sharply slowing to 250-kt CAS at 4000 ft | Decelerates in descending spiral by bringing nose up fast. | B2 ejected | | Head MIG in vertical dive about 800 ft ahead and to side. Second MIG in 30°-40° dive (at 4000 ft altitude). | |
| $T_8$ | B3 recovers at 500-1000 ft | B3 climbs to rejoin B1 | | | | |


2 MIGS FIRE ON B1 AND B2
MIG2 FIRING ON B1B2. BOTH HIT
B2 HEADING FOR SEA
B4 ACTING AS RESCAP
B2 EJECTS
B2 EJECTED
B3 ENROUTE RESCAP B1
2 MIGS FIRE ON B3
B3 ELUDES MIGS, CLIMBS TO REJOIN B1

Event II-1

Event II-2

Aircraft Involved: Four F-105s vs two MIG-15s[1]

Result: No damage

Vicinity of Encounter: 21°23'N/105°17'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 24 June 65/approximately 1600H.

Four F-105s (BLUE Flight) were fragged for Son La. Target was obscured by weather, therefore alternate railroad bridge was hit.

2. MISSION ROUTE

Departed Takhli for tanker rendezvous; then proceeded northeast to the target. After hitting the alternate target, BLUE Flight went into Fluid-Four and headed south to a point approximately northwest of Phuc Yen, then turned north to a heading of 360°.

3. AIRCRAFT CONFIGURATIONS

BLUE 1, 2, 3, & 4

1,029 rounds HEI 20mm
2 - 450 gal tanks
1 - center line MER with 6-MK-117, 750-lb bombs + 2 Pylons
IFF/SIF-off, Radar on search mode.

MIGs 1 & 2

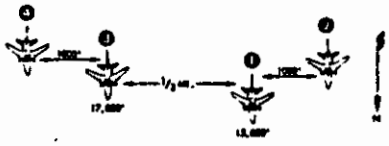
2 - external tanks
Guns

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 20,000 ft overcast with 3-4 mile visibility in some quadrants with scattered clouds at lower levels. Thunderstorms in vicinity.

| | | |
|---|---|---|
| Altitude: | BLUE 1 & 2: 15,000 ft | BLUE 3 & 4: 17,000 ft |
| Heading: | 360° | 360° |
| Speed: | 460 KCAS | 460 KCAS |
| Fuel State: | Unknown | Unknown |

Flight Formation:



5. INITIAL DETECTION

MIGs were observed by BLUE 2 at 6 o'clock position, 1 mile behind BLUE 3 & 4. MIG RED warnings had been received from BIG EYE during the entire mission prior to initial contact.

6. ACTION INITIATED

All aircraft jettisoned tanks. BLUE 1 & 2 turned right and climbed into MIGs while BLUE 3 & 4 turned right and descended.

7. SITUATION DEVELOPMENT

MIG 1 stayed with BLUE 4 throughout encounter firing his cannon inaccurately, until BLUE 4 went to Mach 1.1 and dove for the deck to break contact after 270° of turn. BLUE 1 and 2 attacked MIG 2 who was trying to cut off BLUE 3 in the turn. MIG 2 turned sharply to the left at which time BLUE 1 attempted to hit him with cannon fire. MIG 2 went into the clouds.

8. ORDNANCE

| | No. Fired/No. Hits | Remarks |
|---|---|---|
| BLUE 1 | Fired short burst/0 | Did not expect any hits, could not get sight to radar range. |
| BLUE 2, 3, & 4 | 0/0 | |
| MIG 1 | Fired cannon/0 | Very poor fire control system apparently. |
| MIG 2 | 0/0 | |

[1]Pilot interviews give aircraft as MIG-17 but all other sources show MIG-15.

9. EQUIPMENT PROBLEMS

BLUE 1 was unable to get a lock-on with his gun sight.

10. AIRCREW COMMENTS

| Experience | Total Hours | F-105 Hours | Missions |
|---|---|---|---|
| BLUE 1, 2 & 3 | Unknown | | |
| BLUE 4 | 1800 | 1000 | Unknown |

Comments on this Encounter

BLUE 4 - MIG 1 fire control system was apparently not too good because the bullets were missing by a gross range. MIG 1 apparently did not want to pull any more g. MIGs didn't punch their tanks until F-105s did.

BLUE 1 - As an effective fight, we didn't do too well as far as being attacked by the MIGs is concerned. This was our first actual engagement. Would have been nice to have a few missiles on this engagement.

Comments from Overall Experience

BLUE 1 - For an aircraft we need high energy maneuverability or a high sustained g capability. Need good visibility to the rear. Need a good gun sight; we have a low reliability on our integrated radar or computer gun sight.

BLUE 2 - 105 should engage MIG at Mach .98.

11. DATA SOURCES

Project Interviews: BLUE 1 - 9 March 1967; BLUE 2 - March 1967; BLUE 3 - 6 January 1967.

Messages: 2AD OPREP-4 241721Z June 1965
2 DOTO 03230
CINCPACFLT Staff Study 3-67

12. NARRATIVE DESCRIPTION

BLUE Flight was scheduled for a target in the Son La area. Takeoff was delayed so as to arrive over target at about the termination time of the other strikes with a minimum of fuel expended and then proceed on a MIG search. Refueling was normal but the target was weathered in and an alternate target was hit (a railroad). Then BLUE Flight proceeded on a southerly heading in a Fluid 4 formation (3 & 4 2,000 ft high) to a position approximately northwest of Phuc Yen, when they made a turn to the north. On rolling out on a heading of 360°, BLUE 2 called out to the high element (BLUE 3 & 4), "Look out (BLUE 4), you have two at 6 o'clock." BLUE 4 couldn't see the MIGs. All four aircraft then jettisoned their tanks. The MIGs came out of the clouds at a high altitude and on seeing the 105s jettisoning their tanks, did the same. BLUE 1 then called, "Break, right" and climbed toward the high element. BLUE 3 and 4 simultaneously turned right and descended so as to sandwich the MIGs between them and the low element (BLUE 1 and 2). At first only one MIG was sighted by BLUE 2, but 1000 ft behind MIG 1 came MIG 2 closing on MIG 1. BLUE 1 and 2 managed to get behind the MIGs. While in the turn, BLUE 4 still couldn't see the MIGs and at this time BLUE 1 called out, "Rog, they're MIGs, they're firing keep going." Again BLUE 1 called out, "Four, look out, they're firing." BLUE 4 then crossed over to the left side of BLUE 3 and saw the MIGs at his 5 o'clock position.

BLUE 4 was so engrossed with the MIGs and being fired on that he failed to notice BLUE 3 increasing his g's. MIG 1 was now about 2,500 ft back at BLUE 4's 5 o'clock position. BLUE 4 became separated from BLUE 3. By this time BLUE 1 and 2 were approximately 5000 ft in trail with the two MIGs when MIG 2 tightened his turn and appeared to be cutting across the circle possibly going after BLUE 3. MIG 1 was still on BLUE 4's tail and firing. At this point BLUE 4 asked for someone to get the MIG off his tail. BLUE 1 and 2 were unable to close on MIG 1 mainly because they hadn't selected afterburner, but when MIG 2 turned they were able to go after him. Just as BLUE 1 fired at MIG 2, the MIG broke left hard and inside BLUE 4's turn. BLUE 4 continued on around in his turn but MIG 1 was not pulling lead and was maintaining 2500 ft separation. After 180° of turn, BLUE 4 was at 7,000 ft with MIG 1 still on his tail.

Meanwhile BLUE 1 and 2 turned left and up with MIG 2 and went through some turns which appeared to BLUE 1 as though MIG 2 was looking for MIG 1. Then MIG 2 turned right and appeared to see BLUE 1 and 2 at which time he turned left sharply and climbed into the clouds. BLUE 1 attempted to follow and called and said he had lost sight of BLUE 4. BLUE 4 then lit afterburner, dove for the deck to pick up 1.1 Mach and lost MIG 1. BLUE 4 after a few miles separation turned left to find that he had lost MIG 1, at which time BLUE 1 called and told BLUE 4 to leave the area to the south.

BLUE Flight joined and returned home safely.

RED BARON EVENT II-2 SUMMARY

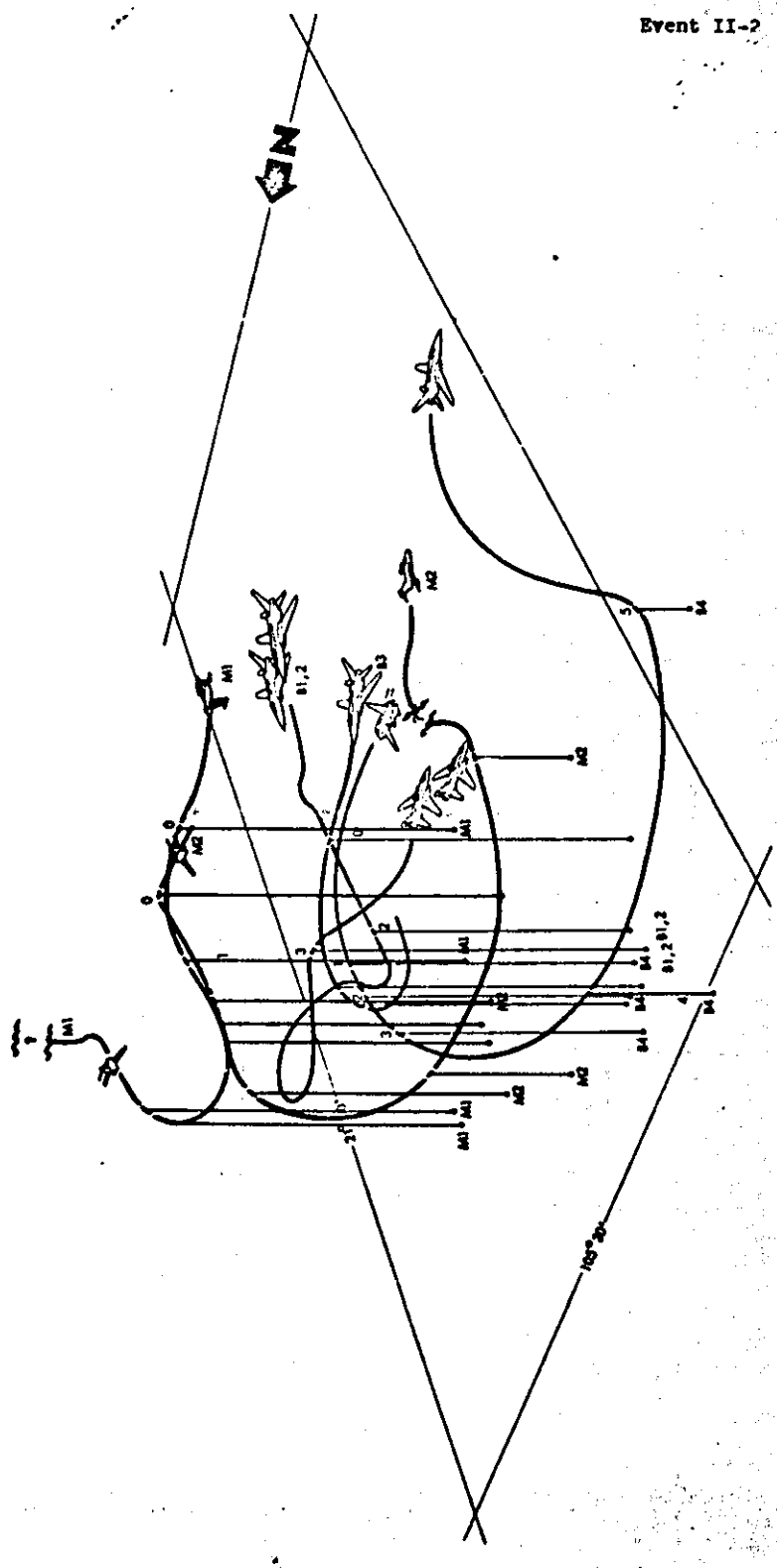
| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | Alt B1&2 15,000 ft Alt B3 & 4 17,000 ft Speed - 460 KCAS Head - 360° | High element broke rt and down. Low element broke rt and up. All aircraft jettisoned external stores. | | B2 called "Look out (BLUE 4) you have two at 6 o'clock." Calls break right. B4 tells B3 "You've got it, three." B1 says "Rog, they're MIG's, they're firing, keep going." | Came out of clouds from a high altitude on a 10-15° dive at B3 & 4's 6 o'clock. Jettisoned external stores on seeing friendlies do so, M2 about 2,000 ft behind M1. | B3 at this point doesn't see MIGs. |
| $T_1$ | B3 & 4 speed .98M Alt - approx 17,000 ft pulling 3 g's. | B3 & 4 are out in front with M1 firing on B4. B1 & 2 are closing on M1 & 2. B4 goes to the outside of B3 (on left wing) and sees MIGs about 2,000 ft back. | | "Four, look out they're firing" by B1. | M1 firing on B4; is about 2,000 ft back. | |
| $T_2$ | | B1 & 2 too far out on M1 out of position. Chose M2 to attack. | B3 pulls high g's and loses B4 who is looking at MIGs. B3 now out of action. B3 in descending steep turn. B4 still pulling 3 g's. | B3 asks someone to get MIG off his tail, that MIG is cutting him off. | M2 attempts to cut across circle and intercept B3 in tight turn. | M1 was not pulling any lead on B4. All cannon fire was not close in range. Believe M2 was attempting to pull lead on B3. |
| $T_3$ | | B1 fires at M2 in turn B1 tries to lock-up to M2 on radar when M2 rolls out. B1 about 4,000 ft behind M2. | M2 is followed in left turn by B1 & 2. | | M2 breaks left and up. M2 still on B4's tail. M2 being fired at by B1. | |
| $T_4$ | | B1 follows M2 who then breaks hard left and into overcast. B1 reverses turn to look for B4. | B4 still has M1 on tail heading 180° 7,000 ft. | B1 has lost sight of B4. | M2 makes hard left turn into clouds and looses B1&2. | It was believed M2 was looking for M1 when he saw B1 & 2 and broke to left. |

RED BARON EVENT II-2 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_5$ | | B4 descends to obtain 1.1M, loses M1. B3 joins up with B1 & 2. | | Transmitting of steers to lead but B1 unable to locate B4. B1 told B4 to leave area. | | B4, after a few miles separation, turns back to the left but unable to find M1. Climbs to 15,000 ft and leaves area. BLUE Flight later joins and returns home safely. |

[redacted]

Event II-2




[redacted]

[redacted]

Event II-3

Aircraft Involved: One F-105 vs MIGs

Result: One F-105 lost

Vicinity of Encounter: 21°55'N/106°42'E (Dong Dang)

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 October 1965, daylight

Four F-105s (BLUE Flight) on a strike mission against the Lang Met highway bridge (21°30'N/106°21'E).

II. DATA SOURCES

OP-05W4 List of MIG Encounters
DIA Intelligence Bulletin 18 July 1966
WSEG Compendium of Aircraft Losses

12. NARRATIVE DESCRIPTION

After the strike, BLUE 2 heard BLUE 1 call that BLUE 1 was off on a heading of 114°. This was BLUE 1's last transmission. China claimed a border violation and that the F-105 was shot down by MIGs.

Event II-4

Aircraft Involved: Four F-105s vs two MIG-17s

Result: No damage

Vicinity of Encounter: 21°N/107°50'

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: October 1965/Not specified

Exiting from IRON HAND mission in conjunction with strike on missile site southeast of Kep.

II. DATA SOURCES

Project Interviews: BLUE 3, 6 Jan 67

12. NARRATIVE DESCRIPTION

BLUE Flight of four F-105s were exiting to the Gulf of Tonkin after an IRON HAND mission in support of a strike on a missile site southeast of Kep. They were heading east, on the deck, at a speed of Mach 0.98 to 1.01 when two MIG-17s fell in behind at a range of 5000 to 6000 feet. The MIGs apparently tried to catch up but never got much closer than a mile even though BLUE 4 had been damaged by ground fire.

BLUE Flight was short on fuel but this was not necessarily a factor which kept them from engaging the MIGs. (See BLUE 3 comments in Event II-17).

Event II-5

Aircraft Involved: Five F-105s vs two MIG-17s

Result: No damage

Vicinity of Encounter: 21°18'N/104°12'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 November 1965/1540H

Five F-105s (BLUE Flight) on a strike mission.

II. DATA SOURCE

CINCPACFLT Staff Study 3-67.

12. NARRATIVE DESCRIPTION

MIGs closed fast, moving to 6 o'clock position approximately 3 miles behind BLUE Flight. BLUE Flight accelerated to Mach 0.93 and pulled away, being unable to engage due to low fuel state.

[redacted]

[redacted]

Event II-6

Aircraft Involved: One F-105 vs two MIG-?
Result: Sighting
Vicinity of Encounter: 20°55'N/104°46'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 28 November 1965/1212H

An F-105 (BLUE 3) was on RESCAP for BLUE 2.

11. DATA SOURCE

CINCPACFLT Staff Study 3-67.

12. NARRATIVE DESCRIPTION

BLUE 3 observed two MIGs for approximately 3 seconds while descending, but no attack was made by either side.

Event II-7

Aircraft Involved: Four F-105s and five MIG-17s
Result: Sightings only
Vicinity of Encounter: 21°30'N/104°00'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 December 1965/1630H

A flight of four F-105s (BLUE Flight) was on a strike mission.

11. DATA SOURCES

CINCPACFLT Staff Study 3-67.

12. NARRATIVE DESCRIPTION

BLUE Flight sighted five MIGs, one in lead and two sections following in trail. No engagement resulted.

Event II-8

Aircraft Involved: Three F-105s vs two MIGs
Result: Sighting only
Vicinity of Encounter: 20°30'N/103°00'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 December 1965/1625H

Three F-105s (BLUE Flight) on a mission on RT 44A-1.

11. DATA SOURCES

RED BARON MIG Incident Summary.

12. NARRATIVE DESCRIPTION

BLUE Flight sighted the MIGs 1-1/2 miles behind the flight. No engagement occurred.

[redacted]

[redacted] [redacted]

Event II-9

Aircraft Involved: Four F-105s vs two MIG-17s

Result: No damage

Vicinity of Encounter: 21°15'N/107°15'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 December 1965/1600H.

Four F-105s (BLUE Flight) on a SARCAP for another F-105 (GREEN 3).

11. DATA SOURCES

CINCPACFLT Staff Study 3-67.

12. NARRATIVE DESCRIPTION

BLUE Flight sighted two MIGs coming from the direction of Haiphong. The F-105s attempted to attack but could not catch the MIGs. The MIGs were coming straight and level; and BLUE Flight turned into the MIGs who passed under BLUE Flight with about 700 ft separation. The MIGs did not slow or turn, and no further action resulted.

Event II-10

Aircraft Involved: Four F-105s vs two possible MIG-21s

Result: Sighting only

Vicinity of Encounter: 21°26'N/103°02'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 March 1966/1433H

BLUE Flight was diverted from primary target for RESCAP mission. Dropped ordnance on secondary target prior to RESCAP.

5. INITIAL DETECTION

It is not known which member of BLUE Flight sighted MIGs. MIGs crossed 2 miles in front of BLUE Flight headed for Hanoi.

6. ACTION INITIATED

Distance between aircraft prevented action.

7. SITUATION DEVELOPMENT

MIGs exit to Hanoi; BLUE Flight continued RESCAP.

8. ORDNANCE

None expended

9. EQUIPMENT PROBLEMS

None noted.

10. AIRCREW COMMENTS

No interviews.

11. DATA SOURCE

Message: 2AD 1[illegible]55Z, DOCO 15376, Mar 66.

12. NARRATIVE DESCRIPTION

BLUE Flight was on a strike mission. They were diverted to a RESCAP mission and dropped their ordnance on a secondary target. At about 21°26'N/103°02'E, they sighted two possible MIG-21s 2 miles ahead, heading to Hanoi. They did not pursue the MIGs. Markings were unidentifiable due to distance. MIGs were at 24,000 ft.

[redacted] [redacted]

[redacted]

Event II-11

Aircraft Involved: Four F-105Ds vs three MIG-17s

Result: No damage

Vicinity of Encounter: 21°55'N/105°34'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 23 April 66/1532H

Four F-105s (BLUE Flight) had bombed the Bac Giang Bridge and was exiting the area. BLUE 2 was separated from the rest of the flight.

2. MISSION ROUTE

BLUE flight was from Korat but route to target unknown. Egress was overland through Laos.

3. AIRCRAFT CONFIGURATIONS

BLUE Flight carried an unknown number of 750 lb bombs.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Cloud cover at unknown altitude.

| | | | |
|---|---|---|---|
| BLUE | Heading ~290° | 1500 ft AGL | 550 KTAS |

5. INITIAL DETECTION

BLUE 2 detected 3 MIGs at his 3 o'clock position, on a reciprocal heading at an altitude of 2,000 ft.

6. ACTION INITIATED

BLUE 2 entered cloud layer to elude MIGs.

7. SITUATION DEVELOPMENT

Two of the three MIGs chased BLUE 2 for 20 n mi (about 3 minutes) and fired before breaking off. BLUE 2 rejoined flight and exited the area.

8. ORDNANCE

BLUE flight expended no air-to-air ordnance. MIGs had cannons and fired unknown number of times at BLUE 2. No hits.

9. EQUIPMENT PROBLEMS

None noted.

10. AIRCREW COMMENTS

None.

11. DATA SOURCES

Project Interviews: BLUE 4 14 March 1967
Messages, Reports: Messages: a. 7AF 231133Z, DOCO-18143, Apr 66, OPREP-3
b. 250420 Apr 66, DIAAP-2 9208
CINCPACFLT Staff Study 3-67

12. NARRATIVE DESCRIPTION

BLUE flight was part of the strike force which was supported by the U.S. aircraft in Events I-22 (F-4s escorting a B-66) and I-23 (F-4s on MIG SCREEN). These aircraft were not involved in this event.

After attacking the target, BLUE Flight, which was the last of 3 or 4 strike flights, turned north to evade heavy 37mm, 57mm and 85mm flak from the Kep area. During this maneuver BLUE 2 became separated from the flight. BLUE 2 was heading 290 degrees about 55 miles NW of the target when he observed 3 MIG-17s at 3 o'clock on a reciprocal heading. Two of the MIGs made a 180 degree turn and gave chase firing on BLUE 2. Although the MIGs chased him for 20 miles, BLUE 2 successfully evaded by using cloud cover and low altitude. BLUE 2 did not use afterburner. During the chase, BLUE 2 informed the rest of the flight of the situation, but BLUE 4 did not hear the transmission.

The remaining 3 aircraft of BLUE Flight turned west for the Red River and the turning point south. BLUE 2 rendezvoused with the rest of the flight on the West bound leg but by that time the MIGs had broken off.

[redacted]

Event II-12

Aircraft Involved: Four F-105Ds vs two MIG-17s

Result: No damage

Vicinity of Encounter: 21°22'N/107°05'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 8 May 1966/1605H

BLUE flight had left the target after a strike and was heading toward Tonkin Gulf.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

| | Altitude | Speed | Heading |
|---|---|---|---|
| BLUE 1, 2, 3, 4 | 5,000 ft | 450 kt | 110° |
| MIG 1, 2 | 7,000 ft | Unknown | 130° |

BLUE Flight in Fingertip-Four formation

5. INITIAL DETECTION

BLUE Flight had received a general MIG alert from EC-121.

BLUE 3 detected MIG flight of two aircraft at 8 o'clock, about 2,000 ft above. MIGs crossed over and continued to 3 o'clock position, apparently not detecting BLUE Flight.

6. ACTION INITIATED

The MIGs turned to close on BLUE Flight. BLUE Flight accelerated to 575 knots. MIG 2 attacked from 6 o'clock.

7. SITUATION DEVELOPMENT

BLUE 1 did not know of presence of MIGs because of bad radio receiver and continued straight and level. BLUE 2, 3, and 4 started jinking maneuver. BLUE 4 reported that MIG 2 fired his cannon. During maneuvering, BLUE 2 took a snapshot burst at MIG 1 at 3 o'clock position. MIG flight withdrew with no damage to either side.

8. ORDNANCE

| | (No. fired/No. hits) Cannon | Remarks |
|---|---|---|
| BLUE 2 | 1/0 | Snapshot during jinking maneuver. |
| MIG 2 | 1/0 | Miss. |

9. EQUIPMENT PROBLEMS

Radio communications very poor. BLUE 1 had no receiver.

10. AIRCREW COMMENTS

BLUE 2: MIG attacked from above and showed low level of training/experience. During later events, the MIG attacks were more aggressive and attacked from below.

11. DATA SOURCES

Project Interview: BLUE 2, 15 March 1967.
Reports: CINCPACFLT Staff Study 3-67.

12. NARRATIVE DESCRIPTION

BLUE Flight of 4 F-105s was returning from a strike mission when BLUE 3 detected a pair of MIG-17s at 8 o'clock. The MIG flight was about 2,000 ft above and crossed over to the 3 o'clock position, apparently without seeing BLUE Flight.

BLUE Flight continued straight and level and MIG flight turned to close. BLUE Flight accelerated to 575 kt. BLUE 1, unaware of MIG presence due to radio malfunction, continued to fly straight and level but BLUE 2, 3, and 4 flew jinking maneuver. MIG 2 attacked from 6 o'clock position. MIG cannon fire was reported by BLUE 4. BLUE 2 fired snapshot burst at MIG 1 at 3 o'clock position turning jinking maneuver. MIG flight withdrew, no damage.

[redacted]

Event II-13
Aircraft Involved: Four F-105Ds vs four MIG-17s
Result: Sighting only
Vicinity of Encounter: 21°10'N/104°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 10 May 1966/1621H

BLUE Flight was returning from RESCAP mission in two elements when MIGs were sighted by each element. BLUE 1 and 2 were several miles behind BLUE 4 and 5. BLUE 3 had been shot down by ground fire.

2. MISSION ROUTE

Enroute to Udorn from a bombing mission in the vicinity of Yen Bai.

3. AIRCRAFT CONFIGURATIONS

| | |
|---|---|
| BLUE 1, 2 | Unknown |
| BLUE 4, 5 | Drop tanks |
| MIG 1, 2 | No external stores, silver color |
| MIG 3, 4 | Unknown |

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

| | Altitude | Heading | Fuel State |
|---|---|---|---|
| BLUE 1, 2 | 7,000 ft | 225° | Low |
| BLUE 4, 5 | 12,000 ft | 225° | 1200 lb |
| MIG 1, 2 | 7,000 ft | 315° | -- |
| MIG 3, 4 | -- | 225° | -- |

5. INITIAL DETECTION

BLUE 1 and 2 visually detected two MIGs at 9 o'clock.

BLUE 4 detected the presence of MIGs by means of a MIG-type armed vector. MIG 3 and 4 were visually detected at 6 o'clock as two specks at a range of seven miles and closing fast. The location was between the Red and Black Rivers.

6. ACTION INITIATED

BLUE 1 and 2 began to descend as MIG 1 and 2 began a slow 30° bank into a pursuit curve.

BLUE 4 and 5, who had been descending, continued to descend. MIG 3 and 4 continued to close.

7. SITUATION DEVELOPMENT

BLUE 1 and 2 continued to descend. MIG 1 and 2 closed to about one mile at 6 o'clock when BLUE 1 and 2 reached 3,000 ft AGL at a speed of 1.1 Mach. BLUE 1 and 2 out accelerated MIG 1 and 2.

BLUE 4 dropped tanks and both BLUE 4 and 5 lit afterburner. They descended to the deck at Mach 1.3-1.4 and lost MIG 3 and 4 before reaching the Black River.

8. ORDNANCE

None.

9. EQUIPMENT PROBLEMS

None.

10. AIRCREW COMMENTS

None.

11. DATA SOURCES

Project Interview: BLUE 5 - February 1967
Messages, Reports:

7AF OPREP 101637Z DOCO-0 19229 May 66
7AF OPREP 102117Z DOCO-0 19253 May 66
CINCPACFLT Staff Study 3-67

12. NARRATIVE DESCRIPTION

BLUE 1, 2, 3 and 4 attacked a target near Yen Bai and BLUE 3 was shot down by ground fire. BLUE 1, 2, and 4 were joined by a member of an earlier flight and all formed a RESCAP. The new member is called BLUE 5.

[redacted]

[redacted]



BLUE 4 and 5 became low on fuel and departed for Udorn. BLUE 1 and 2 followed a few minutes later.

BLUE 1 and 2 sighted two MIGs at 9 o'clock in a slow 30° bank as if in a pursuit curve. The MIGs closed to about one mile at 6 o'clock as BLUE 1 and 2 descended to 3,000 ft AGL and accelerated to Mach 1.1. The MIGs were out accelerated. No attempt was made to engage the MIGs because of the low fuel state.

BLUE 4 detected the presence of MIGs by means of a MIG-type armed vector. MIG 3 and 4 were visually detected at 6 o'clock as two specks at a range of seven miles and closing fast. BLUE 4 and 5 decreased altitude, BLUE 4 dropped tanks, and both lit afterburners. They descended to the deck at 1.3 Mach and lost the MIGs.

[redacted]

[redacted]

Event II-14

Aircraft Involved: Four F-105s vs three MIG-17s

Result: Sighting only

Vicinity of Encounter: 21°10'N/104°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 10 May 1966/1800H

BLUE Flight was returning from a bombing mission near Yen Bai.

11. DATA SOURCES

DIA Intelligence Bulletin

12. NARRATIVE DESCRIPTION

BLUE Flight of four F-105s was returning from a bombing mission near Yen Bai when they encountered three MIG-17s. The MIG flight made three descending turns over the flight coming as close as two miles. Apparently no firing passes were made.

A flight of F-4s was informed of the MIG's presence. The MIG flight withdrew on arrival of the F-4s.

[redacted]

[redacted]

[redacted]

Event II-15

Aircraft Involved: Four F-105s vs four MIG-17s

Result: One MIG destroyed and two F-105s damaged

Vicinity of Encounter: 21°33'N/105°37'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 29 June 1966/1310H

Four F-105s were on an IRON HAND mission in the vicinity of JCS Target 51 at 21°10'N/105°51'E. The flight had left the target and was heading northwest at 4-5,000 ft AGL when attacked by four MIG-17s.

2. MISSION ROUTE

BLUE Flight took off from Korat at 1215H. They headed north at 0.8 Mach and at 16,000 ft to rendezvous with the Orange track tanker. After refueling, BLUE Flight headed northeast at 18,000 ft and 420 knots ground speed. The flight proceeded past checkpoint Alpha and on to JCS Target 51.

3. AIRCRAFT CONFIGURATION

| | Aircraft | Tanks (Inboard) | SHRIKE (Outboard) | LAU-3A (Outboard) |
|---|---|---|---|---|
| F-105F, | BLUE 1 | two, 450 lb | one left, one right | |
| F-105D, | BLUE 2 | two, 450 lb | | one left, one right |
| F-105D, | BLUE 3 | two, 450 lb | one left | one right |
| F-105D, | BLUE 4 | two, 450 lb | | one left, one right |

All of BLUE flight camouflaged. BLUE 1 had vector and WILD WEASEL equipment. BLUE 3 had vector equipment.

MIG flight (1, 2, 3, 4) had Red Stars on wing tips and on the vertical stabilizer. No missiles or missile racks were observed.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Broken to overcast between 2 and 12,000 feet. Below the cloud base, the visibility was about seven miles.
Altitude: 4,000-5,000 ft AGL
Speed: 480 knots ground speed
Fuel State: 13,000 pounds
Flight Formation: Two elements of two F-105s. BLUE 3 and 4 approximately one-half mile to rear and one-half mile to right of BLUE 1 and 2.

5. INITIAL DETECTION

BLUE 4 sighted MIG flight at 7 o'clock at 2-3,000 ft. MIGs were closing with 50 to 70 knots closing speed at an altitude of 2-3,000 ft AGL.

6. ACTION INITIATED

BLUE 4 broadcast MIG warning. BLUE 3 called for a hard left break, carried out by BLUE 3 and 4. BLUE 1 and 2 apparently did not hear the warning.

7. SITUATION DEVELOPMENT

MIG 1 fires at BLUE 3 (miss) as BLUE 3 and 4 break and dive. MIG 1 and 2 continued on and headed for the lead element. (MIG 3 and 4 followed but did not take active part in fight.) BLUE 1 and 2 had begun a left turn when BLUE 1 sighted the MIG flight at 8 o'clock. He called to break left, go to afterburner, and jettison ordnance. MIG 1 hit BLUE 2 with 23mm cannon fire but overflew the target and ended up at BLUE 2's 12 o'clock. BLUE 2 shot down MIG 1.

Meanwhile, MIG 2 attacked BLUE 1 causing damage. BLUE 4 engaged MIG 4, firing 200 rounds of 20mm. BLUE 3 closed on MIG 2 and fired a fleeting shot.

BLUE 2 departed due to damage and BLUE 3 left to cover BLUE 2. BLUE 1 took a long range shot at two departing MIGs.

8. ORDNANCE

| | No. Fired/No. Hits SHRIKE | Cannon | Remarks |
|---|---|---|---|
| BLUE 1 | 1/0 | 1/0 | Fired SHRIKE at SAM site. Site went down 40 seconds after launch. No BDA. Short burst 20mm, no damage. |
| BLUE 2 | | 1/1 | 200 rounds. Confirmed MIG kill. |

[redacted]

8. ORDNANCE (Cont'd)

| | No. Fired/No. Hits SHRIKE | Cannon | |
|---|---|---|---|
| BLUE 3 | 1/0 | 1/0 | SHRIKE fired into the blind. 100 rounds of 20mm; range 2,500 ft at high angle off. |
| BLUE 4 | | 1/0 | 200 rounds, no damage. |
| MIG 1 | | 2/1 | Missed BLUE 3, damaged BLUE 2. |
| MIG 2 | | 1/1 | Damaged BLUE 1. |

9. EQUIPMENT PROBLEMS

BLUE 2 took 23mm cannon hits on side of cockpit and one shell through cockpit. These hits knocked out all instruments except engine instruments but including the gun sight and the oxygen equipment. MIG kill make in spite of lack of gun sight.

Communication problems between aircraft prevented effective MIG warning.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | |
|---|---|---|---|---|
| BLUE 3 | 3100 | 1000+ | 25 | Had no formal air-to-air training for 13 years. Qualified on DART twice a year. Would have liked to have had better combat training including more air-to-air practice. BLUE 3 stated the F-105 needs better turning capability and a panic means to get into air-to-air mode. The equipment worked fine. |

BLUE 1,2,4 Not Interviewed

11. DATA SOURCES

Project Interview: BLUE 3, 6 January 1967
Letter Statement: BLUE 2, 20 February 1967
Messages:
7AF/NMCC/Z291150Z, 29 June 1966
7AF/OPREP/Z291235Z, 29 June 1966
7AF/DAI/03002262, 30 June 1966
7AF/AIG 913/0250627Z, 25 September 1966

12. NARRATIVE DESCRIPTION

BLUE Flight of four F-105s are on an IRON HAND mission in the vicinity of 105°37'E/21°33'N when they are attacked by a flight of three MIG-17s. (MIG 4 is about four miles to the rear.)

$T_0$ - BLUE Flight is divided into two elements of two. BLUE 3 and 4 following about a half-mile to the rear and a half-mile to the right. All are flying straight and level at 4 to 5,000 feet and at approximately 480 knots ground speed. BLUE 4 sighted MIG flight closing with 50 to 70 knots closing velocity, at a range of 2 to 3,000 feet, and at an altitude of 2 to 3,000 feet AGL.

$T_1$ - BLUE 4 gives MIG warning and BLUE 3 calls for a left break. Apparently BLUE 1 and 2 did not hear transmissions as they continued on. MIG 1 fired at BLUE 3 but missed. MIGs 1, 2, and 3 continue after BLUE 1, 2.

$T_2$ - BLUE 3 and 4 continue their diving break. BLUE 3 radios BLUE 4: "Glad you called the MIGs." At about this time, BLUE 1 and 2 begin a left turn when BLUE 1 sights MIGs at 8 o'clock and called for a diving left break. BLUE 1 and 2 go into afterburner and dive left.

MIG 1 fires at BLUE 2. Several rounds hit and one round went through the cockpit. This round knocked BLUE 2's hand off the throttle (putting him out of afterburner) and damaged his instruments, except engine instruments, including his gun sight and oxygen equipment.

MIG 2 fires at BLUE 1 and hits him in the vertical and horizontal stabilizer.

$T_4$ - MIG 1 overflew the target and ended up at BLUE 2's 12 o'clock. BLUE 2 fired about 200 rounds and observed about ten hits. MIG 1 rolled over and did Split-S into clouds (at 2,000 ft).

BLUE 2 sees MIG 2 at 10 o'clock and 200 feet away. But when BLUE 2 maneuvers toward MIG 2, he observed MIG 3 at 6 o'clock. BLUE 2 escapes into broken clouds.

$T_3$ - Meanwhile, BLUE 4 engages MIG 4 who is joining the MIG flight. No damage. MIG 4 disengages and BLUE 4 attempts [redacted] E Flight.

BLUE 3 ends break after 270 of 360 degree turn and finds he is separated from BLUE 4. BLUE 3 heads into clouds to lose any MIGs which may be attacking.

$T_5$ - BLUE 2 announces he is damaged and heading for Point Alpha. BLUE 3 acknowledged, said he would meet him there, and engages afterburner.

$T_6$ - In heading for Point Alpha, BLUE 3 sees MIG 2 on tail of BLUE 1. BLUE 3 takes high angle shot at MIG who executes very sharp break. BLUE 3 departs for Point Alpha.

$T_7$ - MIG 3 joins with MIG 2 as BLUE 1 fires burst at long range. No damage.

Official weather forecast puts clouds at 5 to 12,000 ft. But both BLUE 2 and BLUE 3 mention clouds as low as 2,000 ft. The scattered clouds alternately helped and hindered the BLUE Flight as both sides used the available cover when necessary.

## RED BARON EVENT II-15 SUMMARY

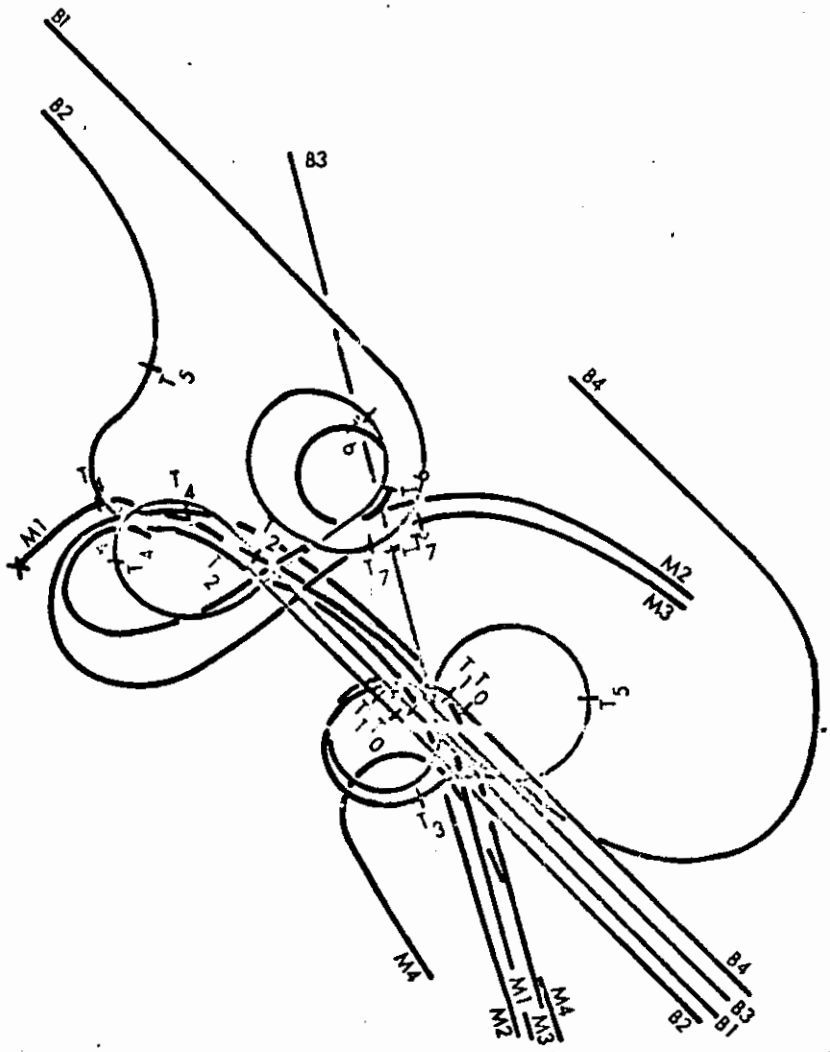
| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | 4-5,000 ft AGL<br>480 kt ground speed<br>Straight and level<br>Fuel 13,000 lb | B4 catching up to flight sights 3 MIG-17s at 7 o'clock at 2 to 3,000 feet AGL, at approximately 2-3,000 ft range. (A fourth MIG-17 is trailing by 4 miles) | B1,2,3, flying straight and level. | B4: "MIGs at 7 o'clock."<br>B3: "Are you sure they are MIGs?"<br>B4: "Damn right." | MIG flight closing at 50-70 knots. | Apparently B1 and B2 did not hear transmission. |
| $T_1$ | B3,4 full afterburner | Hard left break and dive to 1,000 ft AGL | B1,2 continue straight and level. | B3: "Break, hard left." | M1 fires at B3.<br>MIG flight continues on to B1 and B2. | |
| $T_2$ | B1 and 2 begin left turn | B1 sights MIG flight at 8 o'clock | B3 and 4 in hard left break. | B3: "Glad you called the MIGs."<br>B1: "Break left, go to afterburners, and jettison ordnance." | MIG Flight closing on B1 and 2.<br>M1 damages B2.<br>M2 damages B1. | Transmissions not heard by other element. |
| $T_3$ | B4 comes out of break at 2,000 ft | B4 attacks M4 | B1 attempts to evade M2.<br>B2 slows down as result of damage.<br>B3 seeks out clouds to lose any MIGs on tail. | | M1 overflies B2.<br>M2 chases B1.<br>M3 closing on B2.<br>M4 avoids B4. | |
| $T_4$ | B2 loses instruments and gun sight as result of damage. | B2 fires at M1, sees flashes in left wing root.<br>M2 at 10 o'clock and M3 at 6 o'clock and closing. Evaded by diving into broken clouds. | B1 attempting to evade M2.<br>B3 circling in clouds.<br>B4 attempting to reacquire M4. | | M1 hit. Rolls over and does Split-S into clouds at 2,000 ft.<br>M2 and 3 continue after B1. M2 considerably ahead of M3. M4 departs. | B2 credited with confirmed kill. |
| $T_5$ | | B3 goes to afterburner to meet B2. | | B2: "I'm hit. I'll see you at Point Alpha."<br>B3: "Roger, will meet you when I can." | As above. | |

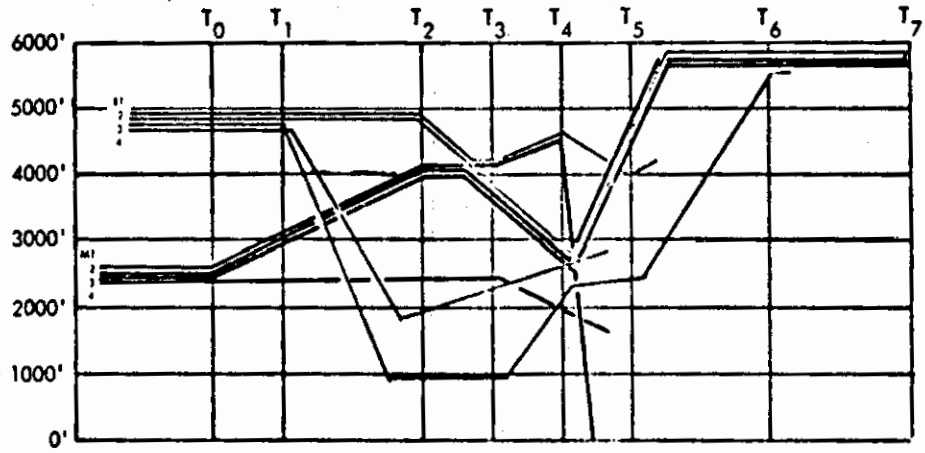
RED BARON EVENT II-15 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communic. tions | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_6$ | B3 sights M2 on tail of B1. Fires 100 rounds at high angle off. Cannot turn with M2. Exits to join B2.<br><br>B1 circles and closes on M2 and M3. Fires at MIGs at long range. | | | | M2 makes very tight left break.<br>M3 joins with M2. | |

[redacted]



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Event II-16

Aircraft Involved: Four F-105s vs one MIG-17

Result: Sighting only

Vicinity of Encounter: 21°40'N/105°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: Mid June 1966/unknown

BLUE Flight was on a strike mission against Thai Nguyen

11. DATA SOURCES

Project Interview: BLUE 1 - 5 January 1967

12. NARRATIVE DESCRIPTION

BLUE Flight was inbound on a strike mission against Thai Nguyen. They were heading in an easterly direction north of Thud Ridge at an altitude of 1000 ft AGL and at a speed of 500 knots. BLUE 2 sighted a MIG at 10 o'clock at 5 to 6,000 feet AGL, 3 to 4 miles out, and heading in a westerly direction. As the F-105s had been instructed to hit the target first, they did not engage. The MIG did not maneuver either and passed at a range of 3 to 4 miles.

MIG warnings had been broadcast but none were of any consequence to this flight.

[redacted]



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Event II-17

Aircraft Involved: Two F-105s vs two MIG-17s

Result: No damage

Vicinity of Encounter: 21° 36'N/105° 20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: Late June or early July 1966/1500H

BLUE flight of four F-105s were part of an F-105 strike force bombing a preselected target located at 10°30'N/105°37'E. BLUE 3 and 4 had separated from BLUE 1 and 2 during a maneuver to avoid a SAM.

2. MISSION ROUTE

BLUE flight departed Korat and joined ORANGE ANCHOR tanker for prestrike refueling. BLUE flight proceeded to check point near 22°N/104°37'E and on to target near 21°30'N/105°37'E.

3. AIRCRAFT CONFIGURATION

| | |
|---|---|
| BLUE 3, 4 | Empty MER rack and two empty 450 gal tanks |
| MIG 1, 2 | Silver color |

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered cumulus north of the Red River. Visibility 10 plus miles with haze on the deck.

| | BLUE 3 and 4 |
|---|---|
| Altitude: | Approximately 1000 feet AGL |
| Heading: | Northwest |
| Speed: | 500 KCAS |
| Fuel State: | 7500 pounds internal |

5. INITIAL DETECTION

BLUE 3 sighted two MIG-17s at 3000 to 4000 feet AGL, traveling at a speed of 400 knots, and in a close formation. Range not reported. Bearing: 12 to 1 o'clock. MIGs were identified by their high tail and their silver color.

There was no MIG alert.

6. ACTION INITIATED

BLUE 3 called "Bogies at 12 o'clock high." BLUE 3 and 4 pulled up, went into afterburner, and chased the MIGs. (BLUE 3 noted they were in afterburner for "a long time.")

7. SITUATION DEVELOPMENT

BLUE flight had reached a position 3000 feet to the rear and 1000 feet over the MIG's 7:30 sector. BLUE 3 told BLUE 4 he would take the one on the left. BLUE flight rolled and dove on the MIGs. At about this time the MIGs broke left. BLUE fired 300 rounds at MIG 1 while BLUE 4 fired 200 rounds at MIG 2. Neither BLUE member could hold his sight on his MIG as BLUE flight disengaged by breaking (4 to 5 g's) to the right.

8. ORDNANCE

| | | |
|---|---|---|
| BLUE 3 | 300 rounds 20mm | No damage observed. |
| BLUE 4 | 200 rounds 20mm | No damage observed. |

9. EQUIPMENT PROBLEMS

BLUE 3: Radar would not lock on target. It apparently was locking on the ground.

BLUE 4: Sight did not have a reticle and also could not get a radar lock on target.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 3 | 1600 | 600 | 80 | Very little ACM training, had fired at DART 3 or 4 times. |
| BLUE 4 | ------Not interviewed------ | | | |

Comments on this Encounter

BLUE 3 felt this was a minor engagement in that the two flights sort of ran into each other and one made a pass at the other and then left. When asked why he disengaged, he stated that he felt he was in a bad position so he broke it off. He knew he had a speed advantage and was capable of getting away. If he had had an airplane that could maneuver

[redacted]

with the MIG, he would have stayed and fought (unless such action was contrary to SOP). BLUE 3 is of the opinion that it doesn't make sense to slow down with the MIGs or to get into a dog fight with a MIG-17 because of its maneuverability.

11. DATA SOURCES

Project Interview: BLUE 3, 6 Jan 1967.

12. NARRATIVE DESCRIPTION

$T_0, T_1$- BLUE flight of four F-105s bombed a target at approximately 21° 32'N/105° 47'E. As they were coming off the target at 2000 feet and a speed of 500 knots CAS, BLUE 4 sighted a SAM and gave the warning: "Missiles, 9 o'clock, break," BLUE 1 and 2 broke right as BLUE 3 and 4 broke left. BLUE 3 saw the SAM and observed it closing at roughly a level angle. It passed at least 500 feet from him and blew up behind the flight. BLUE 1, 2 and BLUE 3, 4 continued as separate elements toward their return check point.

$T_2$- BLUE 3 and 4 are continuing toward the return check point at 1000 feet AGL, 500 knots CAS when BLUE 3 sighted a pair of airplanes at approximately 1 o'clock. They were recognized as MIG-17s by their high tail and silver color. BLUE 3 radioed, "Bogies at 12 o'clock high." BLUE 3, 4 pulled up and went into afterburner. (They stayed in afterburner "a long time.")

$T_3$- When they reached a point 1000 feet over and 3000 to the rear of the MIG's 7:30 position BLUE 3 called, "I'm taking the one on the left." They rolled and dove as the MIGs broke to the left. BLUE 3 fired about 300 rounds and BLUE 4 fired about 200 rounds, but neither could keep his target in the gun sight. BLUE 3, 4 disengaged by breaking right.

RED BARON EVENT II-17 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | 2000 ft AGL<br>500 KCAS climbing | B1,2 break right<br>B3,4 break left and go down within 50 ft AGL | | B4: "Missiles, 9 o'clock, break." | SA-2 missile fired at flight. | SAM came in level and passed 500 ft behind and below B3. SAM exploded behind the flight. |
| $T_1$ | Completed diving break. 1000 ft AGL 500 KCAS | | | B3 to 1: "Have lost you. Am going up the (THUD) ridge." | | |
| $T_2$ | 500 KCAS on full military power.<br>10,000 ft<br>Approx. 7500 lb of fuel internal | B3 and 4 pulled up and lit afterburners. Rolled and dove to approx. 1000 ft above MIGs. | B1 and 2 flying as independent element. | B3: "Bogeys at 12 o'clock high." | M1 and 2 in level flight, close formation flying slow (400 kt) at 3-4000 ft AGL. | |
| $T_3$ | | B3 attempted to follow turn, fired 300 rounds (one burst). Could not hold sight on M1 so broke right (4 to 5 g's) and headed for check point.<br>B4 fired 200 rounds at M2 on right. No damage. | | B3: "I'm taking left MIG." | MIGs broke hard left when B3 and 4 attacked from MIG's 7:30 position, 1000 ft up and 3000 ft out. | B3 felt he was in a bad position so broke off engagement and utilized speed advantage to get away from MIGs. |
| | | | | | | |

[redacted]

Event II-20

Aircraft Involved: Four F-105s vs two MIG-17s

Result: No damage

Vicinity of Encounter: 21°30'N/106°00'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date: 11 July 1966/unknown

BLUE Flight was inbound to JCS Target 18.24 at 21°33'N/106°30'E on a strike mission.

11. DATA SOURCES

Project Interviews: BLUE 1, 5 January 1967.

12. NARRATIVE DESCRIPTION

BLUE Flight was north of Kep flying at 50 ft altitude heading east-southeast. Bomb load was two 3,000 lb bombs per aircraft for use on a bridge target. MIGs were not to be engaged unless they posed a real threat. Two MIG-17s were sighted at 8,000 to 10,000 ft altitude headed south. No MIG warnings were received for this area. The F-105s were camouflaged, making them difficult to see from above over North Vietnamese terrain. The flight members felt that the MIGs did not see them and no maneuvering took place on either side.

[redacted]



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Event II-18

Aircraft Involved: Four F-105Ds vs four MIG-17s

Result: No damage

Vicinity of Encounter: NE rail line

1. PRIMARY MISSION AND TACTICAL SITUATION

Date: 7 July 1966 / unknown

BLUE Flight was on a strike mission against a target on the NE rail line.

11. DATA SOURCES

Letter from BLUE 3.

12. NARRATIVE DESCRIPTION

As BLUE Flight was coming off a target on the NE rail line two MIG-17s jumped the lead element. BLUE 3 accelerated to Mach 1.1 to attain a more favorable position when BLUE 4 called out two more MIGs at seven o'clock. The latter MIGs overshot and BLUE 3 and 4 turned back into them. Contact was lost due to haze and the engagement ended without loss or damage.

[redacted]

Event II-19

Aircraft Involved: One F-105F and one F-105D vs two MIG-21s

Result: No damage

Vicinity of Encounter: 21°15'N/105°48'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 7 July 66/1615H

One F-105F (BLUE 1) and one F-105D (BLUE 2) on an IRON HAND mission. BLUE 3 and 4 ground aborted. After BLUE 1 and 2 launched, a spare was launched to fill in for one of the ground aborts. However, after the spare joined the flight, BLUE 1 decided not to take a three ship flight on the mission due to the MIG environment and sent the spare home. BLUE 1 and 2 then proceeded to North Vietnam.

2. MISSION ROUTE

BLUE Flight departed Korat, refueled in Orange Anchor, and flew to 21°55'N/104°37'E (NW of Yen Bai, and down the south side of Thud Ridge toward Phuc Yen.

3. AIRCRAFT CONFIGURATIONS

F-105F BLUE 1 and F-105D BLUE 2

2 - AGM-45 on outboard stations

2 - LAU-3 on inboard stations

650 gal tank on centerline station

BLUE 2 had radar vector gear

MIG-21 MIG 1, 2

Dull silver color with no marking

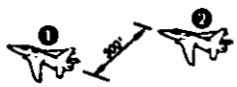
MIG-1 had 2 air-to-air missiles (probably ATOLL)

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear with 15 mi visibility except for cumulus buildups over Thud Ridge extending down to the mountain tops.

| | BLUE 1 | BLUE 2 |
|---|---|---|
| Altitude: | 7000 ft AGL | |
| Heading: | about 335° | |
| Speed: | 450 KCAS | |
| Fuel State: | Unknown | |

Flight Formation: BLUE flight in left turn



BLUE 2 500 ft out, some distance back and slightly higher.

5. INITIAL DETECTION

BLUE 2 saw a MIG-21 at 7 o'clock, low and called that a MIG-21 was attacking the flight. The MIG, when observed was about 5,000 ft behind BLUE 1 but was overtaking rapidly (at about 100 kt).

6. ACTION INITIATED

As the MIG passed over BLUE 1 the MIG reversed to a right turn in an 11 o'clock high position to BLUE 1. BLUE 1 also reversed his turn to the right to follow the MIG.

7. SITUATION DEVELOPMENT

After reversing to the right, BLUE 1 saw another MIG-21 close behind BLUE 2 and tracking. BLUE 2 then broke left and down, (never seeing the MIG) and exited in afterburner at low altitude.

BLUE 1 continued to turn right and descended but was outturned by the MIG. The MIG ended up at 3 o'clock at about 90° angle off and with these conditions and 2,000 ft range, the MIG fired two air-to-air missiles at BLUE 1. BLUE 1, who was now unloading in afterburner, observed the missiles to pass to the rear.

BLUE 1 accelerated to high speed and low altitude and the MIGs were not seen again. BLUE 1 and 2 subsequently rejoined and continued the mission without further incident.

8. ORDNANCE

| | | No. fired/No. hits (AA Missile) | Remarks |
|---|---|---|---|
| BLUE 1, 2 | No ordnance expended | | |
| MIG-1 | No cannon ordnance observed | 2/0 | Missiles fired at high angle off. |

9. EQUIPMENT PROBLEMS

BLUE 2
a. Jettison circuit malfunction - could not jettison outboard stores.
b. Visibility severely limited due to condensation around outside of canopy at high Mach. An inherent characteristic when flying in moist conditions.

10. AIRCREW COMMENTS

Experience

| | Total Hours | Combat Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | ----------Unknown---------- | | | |
| Back | 2,000 | 239 | 45 | Four years/1500 hours in B-52. |
| BLUE 2 | ----------Unknown---------- | | | |

Comments on this Encounter

BLUE 2: In the high speed dash to evade RED 2, BLUE 2 had to slow down to decrease the condensation around his canopy and consequently increase his visibility.

BLUE 2 estimated that RED 1 had approximately 560 kt on the first pass and this surprised him because he thought that the MIG-21 was limited to 500 kt at low altitude.

Comments from Overall Experience

BLUE 2 felt that BIG EYE did little more than garble up Guard Channel.

11. DATA SOURCES

Project Interviews:

BLUE 1 Backseat (9 Mar 1967)

BLUE 2 (5 Jan 1967)

Messages, Reports:

Letter from BLUE 1 Backseat (July 1967)

Letter from BLUE 1 (7 July 1967)

7AF 071650Z July, DIO 29957

7AF 071702Z July, DOCO-O 22483

7AF 071334Z July, DOCO-O 22483

DIA Intsum, 8 July 1966

USAF Fighter Weapons Center Bulletin CAD-7

12. NARRATIVE DESCRIPTION

BLUE 1 and 2 were on an IRON HAND mission. The mission route extended in the general direction of 155° along the southern side of Thud Ridge, and near the end of Thud Ridge, just above Phuc Yen. BLUE Flight received a strong signal and pulled up while B-1 launched a SHRIKE missile. After missile launch, BLUE Flight started a left turn back to the north. BLUE Flight was at 8-12,000 ft altitude at about 425 KTAS.

BLUE 2 sighted a MIG-21 closing on the flight at high speed with about 100 kt overtake, and alerted B-1. The MIG was at BLUE 2's 7 o'clock, and at BLUE 1's 6 o'clock, 5,000 ft behind BLUE 1. The MIG was passing from BLUE 1's 4 o'clock to his 10 o'clock and climbing so that while the MIG started slightly below BLUE 2, the MIG passed above BLUE 1.

Due to the approach of the MIG, it appeared that the MIG had been directed on a GCI pursuit curve but with excessive cutoff so that the MIG overshot B-1 and 2, and passed out in front.

As the MIG passed, BLUE 2 attempted to jettison external stores and track the MIG for a firing pass. However, BLUE 2 was too busy with the switches and could not simultaneously jettison stores and setup for an attack, before the MIG passed out of range.

As the MIG passed BLUE Flight, to the left, he started a right turn. This put the MIG at BLUE 1's 10 o'clock position but high above BLUE 1. At this time BLUE 1 also started a right turn to stay with the MIG. The MIG was not observed to fire during this pass.

BLUE 2 had been on the outside of the turn when the flight was turning left, but on BLUE 1's right turn BLUE 2 ended up on the inside. As BLUE 1 started to turn to the right, he observed a MIG at BLUE 2's 6 o'clock at 2,000 ft range and apparently tracking BLUE 2, BLUE 1 called for BLUE 2 to break and BLUE 2 did so, although BLUE 2 never saw this MIG. (BLUE 1 indicates that his instructions were for BLUE 2 to break left, although BLUE 2's actions were described as a break to the right.)

BLUE 2 executed a maximum g descending turn to the deck, simultaneously going to afterburner and jettisoning stores (except for the outboard stores which hung). BLUE 2 descended to treetop level (about 500 ft) and accelerated to Mach 1.1. He went up a valley through the clouds over Thud Ridge. BLUE 2 left the Ridge on the north side, turned to a heading of NW, came out of afterburner and subsequently joined on BLUE 1 with a DF steer, by crossing back over the ridge.

BLUE 1 and the first MIG continued to turn right, with BLUE 1 continuing to descend and tighten the turn. The MIG, [illegible], outturned BLUE 1 however, so that after approximately 180° of turn the MIG was at 90° angle off to BLUE 1 and at BLUE 1's 3 o'clock position. The MIG then simultaneously launched two air-to-air missiles from 2,000 ft range at 3 o'clock, 90° angle off. The missiles passed behind BLUE 1, as did the MIG and BLUE 1 unloaded and accelerated (in afterburner) away towards the clouds at low altitude, reaching 650 KTAS by the time minimum altitude was reached. The MIG was not seen again. BLUE 1 was now heading back to the northwest on the south side of Thud Ridge.

After joining with BLUE 2, who crossed back over the Ridge, the flight turned around and headed back down the Ridge to continue the mission. Just before leaving the mission area, BLUE 1 launched his remaining SHRIKE at a SAM site, and BLUE Flight egressed on a similar route as the ingress.

[redacted]

Event II-21

Aircraft Involved: Part (a) one F-105 vs two MIG-21s
Part (b) one F-105 vs two MIG-21s

Result: No Damage (One F-105 destroyed when aircraft ran out of fuel — pilot recovered).

Vicinity of Encounter: 21°30'N/105°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 11 Jul 1966/0705Z

BLUE flight, a flight of four 105s was on an IRON HAND SAM suppression mission 25 miles northeast of Hanoi. Two separate engagements occurred in the vicinity of Thud Ridge as the flight was egressing the target area.

2. MISSION ROUTE

The route of flight was from Takhli, direct to the tanker, direct to the northwest end of Thud Ridge, and east to the Kep area (northeast of Hanoi). The egress route was back to Thud Ridge, southwest across the Red River to Takhli.

3. AIRCRAFT CONFIGURATIONS

F-105F BLUE 1, 3

2 - AGM-45
1000 rd 20mm

F-105D BLUE 2, 4

2 - LAU-3 rocket pods
1000 rd 20mm

All 105s 650-gal bomb bay tanks.

MIG-21

2 - AAM (known)
Aircraft silver with Red Star on wing.
No drop tanks.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Broken clouds, 5/8 coverage, bases 3 to 4000 ft, tops 6000 ft, 5 miles in haze below clouds, clear and 7 miles plus above clouds. BLUE Flight had just attacked a SAM site and the flight had become separated from each other. All four aircraft were approaching Thud Ridge from the east individually.

| | BLUE 2 | BLUE 4 |
|---|---|---|
| Altitude: | 6000-7000 ft MSL | 6000-8000 ft MSL |
| Heading: | SSE | 250°-270° |
| Speed: | 450 KCAS | 350 KCAS |
| Fuel State: | Bingo | Bingo |
| Flight Formation: | Single Ship | Single Ship |

5. INITIAL DETECTION

MIG warnings had been received; however, they were not called in the same area that BLUE Flight was working.

a. BLUE 2 sighted two unidentified aircraft at 12 to 1 o'clock, 4-5 miles, which he assumed to be members of his flight.

b. BLUE 4 sighted two MIG-21s at 4 o'clock, 2000 ft high, in a pursuit curve attack.

6. ACTION INITIATED

a. BLUE 2 closed in a tail chase attempting to join on the two unidentified aircraft (MIG-21s) assumed to be friendly.

b. BLUE 4 jettisoned tanks and pylons, went afterburner, and dived straight ahead.

7. SITUATION DEVELOPMENT

a. When BLUE 2 had closed to approximately 2 miles one of the then identified MIG-21s made a hard right climbing break and the other MIG continued straight ahead. BLUE 2 jettisoned external stores, went afterburner, and initiated a hard right 180 degree turn. As BLUE 2 started to roll out of this right turn he saw a MIG-21 "canopy to canopy" approximately 30 degrees ahead, 500 ft high and to the right. BLUE 2 then broke right, down, and under, rolling out "on the deck" and egressed the area supersonic at minimum altitude.

[redacted]



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b. After accelerating to 600 KCAS, BLUE 4 broke hard right and continued around to meet one of the MIGs head-on. This MIG broke up and to the right and BLUE 4 reversed into a climbing left barrel roll to keep the MIG in sight. The MIG began descending in his right turn and BLUE 4 continued the roll over the top to a 6 o'clock trail position, 2000 ft behind the MIG. The MIG started down through the clouds on a northerly heading and BLUE 4 broke off in a left climbing turn towards home. After establishing a climb, BLUE 4 banked left to clear his tail and saw the other MIG-21 approximately 2000 ft behind him in a firing position. As BLUE 4 went to afterburner and broke hard left and down, this MIG fired two air-to-air missiles which appeared to track to the left but could not match BLUE 4's turn and passed behind the F-105. The MIG broke up and to the left rolling over the top and reversing direction for a northerly descent toward the clouds. Although BLUE 4 had achieved a trail position on the MIG by pulling up and rolling out over the top in his left turn, fuel considerations required him to disengage and egress from the area.

## 8. ORDNANCE

F-105 -- None.
MIG-21 -- One MIG-21 fired two AAMs at BLUE 4.

## 9. EQUIPMENT PROBLEMS

a. BLUE 2 -- Lost modular cooling, IFF, and all flight instruments during his low altitude supersonic egress. The fuel quantity gauge was also suspected to be malfunctioning.

b. BLUE 4 -- Experienced a UHF radio failure during the strike on the SAM site. The bomb bay tank would not feed normally due to a continually popping circuit breaker.

## 10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 2 | 3000 | 350 | 51 | Considerable tactical fighter experience. |
| BLUE 4 | --- Hours not available --- | | | Considerable tactical fighter experience. |

BLUE 2 felt that if he had been equipped with AAMs he may have had a shot at the MIGs. Also he would have been more psychologically prepared for an air-to-air encounter.

The turning radius of the MIG-21 caught BLUE 2 by surprise.

BLUE 2 believed that the MIG flight could not have detected his approach and received warning from GCI or other MIGs in the area.

The canopy on BLUE 2's aircraft was completely obscured with vapor from 2 to 10 o'clock back on both sides as he was going supersonic on the deck. This prevented him from clearing his 6 o'clock position to determine if the MIG had disengaged.

BLUE 4 commented that he thought the maneuverability of the F-105 at high speed caught the MIGs off guard. BLUE 4 felt that for both instances when he was at the MIG's 6 o'clock position, he was too close to use an AAM.

Both pilots complained about the complicated switch settings required to change from the ground attack mode to the air-to-air attack mode.

## 11. DATA SOURCES

Project Interview: BLUE 2 (2 Feb 67) and BLUE 4 (8 Mar 1967)
Messages:
OPREP-3 DOCO-0 22712 Jul 66
AF Command Post Message S-12-02, 12 Jul 66
DAI Message 29986 Jul 66
Det 5 Udorn Thailand Message 30666 Jul 66
USAF Fighter Weapons Center Bulletin - 7.

## 12. NARRATIVE DESCRIPTION

a. BLUE 1 and BLUE 2 initiated a follow-up gun and rocket attack on a visually acquired SAM site following a SHRIKE launch. BLUE 2 became separated from his leader as both aircraft pulled off the target and entered a cloud jinking to avoid heavy AA and automatic weapon fire. BLUE 2 broke out on top at 5-6,000 ft on a westerly heading toward the northern edge of Thud Ridge and requested a DF steer from BLUE 1. After turning 45° to 80° left to the indicated DF heading, BLUE 2 saw two dots of aircraft in the distance on a southerly heading toward Thud Ridge. When the two aircraft made a left turn to parallel Thud Ridge, BLUE 2 became concerned and asked BLUE 1 if he was in a left turn. When BLUE 1 confirmed a left turn, BLUE 2 initiated a cutoff to join and maneuvered into a closing trail position 4 miles behind the two aircraft now flying down Thud Ridge about 3000 ft above the Rid[redacted] BLUE 2 closed to a 2 mile trail position,

approximately 2000 ft below the two aircraft, he realized that they were not F-105s. He then noticed that his reticle was not on and because of the complicated switching arrangements did not believe he was set up to fire his guns. At that instant the aircraft on the right broke sharply up and to the right and the other aircraft continued straight ahead. The Red Star and the MIG-21 top profile was immediately identified. BLUE 2 went afterburner, jettisoned external stores and made a hard right 180 degree turn to parallel Thud Ridge northbound. As BLUE 2 relaxed "g's" and started to roll out he sighted a MIG-21 in an inverted "canopy to canopy" position, approximately 30 degrees ahead, 500 ft high and to the right. BLUE 2 broke right into the MIG pulling the nose down and rolling under to recover at minimum altitude "on the deck" heading northwest "hugging" the northside of Thud Ridge. Although he had lost cooling and flight instruments, BLUE 2 knew he was supersonic due to the vapor that formed around his canopy obscuring all rearward visibility from 2 o'clock and 10 o'clock aft. Since BLUE 2 could not clear his 6 o'clock position to determine if the MIG had disengaged, he crossed Thud Ridge through a valley and continued west in supersonic flight on the deck jinking hard right and left until crossing the Red River. After crossing the Red River with 2000 lb indicated fuel remaining, BLUE 2 came out of afterburner and zoomed to 25,000 ft continuing a full military climb to 35,000 ft. GCI was saturated with three other emergency fuel aircraft and had only intermittent skin paints on BLUE 2 since his IFF was inoperative. BLUE 2 flamed out shortly after gaining visual contact with the tanker and ejected descending through 4000 ft.

b. BLUE 4 became separated from the flight as the flight maneuvered into a broken 5-6000 ft area of cumulus clouds for a follow-up attack after BLUE 1 launched a SHRIKE missile at a SAM site. BLUE 4 then noted that his bomb bay tank had not fed properly and he had a low fuel indication. He pulled off of the target and also discovered his radio was inoperative when he could not contact his flight. BLUE 4 climbed out to the west topping the clouds at 5-6000 ft as he approached Thud Ridge. He discovered he could get intermittent bomb bay tank fuel by constantly resetting a popped circuit breaker. As BLUE 4 was climbing through 6-8000 ft at 350 KCAS, he sighted two MIG-21s approximately 2000 ft high and closing in a pursuit attack curve from 4 o'clock. BLUE 4 jettisoned his tanks and pylons, went afterburner and accelerated to 600 KCAS in a straight dive to 2000 ft. BLUE 4 broke hard right and continued around in his turn to meet one of the MIGs head-on. BLUE 4 did not see the other MIG at this time. When the MIG broke up and to the right, BLUE 4 reversed his turn and entered a climbing left turn to keep the MIG in sight. When the MIG started a descent in his right turn, BLUE 4 continued a left barrel roll over the top and rolled out approximately 2000 ft behind the MIG. As the MIG continued down on a northerly heading toward the clouds, BLUE 4 broke off in a left climbing turn toward home hoping to nurse enough fuel out of the bomb bay tank to reach a safe bail-out area. After establishing a climb and resetting the fuel circuit breaker, BLUE 4 banked left to clear his tail and saw the other MIG-21 approximately 2000 ft behind him in "perfect" firing position. BLUE 4 went afterburner and broke hard left and down just as the MIG launched two air-to-air missiles. Although the missiles appeared to initially start tracking to the left, BLUE 4 believed that the hard break at 600 KCAS down and into the ground clutter defeated missile guidance and caused them to pass behind him without observed detonation. After firing, the MIG broke up and to the left, rolling over the top and reversing direction for a northerly descent toward the clouds. Although BLUE 4 had achieved a trail position on the MIG by pulling up and rolling out over the top in his left turn, fuel considerations required him to disengage and egress from the area. BLUE 4 was able to successfully feed out his bomb bay tank by continually resetting his circuit breaker. He made a no-radio recovery at Udorn with 200 lb of fuel remaining.

[redacted]

Event II-22

Aircraft Involved: Four F-105s vs one MIG-21

Result: Sighting only

Vicinity of Encounter: 21°28'N/104°50'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 July 1966/Unknown

11. DATA SOURCES

Messages, Reports: Message 7th AF 142254Z, DIO 0003, July 66, Part IV.

12. NARRATIVE DESCRIPTION

A MIG-21 was sighted by BLUE Flight (four F-105s) at 21°28'N/104°50'E near the Black River. The MIG was low beneath clouds on a 120° heading. When BLUE Flight turned toward the MIG, the MIG turned to 50° and then to a 310° heading. The MIG was lost in clouds before BLUE Flight could close. No markings were observed due to distance.

[redacted]



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Event II-23

Aircraft Involved: Eight F-105s vs four MIG-17s

Result: One F-105 lost; one F-105 damaged; three MIG-17s damaged

Vicinity of Encounter: 21°13'N/105°48'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 July 1966/1611H

Four flights of four F-105 aircraft on ROLLING THUNDER mission to strike JCS-51, a POL storage 7 n mi north of Hanoi. The flights were one to three minutes apart and following identical route. The first four F-105s (BLUE Flight) and the second flight of four F-105s (GREEN Flight) were the only flights to engage hostile aircraft; however the third flight had visual sighting of the encounter. Two IRON HAND flights (4 F-105s) and their supporting MIGCAP flights (F-4Cs) were within 25 n mi of the target, one flight north and the other northwest of the target area. Also ABN/GCI EC-121 aircraft were supporting the strike mission along with B-66 ECM aircraft. For the location of these aircraft, see Figure 1.

2. MISSION ROUTE

Sixteen F-105s including BLUE and GREEN Flights departed Takhli Air Base for pre-strike refueling on Orange Anchor track extended N to 20° direct to 22°N/104°32'E direct 21°45'N/105°13'E direct target 21°10'08"N/105°59'21"E. After crossing Red River and proceeding on a 135° heading at 4,000 ft, four missiles were observed converging on BLUE Flight. Missiles were evaded by changing altitude and heading. Flight continued through heavy small arms and 85mm fire to vicinity 21°13'N/105°48'E where aerial encounter commenced. BLUE 3 and 4 became separated from BLUE 1 and 2 during missile evasive action. One to three SAMs were also fired at GREEN Flight as they passed 21°49'N/105°13'E. Post-strike refueling was on Red Anchor.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 4

5 - 1000 lb GP bombs
2 - 450 gal tanks

BLUE 2

4 - 1000 lb GP bombs
1 - camera pod
2 - 450 gal tanks

BLUE 3

4 - CBU-24
2 - AIM-9B
2 - 450 gal tanks

Lead aircraft IFF on, TACAN plus doppler. All aircraft camouflage paint.

F-105 GREEN 1, 3, 4

2 - 3000 lb bombs
1 - 650 gal tank centerline

GREEN 2

4 - CBU-24
2 - AIM-9B

MIG-17 1, 2, 3, 4

Silver color with Red stars and had afterburners.
No external ordnance or tanks.

MIG-17 5 (This aircraft not engaged, visual sighting only)

Silver color
Underwing drop tanks

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear, visibility unlimited

| | BLUE Flight | GREEN Flight |
|---|---|---|
| Altitude: | 4000 ft AGL | 4500 ft |
| Heading: | 135° | 135° |
| Speed: | 480 kt | 480 kt |
| Fuel State: | Unknown | Unknown |

Flight Formation

BLUE Flight not clearly determined. They probably started in normal fluid-four



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[redacted]



formation, aircraft lined abreast, 500 to 1500 ft out for wingmen and 1500-3000 ft between lead and No. 3. During missile evasion the elements became separated, the exact distance of separation is not known.

GREEN Flight formation was fluid four, aircraft abreast, wingmen out 500-1500 ft.

5. INITIAL DETECTION

Missile and MIG warnings were issued on Guard Channel according to airborne GCI aircraft's log. However, BLUE and GREEN Flights did not receive warnings according to their reports. BLUE Flight was approaching Initial Point (IP) and had been jinking to avoid ground fire but generally heading 135° at 4000 ft with BLUE 3 and 4 a short distance behind BLUE 1 and 2. GREEN Flight one to three minutes behind BLUE Flight. Three MIG-17s approached BLUE 1 and 2 from 6 o'clock position, slightly higher than level with guns firing. BLUE 2 was the first to observe MIGs and called them over the radio. BLUE lead confirmed. Time of initial engagement 1611H.

6. ACTION INITIATED

BLUE 2 called out MIGs. BLUE one transmitted "Roger MIGs - clean it up." BLUE 1 and 2 jettisoned all external stores and broke into the firing MIGs. This is estimated to be a right break. The relative MIG positions in their attack formation is not known. BLUE 3 sighted MIGs attacking BLUE 1 and 2 and initiated a gun pass.

7. SITUATION DEVELOPMENT

BLUE 1 and 2 broke into the three MIGs who were at 6 o'clock firing. BLUE 3 closed on MIGs, got a 90° deflection shot with gun at MIG 2 and observed pieces fly from the left wing and a puff of smoke. MIG 2 broke left, leaving encounter, leveled out and started a slight climb, heading toward Phuc Yen airfield. BLUE 3 and 4 continued after MIG 2 while BLUE 1 and 2 attempted to gain advantage of MIG 1 and 3. BLUE 3 set switches for missiles and launched 1 AIM-9B at MIG 2 4,000 ft in trail at 3-4000 ft AGL. Missile observed to head for ground, no apparent guidance. As MIG 2 started turn BLUE 3 launched second AIM-9B which did not hit target. Suspected reason for miss was missile g limits exceeded in turn. BLUE 3 continued attack with gun, observed no hits. MIG 2 broke sharply for ground causing BLUE 3 to overshoot. BLUE 3 and 4 then continued to target.

Shortly after the encounter started, GREEN 1 asked BLUE 1 if he needed any help. BLUE 1 replied "No, hit the target." As GREEN Flight passed the encounter GREEN 2 witnessed BLUE 1 and 2 with two MIG-17s "going around in circles in a lufberry at 3 to 4000 ft." BLUE 3 and 4 were not sighted by GREEN Flight. GREEN Flight continued on to target.

(From this point, the statements and reports are conflicting and confusing. All members of BLUE Flight are "Missing in Action" or "captured" and were not available for interview. The following is one logical sequence of events but the timing is not concretely supported by all reports and interviews.)

BLUE 1 and 2's ensuing encounter with MIG 1 and 3 lasted for 13 to 15 minutes. Maneuvers in "dogfight" reached from near the surface to 7000 ft and from point of initial encounter southeast to Phuc Yen airfield, with the majority of encounter in vicinity of Phuc Yen. MIGs made approximately 7 passes on BLUE 1 and 2. Maneuvers included "lufberry," "hard turns" with maximum power and "scissors." During this time period, GREEN Flight hit fragged target, probably ahead of BLUE 3 and 4. During GREEN Flight's delivery of ordnance, BLUE 1 requested assistance from both strike and CAP flights. GREEN 3 and 4 came off delivery run and proceeded NW towards foothills north of Phuc Yen where MIG 1 and 3 were spotted, engaged in tight turns at 500-1000 ft over the terrain at the 6 o'clock position of BLUE 1 and 2. All aircraft were at low airspeed with BLUE 1 and 2 losing out. GREEN 3 and 4 rolled in from above the MIGs at high airspeed, fired gun at MIG with no results, overshot, and yo-yo'd up to kill off airspeed and attempted to keep engagement in sight. GREEN 3 and 4 lost sight of encounter in turn reversal at top of yo-yo and proceeded south toward Phuc Yen. At Green 1 and 2's completion of ordnance delivery, GREEN 2 was hit with ground fire. Since G-2's ordnance was for flack suppression, and not required, it was dropped on trains in target areas. This caused separation of GREEN 1 and 2 and required a period of time for GREEN 1 and 2 to get rejoined and determine extent of damage to GREEN 2.

While GREEN 1 and 2 were rejoining, BLUE 3 and 4 delivered their ordnance on fragged target and turned N toward Phuc Yen to answer BLUE 1's call for help. After GREEN 3 and 4's pass at MIGs and while BLUE 3 and 4 proceeded northward, BLUE 2 in steep left turn was hit (believed but not confirmed to be MIG fire). BLUE 2 broke right and stated he had been hit. MIG 3 overshot and rolled back in behind BLUE 2 allowing BLUE 1 to get behind MIG 3 and damage horizontal stabilizer of MIG 3 with 20mm. MIG 3 then broke off BLUE 2 and engaged BLUE 1 with MIG 1. BLUE 2 stated he was heading out 240° and shortly thereafter said he "had to get out" and ejected at approximately 21°22'N/105°44'E. A beeper was heard from a parachute soon after BLUE 2's ejection. BLUE 1 was then hit by MIG fire and transmitted that he was over Phuc Yen with MIG in tail and had been hit.

GREEN 1 and 2, now rejoined, were directed by BLUE 1 to his position and GREEN 1 and 2, observing MIGs on BLUE 1, attacked fr[redacted]lock with gun. GREEN 1 started



[redacted]

firing at 3000 ft range and fired down to 50 ft damaging MIG 1's right wing. MIG 1 broke left causing GREEN 1 to overshoot. GREEN 2 with missiles attempted to track and turn with MIG 1 but was unable to track MIG using 6 gs. MIG 1 departed engagement and enabled BLUE 1 to disengage by use of afterburner descent, outrunning MIG 3.

As BLUE 3 and 4 approached Phuc Yen to aid BLUE 1, MIG 4 was encountered heading eastward. BLUE 3 and 4 rolled in behind MIG 4 with BLUE 3 firing as the encounter crossed Phuc Yen airfield from East to West at 500-1000 ft. BLUE 3 overshot and MIG 4 broke off and headed South. No hits observed. This encounter was witnessed by GREEN 3 and 4 as they crossed Phuc Yen after their pass at MIG 1 and 3 behind BLUE 1 and 2. The North Viets were firing 37mm at MIG-4 and BLUE 3 as they crossed the airfield. BLUE 3 and 4 made another sweep around Phuc Yen observing a fifth MIG with underwing drop tanks. This MIG not engaged as BLUE 3 took a hit from ground fire and was below bingo fuel. GREEN 3 and 4, encountering heavy flak, egressed area also.

8. ORDNANCE

| | (No. fired/No. hits) AIM-9B | 20mm | Remarks |
|---|---|---|---|
| BLUE 1 | 0/0 | 1/1 | Hit MIG 3 with one burst 20mm. |
| BLUE 2 | 0/0 | unk/unk | Pilot did not return from mission, but not suspected that he fired. |
| BLUE 3 | 2/0 | 3/1 | Fired two AIM-9B at MIG 2. First missile did not guide. Second missile did not hit. Suspected exceeding "g" limits. |
| | | | Hit MIG 2 with 20mm. Fired second 20mm burst at MIG 2. No hits observed. Fired 20mm at MIG 4 with no observed hits. |
| GREEN 1 | | 1/1 | Hit MIG 1 in right wing with 20mm. |
| GREEN 3 | | 1/1 | Fired 20mm but observed no hits. |
| | | 23/37mm | |
| MIG 1 | | yes/yes | Hit BLUE 1 with cannon fire. |
| MIG 2 | | yes/no | Fired at BLUE 1 and 2, no hits. |
| MIG 3 | | yes/yes | Shot down BLUE 2. |

9. EQUIPMENT PROBLEMS

Malfunctions

BLUE 3 First SIDEWINDER (AIM-9B) headed for ground, no apparent guidance.

GREEN 1 Gunsight grossly out of calibration.

Shortcomings

1. Communications difficulties due to range limitations, altitude (possible terrain masking) and single frequency usage by all strike and support aircraft. Neither MIGCAP aircraft nor strike aircraft heard MIG warnings issued at 1428, 1555, 1604L on guard frequency (243.0) by ABN/GCI aircraft. All aircraft indicated radio equipment fully operational.

BLUE 1 called MIGCAP for help on strike frequency but MIGCAP did not hear BLUE 1's call and remained unaware of engagement. MIGCAP was 18 mi from engagement at altitudes varying from 3000 ft to 14,000 ft supporting IRON HAND Flight. Altitude of BLUE Flight during engagement varied from 500 ft to 7000 ft. MIGCAP is expected to react immediately to a call from strike aircraft and MIGCAP is on the same frequency as strike aircraft. Frequency extremely crowded during engagement.

2. Inferior maneuverability of the F-105 against MIGs is, again, well established by the MIGs being able to make seven passes against BLUE 1 and 2 before making a mistake. Also GREEN 2 was unable to get sight on maneuvering MIG using 6 gs.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | |
|---|---|---|---|---|
| GREEN 2 | 500 | 300 | 45 | Air-to-air experience F-105 checkout Nellis. One dart mission. One AIM-9B firing. |
| GREEN 3 | Experience unknown | | | |

Comments on this Encounter

Radio communications were all but impossible due to the entire strike force, ECM, WILD WEASEL and Navy GCI aircraft being on the same UHF frequency. When engaging enemy aircraft and evading SAM activity the frequency cannot be used effectively (GREEN 3).

There were indications of ground control of the MIGs. The entire operation was unusual. First, they encountered SAMs, then heavy flak, then the MIGs and it was GREEN 2's impression that this was a coordinated effort against the strike force (GREEN 2).

MIG pilots weren't looking around enough (GREEN 2).

GREEN 1 should have got MIG, almost collided with him.
Gun shooting to right (GREEN 2).

Reason for GREEN 1 making gun attack rather than allowing GREEN 2, who was configured for air-to-air (2 AIM-9B), to make attack unknown. "GREEN 1 did what was natural," i.e., GREEN 1 saw MIG and went after him. (GREEN 2).

Comment from Overall Experience

Too many switches to change to set up missiles and gun. (GREEN 2).

MIGCAP missions were not useful to strike aircraft. They were usually too far away to be of any help. (GREEN 2)

The importance of having the M-61 cannon for MIG encounters at low level hasseling cannot be overemphasized. (GREEN 3)

11. DATA SOURCES

Project Interviews: GREEN 2 5 Jan 1967

Messages:

7AF OPREP 3, 112115Z Jul 66 DOCO-0 23174
355TFW Aircraft Mishap Report, 0 191157Z; DOC P-66-S0625 Jul 66
7AF Fastel; 221007Z; DOCO Fastel 197 Jul 66
7AF Flap Item Report, Z2302482; DOCO 23346 Jul 66

Other:

Letter, GREEN 3
Letter, Member of third flight of four F-105's against target JCS-51
USAF Fighter Weapons Center; Bulletin - 7

12. NARRATIVE DESCRIPTION

BLUE and GREEN Flights (4 F-105s ea) were the first and second flights of four flights of F-105s fragged to strike JCS target #51 (POL storage 7-8 n mi N Hanoi) on 19 July 1966 at 1-3 minute intervals. IRON HAND, MIGCAP, GCI and ECM aircraft were in target area to support strike. Both BLUE and GREEN Flights had SAMs fired at them passing the northwestern end of Thud Ridge. SAMs were evaded by both flights but separated the elements of BLUE Flight (lead strike flight). Missile and MIG warnings had been issued by airborne GCI but warnings were not received by Strike or MIGCAP aircraft. At the SE end of Thud Ridge approaching IP, three MIG-17s attacked BLUE 1 and 2 from 6 o'clock slightly high. BLUE 1 and 2 jettisoned ordnance and broke into MIGs allowing BLUE 3 who was a short distance behind to get a 90° deflection shot hitting MIG 2 who then broke left, leaving engagement, and started a slight climb heading toward Phuc Yen airfield. BLUE 3 and 4 pursued MIG 2 while BLUE 1 and 2 were engaged in a 15 minute "dogfight" with MIG 1 and 3. "Dogfight" consisted of "lufberry," "scissors" and hard turns with afterburner and ranged in altitude from surface to 7,000 ft AGL. GREEN Flight, hearing and observing BLUE 1 and 2's encounter, offered assistance but were advised to strike target by BLUE Lead which they did. BLUE 3 launched two AIM-9Bs at MIG 2, the first not guiding and the second missed possibly due to exceeding g limits. BLUE 3 made follow-up gun pass at MIG 2 observing no hits and overshooting as MIG 2 broke sharply towards ground. BLUE 3 and 4 then proceeded to target and expended ordnance.

MIG 1 and 3 accomplished seven passes at BLUE 2 while GREEN Flight and BLUE 3 and 4 expended ordnance. BLUE 1 decided he needed help and called for it. MIGCAP did not receive call, however GREEN Flight responded. GREEN 3 and 4 came off target and proceeded NW toward Phuc Yen AF where they observed BLUE 1 and 2 losing engagement. GREEN 3 and 4 made gun firing pass from above the MIGs, observed no hits, overshot with high airspeed,

yo-yo'd up to reposition; lost sight of encounter and proceeded south over Phuc Yen where they observed BLUE 3 and 4 in pursuit of MIG 4 heading east directly over Phuc Yen at low altitude receiving 37mm flak. BLUE 3 fired gun at MIG 4, observed no hits and overshot as MIG 4 broke south toward Hanoi disengaging.

At this point BLUE 2, in steep left turn, was hit (probably by MIG fire but not confirmed). BLUE 2 broke right causing MIG 3 to overshoot and roll back in allowing BLUE 1 to position behind MIG and hit horizontal stabilizer of MIG 3 with 20mm. MIG 3 broke off BLUE 2 and got behind BLUE 1 along with MIG 1. BLUE 2 called he was heading out 240° and soon stated he had to get out. A parachute beeper was heard shortly thereafter. BLUE 1 was then hit by MIG 1 and called "over Phuc Yen with MIG in trail and have been hit."

GREEN 1 and 2, after some delay and difficulty rejoining off target, were vectored to BLUE 1's position by BLUE 1. GREEN 1, observing BLUE 1's predicament, elected to make gun pass rather than utilize his wingman's (GREEN 2) SIDEWINDERS. GREEN 1 opened fire at MIG 1 at 3000 ft and fired down to 50' nearly colliding with MIG 1 but getting hits in right wing of MIG and causing MIG 1 to break off BLUE 1. This enabled BLUE 1 to disengage by nosing down, lighting A/B and outrunning MIG 3. GREEN 2, out of position when GREEN 1 initiated pass, attempted to position behind MIG 1 for AIM-9B shot but was unable to get into missile envelope due to high g (+6 gs). GREEN 1 and 2 overshot their passes, lost sight of MIGs, rejoined, and straffed trucks in area of encounter. Reason fuel and ammunition not used for RESCAP unknown.

BLUE 3 and 4 meanwhile made another sweep around Phuc Yen airfield and observed a fifth MIG, configured with drop tanks, in turn over east end of runways. This MIG not engaged as BLUE 3 received hit from flak and egressed area. GREEN 3 and 4 also encountered heavy flak and egressed area. GREEN 3 and 4 also encountering heavy flak over Phuc Yen egressed area westward.

BLUE 1, 3 and 4 and all of GREEN Flight recovered safely. BLUE 2 was not recovered.

The third flight struck the target and sighted the encounter but took no active part. The fourth flight also hit the target.

The MIG warnings issued by the EC-121 Ethan Bravo were broadcast on guard frequency (243.0) at 1428H, 1555H, and 1604H. The MIGCAP aircraft did not hear these MIG calls although their radio equipment was operational. Their flight altitudes varied from 3,000 to 14,000 feet so the CAP flights could have been too low to receive UHF transmission. This could also explain the failure of BLUE Flight to receive the MIG warnings.

The MIGCAP was called on-strike frequency (277.2) by BLUE 1 but neither flight heard it, although they were close enough earlier to observe the SAM firings. BLUE 2 is listed as missing.

## RED BARON EVENT II-23 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | BLUE Flight 480 kt, 4,000 ft 135° heading-jinking to avoid flak BLUE 3 & 4 short distance behind B1 & 2 | B2 calls MIGs. B1 confirms. B1 & 2 jettison stores and break into MIGs | GREEN Flight 1-3 min. behind BLUE Flight. GREEN Flight 500 kt, 4,500 ft goes to full mil power | B2 calls MIGs. B1 "Roger - MIGs - Clean it up" | MIG 1, 2 & 3 6 o'clock slightly high, firing on B1 & 2 | IRON HAND, MIG-CAP, ECM B-66, ABN/GCI on station supporting strike<br>MIG warnings transmitted but not received by Strike or MIGCAP aircraft<br>B3 & 4 separated from B1 & 2 due to evading SAMs fired at them earlier |
| $T_1$ | | B3 got 90° deflection shot with gun hitting M2 in left wing | GREEN Flight closing on BLUE Flight | | M2 breaks left when hit, leaving encounter and starts slight climb toward Phuc Yen. M1 & 3 continue 6 o'clock B1 & 2 | Pieces fly from M2 left wing with a puff of smoke.<br>MIGs silver in color with Red Star markings and equipped with afterburners. MIGs had no external stores or ordnance. |
| $T_2$ | B3 & 4 3-4,000 ft<br>B1 & 2 Altitude and A/S varying | B3 & 4 behind M2 4,000 ft<br>B3 launches AIM-9B at M2 - No guidance<br>B1, 2 engaged in lufberry and scissors with M1, 3 | GREEN Flight, passing B1 & 2 Engagement, continues to target. G2 sees B1 & 2 and MIGs<br>B2 sees B1 & 2 and MIGs | GREEN 1 asks BLUE 1 if he needs help.<br>B1 "Negative - Hit the target" | M1, 3 overshoot and reposition<br>M2 wings level, slight climb | AIM-9B headed for ground after launch |
| $T_3$ | | B3 launched second AIM-9B at M2 turning left. No hit<br>B1, 2 in lufberry with M1, 3 | GREEN Flight accelerating for pop-up | | M2 starts left turn causing missile to miss | Second AIM-9B miss possibly due to exceeding g limits |

RED BARON EVENT II-23 SUMMARY

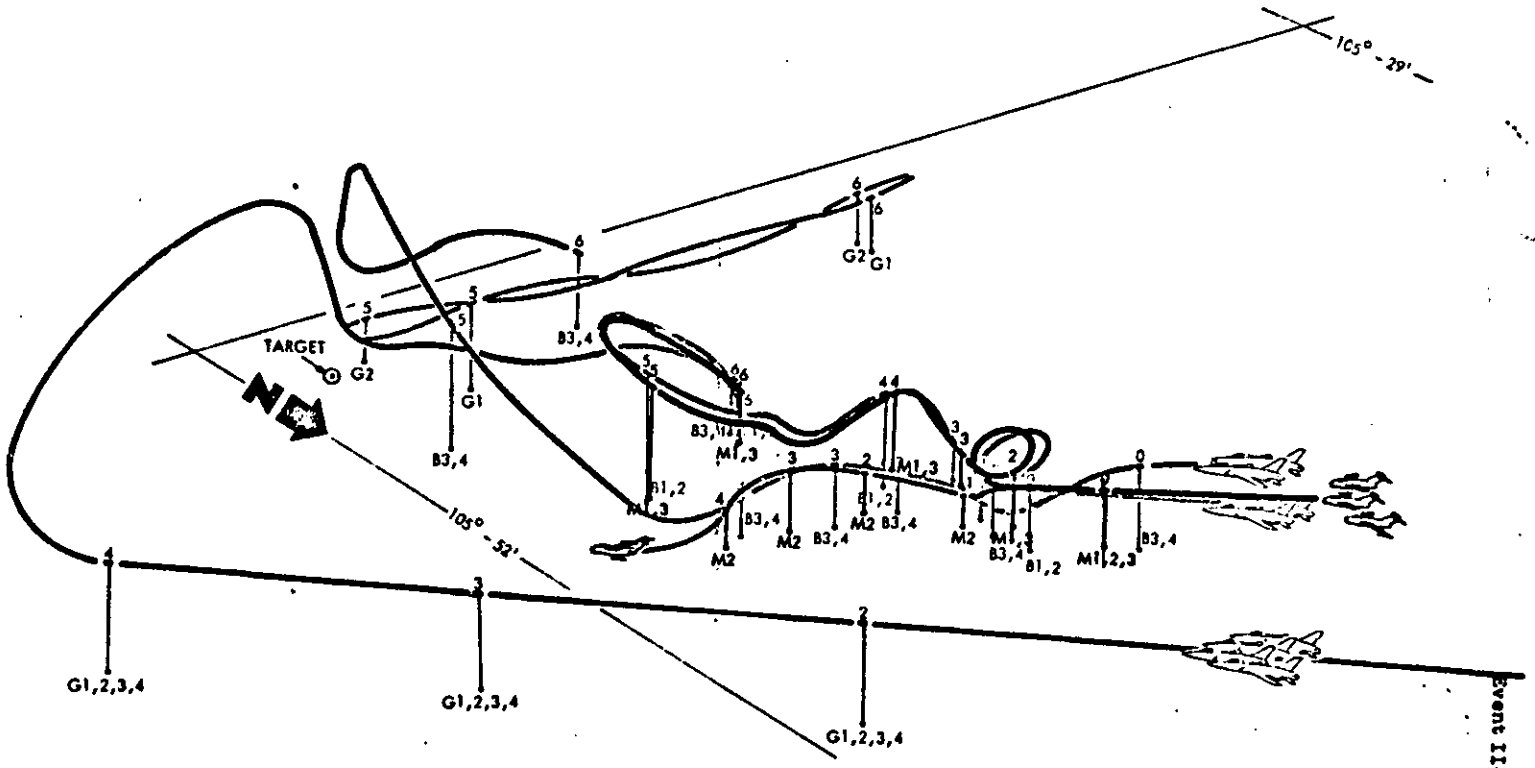
| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_4$ | B1 & 2 altitude from surface to 7,000 ft in dogfight | B3 made follow-up gun pass at M2<br>No hits observed - overshot<br>B3 & 4 head for target<br>B1 & 2 continued engagement with M1, 3. | GREEN Flight - pop up and deliver ordnance.<br>Maximum Alt 12 - 15,000 ft above ground | | M2 broke sharply for ground causing B3 to overshoot.<br>M2 heads south disengaging | Target 7-8 n mi south Phuc Yen Airfield<br>G2 went missiles air on weapon select; search and attack on radar for sight, selected outboard stations. (Earlier checks had obtained good grounds on the missiles) |
| $T_5$ | G3, 4 climbing | G3, 4 off target, head for Phuc Yen to assist B1, 2<br>B1 & 2 losing engagement | G2 delivers CBU on trains in target area.<br>G1 & 2 separated<br>B3 & 4 deliver ordnance on target | B1 calls for assistance<br>MIG CAP does not hear B1 request for help | M1 & 3 make a total of seven passes at B1 & 3 during 15 min engagement | Maneuvers in dog fight "lufberry" "scissors" and hard turns |
| $T_6$ | | G3 & 4 make gun pass at M1 & 3 behind B1 & 2.<br>G3 & 4 overshoot and yo-yo up lossing sight of engagement and head south. No hits on M1 & 3 observed | B3 & 4 off target, head for Phuc Yen<br>G1 & 2 trying to rejoin | G1 and G2 talk while trying to join up | M1 & 3 maintaining advantage behind B1 & 2 | |
| $T_7$ | | B2 hit (probably by M3) breaks right hard causing M3 to overshoot<br>B1 gets behind M3 and hits M3 horizontal stabilizer with 20mm | G1 & 2 rejoined head toward Phuc Yen<br>B3 & 4 spot M4 heading east approaching Phuc Yen | B2 calls he has been hit "Am heading out 240o"<br>B1 & G1 talking to establish contact | M3 overshoots B2 and rolls back in on B2 allowing B1 to get in position at 6 o'clock M3 | |

RED BARON EVENT II-23 SUMMARY

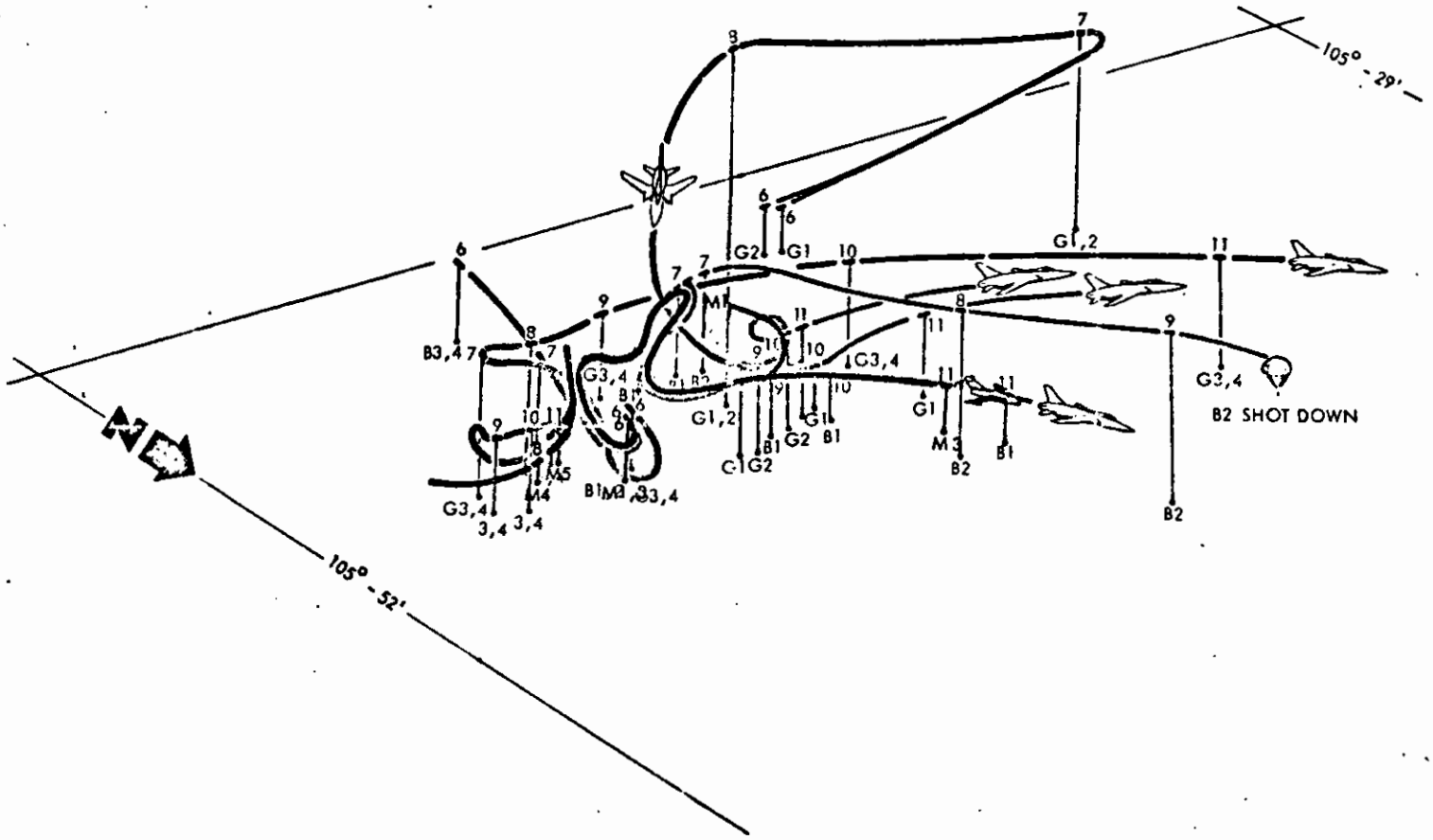
| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_8$ | B3 & 4 500 - 1,000 ft | B3 & 4 behind M4 firing-heading east - no hits observed - overshot<br><br>B1 is hit by M1's fire | G3 & 4 observe B3 & 4 in trail with M4 over Phuc Yen | B2 calls he has to get out<br><br>B1 calls over Phuc Yen, MIGs in trail and have been hit | M4 breaks and heads south<br><br>M3 breaks off B2 and gets behind B1<br>M1 hits B1 with cannon | |
| $T_9$ | G1 & 2 15,000 ft 350-400 kt in left hand turn | B1 trying to evade M1 & 3<br><br>G1 makes gun pass at M1<br>G2 trying to get on G1 wing | G1 & 2 approaching engagement<br>Fuel state 6000 lb<br><br>B3 & 4 make sweep of Phuc Yen after breaking off M4<br><br>G3 & 4 encounter heavy flak over Phuc Yen and egress area<br><br>B2 ejects | B1 vectors G1 & 2 to his position<br><br>G2 sights M1 & 3 calls G1 and continues calling MIG positions<br>G1 does not answer | M1 & 3 in one mile trail with B1; MIGs in left turn at 3000 ft. MIGs at cruise speed | G2 looses his position in the turn, has to use A/B to catch up since gets separated by 2 mi<br><br>G2 configured with AIM-9Bs set up switches for missiles but G1 kept lead, electing a gun pass rather than using G2 missiles<br>G3 or G4 has fuel malfunction<br>Parachute beeper heard after B2 ejection |
| $T_{10}$ | B3 & 4 fuel below Bingo | G1 hits M1 in rt wing and overshoots<br>G2 tries to turn with M1 for missile shot but cannot get in missile envelope (+6g)<br><br>B1 lowers nose and lights afterburner | B3 hit by ground fire<br>B3 & 4 start to egress | | M1 breaks hard left causing G1 to over-shoot<br>M1 disengages and departs<br><br>M3 trying to catch B1 | G1 opens fire with gun at 3,000 ft and ceased fire at approx 50 ft almost colliding with M1.<br>G1 gun sight grossly out of calibration.<br>Gunshooting to the right. |

RED BARON EVENT II-23 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{11}$ | | B1 outruns M3 disengaging and egresses area | B3 & 4 spot M5 in turn over east end of runway of Phuc Yen but do not attempt to engage<br>G1 & 2 lose sight of MIGs so rejoin and strafe trucks in area of engagement prior to egressing | | M3 cannot catch B1<br><br>M5 over east end Phuc Yen does not try to engage | M5 had under wing drop tanks<br><br>No attempt at RESCAP indicated Reason for no RESCAP unknown |




Event II-23

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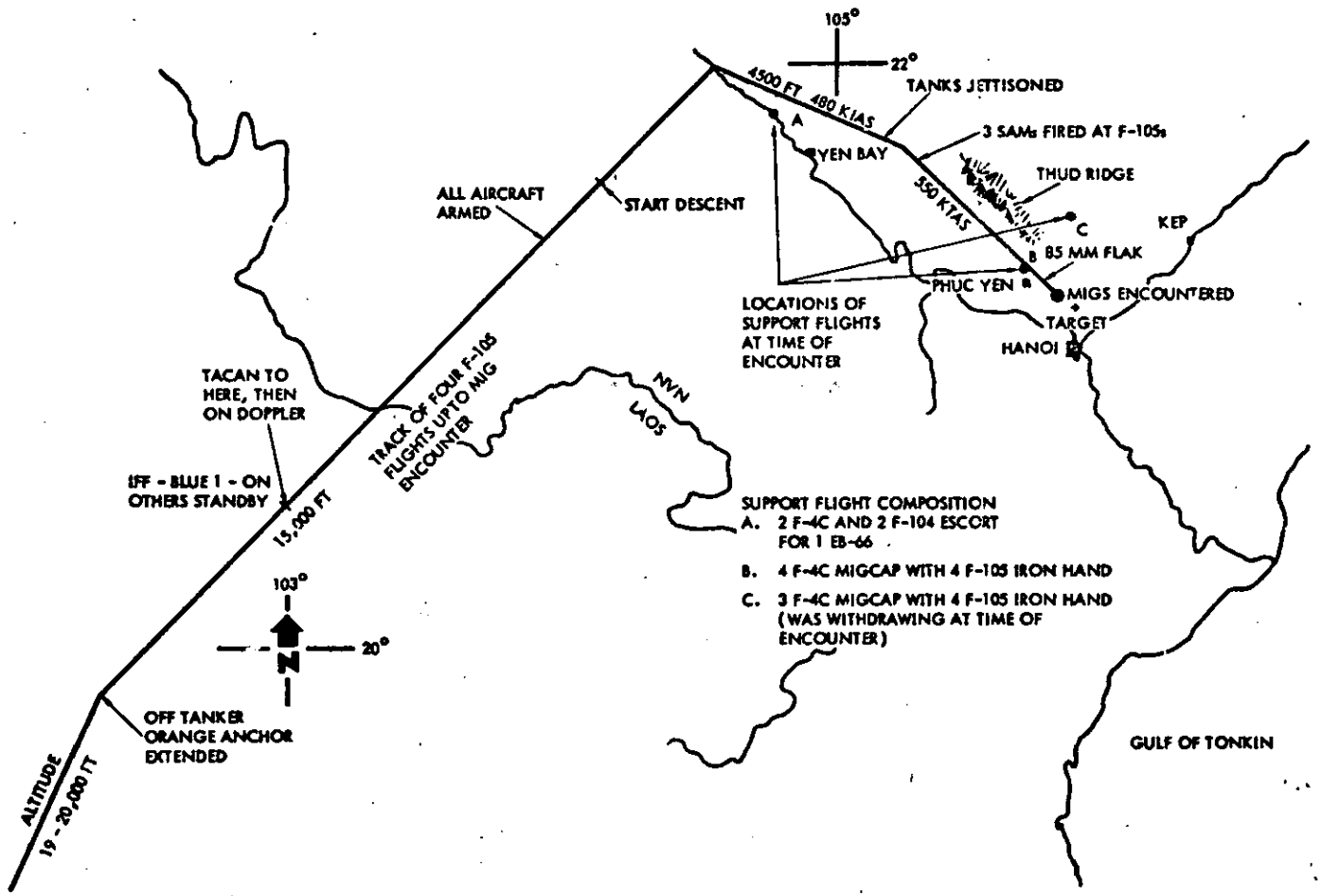
105°
22°
4500 FT
480 KIAS
TANKS JETTISONED
3 SAMs FIRED AT F-105s
YEN BAY
THUD RIDGE
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C
B
85 MM FLAK
PHUC YEN
MIGS ENCOUNTERED
TARGET
HANOI
LOCATIONS OF SUPPORT FLIGHTS AT TIME OF ENCOUNTER
ALL AIRCRAFT ARMED
START DESCENT
TACAN TO HERE, THEN ON DOPPLER
TRACK OF FOUR F-105 FLIGHTS UPTO MIG ENCOUNTER
NVN
LAOS
IFF - BLUE 1 - ON OTHERS STANDBY
15,000 FT
103°
20°
N
OFF TANKER ORANGE ANCHOR EXTENDED
ALTITUDE 19 - 20,000 FT
SUPPORT FLIGHT COMPOSITION
A. 2 F-4C AND 2 F-104 ESCORT FOR 1 EB-66
B. 4 F-4C MIGCAP WITH 4 F-105 IRON HAND
C. 3 F-4C MIGCAP WITH 4 F-105 IRON HAND (WAS WITHDRAWING AT TIME OF ENCOUNTER)
GULF OF TONKIN

Event II-23

Event II-24

Aircraft Involved: Four F-105s vs two MIG-17s
Result: No damage
Vicinity of Encounter: Unknown

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: July 66/unknown

Four F-105s (BLUE Flight) on an IRON HAND mission in support of strike aircraft in the Phu Tho/Viet Tri area.

2. MISSION ROUTE

Unknown

3. AIRCRAFT CONFIGURATIONS

F-105 B1, 2, 3, 4

1 - Guns (Full - 1,029 rounds) 20mm

MIG-17 MIG 1, 2

Guns

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 3,500 ft broken

| | B1, 2, 3, 4 |
|---|---|
| Altitude: | 4-5,000 feet |
| Heading: | 240° |
| Speed: | 540 kt |
| Fuel State: | Unknown |

Flight Formation: Unknown

5. INITIAL DETECTION

BLUE Flight was heading 240° at 540 kt between 4 to 5,000 ft when B4 saw two MIG-17s at the flight's 6 o'clock position and firing.

6. ACTION INITIATED

BLUE Flight broke hard left and selected afterburner.

7. SITUATION DEVELOPMENT

None, no encounter.

8. ORDNANCE

| | Guns | Remarks |
|---|---|---|
| BLUE 1, 2, 3, 4 | No rounds fired | |
| MIG 1, 2 | Unknown rounds fired | MIGs did not hit any aircraft |

9. EQUIPMENT PROBLEMS

Unknown

10. AIRCREW COMMENTS

Experience

Unknown

Comments on this Encounter

None

Comments from Overall Experience

None

11. DATA SOURCES

Project Interviews: B3

12. NARRATIVE DESCRIPTION

BLUE Flight was outbound after making a run on a SAM site at 4-5,000 ft, heading 240°, 540 kt when B4 saw two MIG-17s at 6 o'clock and firing. B4 called for a left break. BLUE Flight engaged afterburner and went into a hard left turn and descended under the broken layer of clouds to approximately 1,000 ft. MIGs disengaged in the turn and headed back for Hanoi. BLUE Flight then continued on with the mission and returned safely to home station.

[redacted]

Event II-25

Aircraft Involved: Four F-105s vs two MIG-21s

Results: No damage

Vicinity of Encounter: 21°32'N/106°13'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 July 66/0842H

BLUE Flight (four F-105s) was cruising at 7,000 ft enroute to a Package VI-A target.

II. DATA SOURCES

35 DOI-842 OPREP-3 20 July 66
7AF 202359Z July 66 DIO 30041
7AF 201629A July 66 DOCO-023239
7AF 201006Z July 66 DOCO-023214

12. NARRATIVE DESCRIPTION

BLUE Flight (from Korat) while on a mission in Package VI-A about 10 n mi northwest of Kep encountered two MIG-21s. BLUE Flight was at 7,000 ft when two MIG-21s made a descending pass on BLUE 3 and 4 and closed to 2,000 to 3,000 ft. A defensive left turn by BLUE 3 caused the one MIG-21 to overshoot and the MIG climbed to 10,000 ft and disappeared from BLUE 1's sight. The second MIG-21 began his pass but didn't complete it and he also disappeared from BLUE 1 and 3. There were no further MIG encounters on this mission. At 0844H BLUE 1 and 3 dropped ordnance and recovered at Danang due to refueling problems while BLUE 2 and 4 recovered at Korat.

Event II-26

Aircraft Involved: One F-105 vs five MIG-17s

Result: Sighting

Vicinity of Encounter: Unknown

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: July 66/1300H

BLUE 1 (one F-105) was on a strike mission.

II. DATA SOURCES

Letter from BLUE 1.

12. NARRATIVE DESCRIPTION

As BLUE 1 rolled in for a dive bomb run, five MIG-17s were spotted at his 1:30 o'clock high position. BLUE 1 continued with his dive bomb run and did not see the MIGs again.

[redacted]

Aircraft Involved: Four F-105s vs two "bogeys"
Result: No damage
Vicinity of Encounter: 21°30'N/105°35'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 July 66/0350H

BLUE Flight (four F-105s) from Takhli enroute to target in Package VI-A

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather unknown

| | BLUE Flight |
|---|---|
| Altitude: | 4,000 ft |
| Heading: | 130° |
| Speed: | 540 KTAS |
| Fuel State: | Unknown |
| Flight Formation: | Unknown |

5. INITIAL DETECTION

BLUE Flight indistinctly spotted bogeys at 3 o'clock slightly high, heading 270°, 3 miles away.

6. ACTION INITIATED

The two bogeys turned to approximately 060° and launched two air-to-air missiles. BLUE Flight turned into the attack and the missiles approached from 2 o'clock to 4 o'clock and passed behind BLUE Flight without detonating. The missiles were unable to match BLUE Flight's turn. The launching aircraft remained about 3 miles away, then broke off the attack and were lost visually.

7. SITUATION DEVELOPMENT

BLUE Flight turned on course and proceeded to their target.

8. ORDNANCE

| | No. Fired/No. Hits | Remarks |
|---|---|---|
| | AA Missiles | |
| RED Flight | 2/0 | Passed behind BLUE Flight |

11. DATA SOURCES

7AF 200855Z July 66 DOCO-O 23209
7AF 201145Z July 66 DOCO-O 23209
USAF Fighter Weapons Center Bulletin 7

12. NARRATIVE DESCRIPTION

BLUE Flight enroute to target at 4,000 ft, 540 kt TAS attacked by two MIGs (type unknown) from a distance of approximately three miles at 3 o'clock, slightly high. The MIGs fired two air-to-air missiles from 3 o'clock. The missiles passed aft of BLUE Flight at an unknown distance. The launching aircraft remained about three miles away, broke off the attack and were lost visually. BLUE Flight turned back on course and proceeded to target.

[redacted]

Event II-28

Aircraft Involved: Four F-105s vs one MIG-21

Results: No damage

Vicinity of Encounter: 21°52'N/105°12'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 July 1966/1446H

Four F-105s (BLUE flight) in Route Package VI-A for bombing mission against Thai Nguyen POL depot (TOT 1450H).

2. MISSION ROUTE

Unknown.

3. AIRCRAFT CONFIGURATION

BLUE Flight equipped with external tanks and an unknown number and type of bombs. MIG was observed to have no external stores or missiles.

4. FLIGHT CONDITION PRIOR TO ENCOUNTER

| | BLUE Flight |
|---|---|
| Altitude: | 8,000 ft |
| Heading: | 100 degrees |
| Speed: | 450 kt |
| Fuel State: | Full internal and some in the tanks |
| Flight Formation: | Unknown |

5. INITIAL DETECTION

BLUE 3 called a bogey approaching at 9 o'clock, 1-1/2 to 2 miles out, 6,000 ft above.

6. ACTION INITIATED

BLUE flight jettisoned fuel tanks, broke left into the bogey. It was immediately recognized as a MIG-21 by delta wing and lack of camouflage paint (it was silver). BLUE 3 and 4 went high hoping to box in the MIG, but the MIG executed tight turn (direction unknown) and escaped to the south. The MIG closed to 6,000 to 8,000 ft from the flight. The distance was never closed during the turn.

7. SITUATION DEVELOPMENT

After the MIG escaped, BLUE flight continued on to the target and dropped their bombs on the target.

8. ORDNANCE

None expended.

9. EQUIPMENT PROBLEMS

None

10. AIRCREW COMMENTS

Experience: Unknown except that this was BLUE 1's first MIG encounter.

Comments on this encounter: BLUE 1 commented that MIGs would usually depart anytime you jettisoned ordnance or tanks -- he assumed he had accomplished his mission and departed rather than actually engage.

11. DATA SOURCES

Project Interviews: BLUE 1 - 5 Jan 1967

Messages, Reports, etc:

7AF DOCO-O 23226 201328Z July 66
388TFW OPREP-4 Pinnacle/610 20 July 66

12. NARRATIVE DESCRIPTION

BLUE flight was inbound to a Package VI-A target when BLUE 3 called out a bogey 1-1/2 to 2 miles at 9 o'clock. BLUE flight jettisoned tanks - retaining bombs - and turned toward the bogey. The bogey, a clean MIG-21, executed a tight turn and accelerated and escaped in the haze heading south. BLUE flight turned with the MIG until they were headed down the Red River. The flight then proceeded to attack the target.

The MIG was initially in a position to launch a missile if he had carried one.

[redacted]

[redacted]

Event II-29

Aircraft Involved: Four F-105s vs one MIG-21

Result: Two sightings

Vicinity of Encounters: 21°50'N/104°15'E
21°50'N/104°45'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 July 1966/1602H, 1610H

5. INITIAL DETECTION

BLUE Flight (four F-105s) at 12,000 ft and 21°50'N/104°15'E, approximately 35 miles west of Yen Bai observed a probable MIG-21 aircraft. The time was 1602H. The MIG was at 15,000 ft or higher heading southwest in the vicinity of 21°40'N/105°15'E.

6. ACTION INITIATED

Flight continued on mission.

7. SITUATION DEVELOPMENT

MIG "flew off in the distance" and disappeared. BLUE Flight continued on the mission. At 1610H when at 21°50'N/104°45'E BLUE Flight again observed a single probable MIG-21. The MIG was in the vicinity of 21°50'N/105°00'E, altitude 14,000 ft and climbing, heading east. BLUE Flight unable to discern color or markings due to distance, and only the delta wing could be recognized.

11. DATA SOURCE

7AF DOI 30041 2023592 July 1966.

[redacted]

[redacted]

Event II-30

Aircraft Involved: Four F-105s vs three MIG-17s

Result: Sighting only

[redacted]nity of Encounter: 20°40'N/104°50'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 July 1966/1630H

BLUE Flight was on a strike mission. They had delivered their ordnance on a target of opportunity (unable to hit primary target due to weather) and were enroute to home base.

2. MISSION ROUTE

Route to target was unknown. Flight was returning from target and was at 20°40'N/104°30'E.

3. AIRCRAFT CONFIGURATIONS

Configuration of BLUE Flight unknown. Flight was carrying external fuel tanks at time of MIG sighting.

MIGs 1 and 2 had air-to-air rockets or missiles. MIG 3 had no radome on nose of aircraft, camouflaged on top (dark brown sandy color) and white on the bottom.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 2 to 3000 ft broken to overcast. Cumulus buildups in the area scattered to broken, tops above 23,000 ft.

| | Altitude | Air Speed | Heading |
|---|---|---|---|
| BLUE | 17,000 ft | 400 kt | about 200° |
| MIGs | about 17,000 ft | above 400 kt | about 200° |

Flight Formation:

Flight of four F-105s in a spread tactical formation with the second element (BLUE 3 and 4) to the right and behind BLUE Lead.

5. INITIAL DETECTION

BLUE 4 called bogeys out at 5 o'clock about 4-5 miles out.

6. ACTION INITIATED

BLUE 1 called for mil power and started a left turn, BLUE Flight went around a cloud and lost sight of the bogeys.

7. SITUATION DEVELOPMENT

BLUE 4 saw a MIG maneuver and identified bogeys as MIG-17s. BLUE 1 called to jettison tanks, go AB and started a shallow left turn toward a cloud bank on the left. BLUE 4 saw four air-to-air rockets or missiles fired from about 4 miles back (two each from MIGs 1 and 2) and called "Missiles away from the aircraft." BLUE 1 called for a left break and BLUE 1 and 2 entered the clouds. BLUE 4 saw MIGs 1 and 2 break up and right back to the North as if they were leaving the area. BLUE 3 and 4 entered the clouds descending to the left. BLUE 4 thought he was overtaking BLUE 1 and 2 so he pulled up. As he broke out of the clouds, he saw MIG 3 descending headon from 11 o'clock. BLUE 4 fired 63 20mm hoping MIG 3 would pass in front. MIG 3 went under BLUE 4 and was not seen again. BLUE 1, 2, 3 and 4 exited at M1.3 to 1.4 to the South.

8. ORDNANCE

BLUE 4 - approx. 60 to 180 rounds of 20mm cannon. -- no hits
MIG 1 - 2 air-to-air missiles[1] -- didn't guide; no hits
MIG 2 - 2 air-to-air missiles[1] -- didn't guide; no hits

[1]Estimated to be AA-2/A by 7th Air Force - DIO 0055

9. EQUIPMENT PROBLEMS

None mentioned.

[redacted]

## 10. AIRCREW COMMENTS

Experience:

| | Total Hours | 105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 1 | 5000 | 200 | 20 |
| BLUE 2 | ----------Unknown---------- | | |
| BLUE 3 | ----------Unknown---------- | | |
| BLUE 4 | 3800 | 650 | 4 |

Comments on this Encounter:

BLUE 1 - 4500 hours jet time. Korea experience. F-80, F-86, B-52, B-47. No formal gunnery school.

BLUE 4 - Thirteen years in jet. F-80, T-33, F-84, F-100.

## 11. DATA SOURCES

Project Interviews: Interview with BLUE 1--1 Feb 67, and with BLUE 4--5 Feb 67.
Messages, Reports:

2308252, 7AF, DOCO 23352, July 1966
221530Z, 7AF, DOCO 23353, July 1966
222238Z, 7AF, DIO 0055, July 1966
USAF Fighter Weapons Center Bulletin 7.

## 12. NARRATIVE DESCRIPTION

BLUE Flight was returning from a strike mission on a secondary target. The primary target was not hit due to weather. The flight was at 17,000 ft, .85 Mach, heading SW when BLUE 4 saw two bogeys at 5 o'clock. The bogeys seemed to be following the flight. BLUE 4 notified the flight. BLUE Flight went around a cloud (there were cumulus buildups to above 23,000 ft), and the bogeys followed. BLUE 4 now saw three bogeys and identified them as MIGs. BLUE Lead called for a gentle left turn to keep the MIGs in sight and BLUE Flight dropped tanks and went to AB. MIGs 1 and 2 then fired two air-to-air rockets or missiles at BLUE 1 and 2. Missiles probably were Soviet AA-2 or 2A type of missiles fired at a bad angle and near clouds and thus failed to guide. (Reference: 7th AF DIOD) BLUE 4 called the missiles and BLUE Flight broke left and down to a cloud bank. BLUE 4 had spread out slightly to keep the MIGs in sight. As BLUE 4 entered the clouds he felt he was overtaking BLUE 1, 2 and 3 so he pulled up out of the clouds. As he came out of the clouds, MIG 3 appeared at 11 o'clock and passed under BLUE 4. BLUE 4 fired approximately 65-180 rounds of 20mm cannon but missed. The MIG entered the clouds and was not seen again. BLUE Flight exited the area. No damage.

[redacted]

[redacted]

Event II-31

Aircraft Involved: Four F-105s vs two possible MIG-19s

Result: No Damage

Vicinity of Encounter: 20°20'N/103°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 25 July 1966/1020H

Four F-105s (Blue Flight) from Takhli were on a strike mission.

11. DATA SOURCE

355TFW 250545Z Jul 1966

12. NARRATIVE

Blue Flight was egressing from a strike when they received air-to-air vector signals from 9 o'clock. They saw two bogeys two miles away. The bogeys began a pursuit curve and Blue Flight broke towards the bogeys and jettisoned external tanks, then reversed and disengaged to the south.

[redacted]

[redacted]

[redacted]

Event II-32

[redacted]volved: Four F-105s vs two MIG-17s

Results: 1 F-105 damaged
1 MIG-17 damaged
1 MIG-17 possible damage

Vicinity of Encounter: 21°49'N/104°42'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 12 August 1966/1088H

GREEN (4 F-105s) and BLUE (3 F-105s) Flights had completed their primary strike mission against the La Danh POL storage area and were egressing as separate flights northwest of Thud Ridge when GREEN 1 was hit by ground fire and ejected. GREEN 2 jettisoned his external tanks to RESCAP GREEN 1. The remaining members of GREEN and BLUE Flights continued egress for RESCAP refueling and returned to relieve GREEN 2 who then departed for home with BLUE 3 as an escort.

2. MISSION ROUTE

GREEN Flight departed Takhli AB, Thailand, refueled, and then proceeded on a northeasterly heading to the target area (La Danh storage area). After striking the target GREEN Flight proceeded northwest of Thud Ridge to approximately 21°49'N/104°42'E where GREEN 1 was downed, thence to the refueling area and back to this location.) BLUE Flight essentially followed this same route approximately 5 minutes behind GREEN Flight, joining with GREEN 3 and 4 during RESCAP refueling.

3. AIRCRAFT CONFIGURATION

F-105 BLUE 1, 2, 3

2 - 2000 lb or 3000 lb bombs[a]
1 - Centerline tank
1 - M-61 Gatling Gun, 20mm (1029 rounds)

F-105 GREEN 1, 2, 3, 4

2 - CBU-24[a]
1 - Centerline tank
1 - M-61 Gatling gun, 20mm (1029 rounds)

MIG-17 MIG 1, 2

1 - Gun (23mm), clean wings
No camouflage, dull silver color, Red Star on wing.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Broken to scattered building cumulus. Bottoms at 3000 ft and tops at 12,000-15,000 ft.

| | GREEN 3, 4 | BLUE 1, 2 |
|---|---|---|
| Altitude: | 5000 ft | 10,000-15,000 ft |
| Heading: | Left Turn | Left Turn |
| Air Speed: | 300-350 KCAS | Unknown |
| Fuel State: | Bingo | Unknown |

Flight Formation: BLUE 1, 2 about 3-5 n mi behind GREEN 3, 4.

5. INITIAL DETECTION

BLUE Flight was in a left bank when they sighted 2 MIG-17s at 11-12 o'clock, range of 2 n mi, trailing GREEN 3 and 4 in attack position.

6. ACTION INITIATED

BLUE 1 warned GREEN Flight of MIGs and after GREEN 3 confirmed presence of MIGs behind him at a range of about 1500 ft, GREEN 3 and 4 dropped tanks and headed for the deck in afterburner. BLUE 1 and 2 turned into the attack with BLUE 1 dropping tanks and 2 keeping his tanks.

7. SITUATION DEVELOPMENT

GREEN 3 and 4 split left and right, respectively. Then GREEN 4 turned on MIG 1 who was behind GREEN 3. GREEN 4, however, received some hits from MIG 2, yet was able to continue attack of MIG 1. Meanwhile, BLUE 2 was closing in on MIG 2 and when he fired MIG 2 broke sharply left into clouds, which previously GREEN 3 had done. BLUE 2 does not know if he hit MIG 2. Meanwhile BLUE 1 was after MIG 1 who had somehow gotten off of GREEN 4's tail and both of them (MIG 1 and BLUE 1) when into clouds as observed by BLUE 2.

[a]Dropped on target prior to MIG engagement.

[redacted]

8. ORDNANCE

| | No. Fired/No. Hits | Remarks |
|---|---|---|
| BLUE 1 | 1/1 (damage) | Fired 457-507 rounds |
| BLUE 2 | 1/0 | Fired 700-750 rounds |
| GREEN 3 | 0/0 | |
| GREEN 4 | 1/1 (possible damage) | Fired 580 rounds |
| MIG 1 | | |
| MIG 2 | 1/1 (damaged G4) | Unknown no. of rounds fired |

9. EQUIPMENT PROBLEMS

BLUE 1, 2: Gun camera film came out black (apparently unexposed).

10. AIRCREW COMMENTS

| Experience | Total Hours | F-105 Hours | SEA Combat Missions |
|---|---|---|---|
| BLUE 1 | Unknown | Unknown | Unknown |
| BLUE 2 | Unknown | Unknown | Unknown |
| GREEN 3 | Over 5,000 | Approx. 400 | Approx. 60 |
| GREEN 4 | Unknown | Unknown | Unknown |

Comments on this Encounter:

BLUE 2: Unable to track MIG in turn. (Still had external tanks). Need more maneuverability to employ guns, use of missiles requires less positioning.

General Comments

BLUE 2: SIDEWINDERS carried at times were in poor condition (i.e., scratched or pitted heads, etc.)
The training received did not include sufficient live firing experience but relied too heavily on simulation.
He felt the concept of air-to-air missiles was good but should be backed up with a good gun.
The warning equipment carried on-board is good but false alarms (or ambiguities) should be eliminated.
Two men are not a necessity for type of mission flown.

11. DATA SOURCES

Project Interviews: BLUE 2 (16 Mar 1967) and GREEN 3 (8 Mar 1967)
Messages:
7AF 12 1754Z August 1966, DOCO-24192, SECRET
7AF 12 2300Z August 1966, DOCO-24207, CONFIDENTIAL

12. NARRATIVE DESCRIPTION

GREEN Flight dropped ordnance on target as scheduled. On the way home, flight observed truck traffic and proceeded to attack. GREEN 3 thought he was hit by ground fire and, along with GREEN 4, departed area as a precaution and headed for a tanker. GREEN 1 was hit by ground fire on a subsequent pass and was forced to eject. GREEN 2 stayed in the area as RESCAP and jettisoned his centerline tank so as to stay in area longer.

In the meantime, BLUE Flight, which was about five minutes behind GREEN Flight, had hit the target and heard the call that GREEN 1 (L) was down. BLUE Flight consisted of 3 airplanes since one had air-aborted prior to hitting the target. BLUE Flight proceeded to tanker to refuel so that they would be available for RESCAP if needed. BLUE 1 and 2 together with GREEN 3 and 4 returned for RESCAP and GREEN 2 and BLUE 3 were sent home. BLUE 1 and 2 were flying at high altitude (10-15,000 ft) while GREEN 3 and 4 were flying at low altitude (approx 5,000 ft) looking for the downed pilot.

BLUE 1 and 2 were in a left turn when BLUE 1 (L) sighted 2 MIGs on the tail of GREEN 3 and 4. BLUE 1 called the information to GREEN 3 who at first thought the MIG was his wingman. Upon verification GREEN 3 saw that they had 2 MIGs at 6 o'clock at a range of approximately 1500 ft. GREEN 3 and 4 jettisoned external stores, lit the afterburner and dove for the deck, getting down to approximately 700 ft altitude. GREEN 3 turned left and GREEN 4 turned right and reversed and got on the tail of MIG 1 chasing GREEN 3, and thinks he hit MIG 1 with cannon fire. MIG 1 was firing at GREEN 3 but scored no hits as the MIG's cannon fire went over the top of both wings. GREEN 3 was able to duck into a cloud and lost contact with the MIGs and the other F-105s. MIG 2, behind GREEN 4, was firing at GREEN 4 and hit him on the top of the left wing with cannon fire but GREEN 4 was able to continue. Meanwhile, BLUE 1 and 2 closed on the two MIGs who were still unaware of their presence. BLUE 1 jettisoned his tank but in the excitement BLUE 2 did not. BLUE 1 and 2 chased MIG 1 and 2 with a left descending turn, and in doing so BLUE 1 was sandwiched between MIG 1 and 2. BLUE 2 tried to get into attack position on MIG 2 and called BLUE 1(L) to break out due to MIG 2 on his tail. Still in a descending left turn, BLUE 2 approached firing position on MIG 2 when the MIG turned hard and really out-turned BLUE 2.

[redacted]



BLUE 2 fired approximately 700 to 750 rounds but there was no indication of a hit. BLUE 2 was doing approximately 420-450 kt. BLUE 1 went into the clouds and so did the two MIGs. BLUE 2 broke off and up to the right to get on top to be able to pick up MIGs again.

BLUE 2 checked in with BLUE 1 who reported that he thought he had hit a MIG and that the MIGs had broken off and were headed for home. BLUE 1 and 2 rejoined and both refueled prior to returning to home base. Due to the late hour, rescue service was postponed to the next day. The gun camera films were unusable since they either were not exposed or underexposed to an extent that they could not be interpreted.

GREEN 3 and 4 joined up on top of clouds and returned home, low on fuel. They had to recover at Udorn since no tankers were available to them.

[redacted]

[redacted]

[redacted] Event II-33

Aircraft Involved: Two F-105Ds vs one MIG-17
Result: No damage
Vicinity of Encounter: 21°10'N/105°54'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 17 August 1966/1516H

Two F-105Ds from Korat (BLUE 1 and 2) were to attack JCS 51, an oil depot north of Hanoi. BLUE 3 and 4 air aborted because one of the aircraft had radio problems and the other escorted him back to base.

2. MISSION ROUTE

BLUE Flight refueled over the Gulf, they then proceeded northwest to a point south of Hanoi, turned north, passed Hanoi to the west and approached the target in a southwest heading. The bomb run on the target was made from the South (i.e., a northerly heading).

3. AIRCRAFT CONFIGURATIONS

BLUE 1 and 2

2 - 450-gal wing tanks
6 - 750 lb bombs (centerline MER)
1 - M-61 Gatling gun, 20mm (1,029 rounds)

BLUE 1 had ECM vector equipment (to provide SAM warning)

MIG-17A

Guns
Silver in color with Red Chinese markings

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear with 5 miles visibility with slight haze. Thunderstorms over the mountains.

| | BLUE 1 | BLUE 2 |
|---|---|---|
| Altitude: | 3,000 ft AGL | Unknown |
| Speed: | 495 ft | 450 ft |
| Fuel State: | Using internal, but had fuel in wing tanks | External tanks only |
| Heading: | 090° | 045° |

Flight Formation: BLUE 2 behind and to the right of BLUE 1.

5. INITIAL DETECTION

As BLUE 1 was pulling off target on heading of 090°, BLUE 2 called a MIG-17 closing on BLUE 1 from his 7 o'clock position at 5,000 ft.

6. ACTION INITIATED

MIG was closing rapidly, firing at BLUE 1. BLUE 1 dove for deck and both BLUE 1 and 2 jettisoned tanks and went afterburner.

7. SITUATION DEVELOPMENT

BLUE 1 accelerated away from MIG who continued to fire at BLUE 1. BLUE 2 got into the MIGs 6 o'clock position and closed range. He fired at the MIG but no hits were detected. BLUE 2 overtook MIG who was flying straight and level and barrel-rolled 200 feet over MIG and flew straight ahead.

8. ORDNANCE

| | No. fired/No. Hits | Remarks |
|---|---|---|
| BLUE 2 | 1/0 | Expended approximately 75 rounds |
| MIG | 1/0 | No hits recorded. |

9. EQUIPMENT PROBLEMS

BLUE 2: Could not get his sight on. Had to use center of wind screen for sight. Was shooting low.

[redacted]

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 1 | - | Unknown | - |
| BLUE 2 | 1500 | 450 | 87 |

Comments on the Encounter:

BLUE 2: Everything happened so fast he didn't have time to set up for a gun pass. If they had had a flight of 4 they could have sandwiched the MIG and perhaps gotten him. MIG did not have any air-to-air missiles. Believes MIG orbited target area and attacked from a high altitude to catch F-105 by surprise.

Comments from Overall Experience:

BLUE 2: Felt he had insufficient quantity of training for air-to-air type engagements. Thought MIG-17 was not a threat to F-105 due to the high speed on the deck of the F-105. F-105 needs a better gun sight. Would like to have AIM-9 faired into the wing tips such as the F-104. Didn't like the fact that the radar didn't work close to the ground because of the ground clutter. Considers BIG EYE is a waste of time for MIG warnings.

11. DATA SOURCES

Project Interviews: BLUE 2, 5 January 1967
Messages, Reports:
7AF 171606Z DOCO 24403 August 1966, SECRET.
Fighter Weapons Bulletin 7

12. NARRATIVE DESCRIPTION

Two F-105s (BLUE 1, 2) were on a strike mission to hit the Nguyen Khe POL storage area. Enroute to the target, the aircraft refueled over the Gulf. Shortly before reaching the target after BLUE 1, BLUE 2 started to pull-up, BLUE 1 received a SAM warning on his vector gear. BLUE 1 descended to 5,000 feet, jinking to look for the SAM. When none was sighted, BLUE 1 pulled up again to 12,000 feet and rolled in on the target to drop six 750-pound bombs. BLUE 2 was behind and to the right of BLUE 1. As BLUE 1 pulled off the target on a heading of 90°, altitude 3,000 feet, BLUE 2 sighted a MIG-17A (MIG 1) closing on BLUE 1 at his 7 o'clock position and at about 5,000 feet AGL. BLUE 2 at this time was in the bomb delivery phase. BLUE 2 delivered his ordnance and during pullup saw MIG 1 closing on BLUE 1 and firing as evidenced by seeing a flame of the small gun in the MIG's nose and a cannon going off and shells bursting. BLUE 1 and MIG were both in a slight left hand turn. BLUE 2 called BLUE 1 to "break - you have a MIG closing". BLUE 1 and 2 went to after burner and jettisoned tanks. BLUE 1 headed for the ground, maintained 4.5 g's and 400 kt in a left turn. MIG 1 outturned BLUE 1 and continued to close. The MIG fired when reaching range of 4000 feet and continued until the range closed to 1500 feet. BLUE 1 dove to approximately 5 ft AGL, so low he had to pull up to avoid rice paddy dikes. MIG continued firing all the way. BLUE 1 finally separated at Mach 1.2. Estimated speed of MIG was 580 kt.

In the meantime BLUE 2 started to chase the MIG and set up his weapons by setting the weapon selector switch from "bombs" to "guns-air", the radar to "air-to-air" and the radar to "radar lock-on" in order to obtain range information for the gun. BLUE 2 hit the button to reject farthest target but did not get a good sight picture. He then maneuvered the airplane to place the MIG in his windscreen and fired (approx. 3/4 second or 75-150 rounds). At this point, BLUE 1 cut in front of the MIG and BLUE 2 had to cease firing. Almost immediately BLUE 2 pulled up and barrel-rolled approximately 200 feet above the MIG, BLUE 1 and BLUE 2 pulled away from MIG as MIG began to drop off at completion of turn and BLUE flight had established a high speed on a heading of 325°. Both aircraft recovered safely, BLUE 1 had to refuel enroute home.

Event 1I-34

Aircraft Involved: Two F-105Ds vs one or two MIG-17s

Results: No damage (F-105s jettisoned ordnance and aborted strike mission)

Vicinity of Encounter: 21°05'N/105°55'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 17 August 1966/1502H

BLUE Flight was on a strike mission enroute to the Nguyen Khe POL storage area.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Altitude: 3500 ft
Heading: 315°
Speed: 510 kt

11. DATA SOURCES

7AF, 172019Z, DOCO 24415 Aug 66, CONFIDENTIAL
7AF, 171420Z, DOCO 24398 Aug 66, SECRET
7AF, 180039Z, DIO 30251 Aug 66, SECRET-NOFORN

12. NARRATIVE DESCRIPTION

BLUE Flight, consisting of 2 F-105s on a strike mission enroute to target (Nguyen Khe POL area) encountered one MIG-17 (possibly two MIG-17s). At time of encounter, BLUE Flight was at 21°05'N/105°55'E, altitude 3500 ft, speed 510 kt, heading 315°. As the MIG started to turn in, BLUE Flight attempted to turn left into the MIG. BLUE 1 and 2 jettisoned ordnance and tanks, but the MIG-17 continued to gain advantage. BLUE 1 and 2 lit afterburners and dove to 500 feet ending up on a heading of 90°. Contact with the MIG was lost during this descent; no firing was reported. BLUE flight reported heavy flak activity which continued during the MIG encounter and the MIG as well as BLUE Flight had to fly through the flak.

[redacted]

Event II-35

Aircraft Involved: Two F-105s vs two MIG-17s
Result: One MIG 17 destroyed
One F-105 damaged
Vicinity of Encounter: 21°20'N/105°50'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 18 August 1966/1528H

One F-105F and three F-105Ds (BLUE Flight) in an IRON HAND flight. Three flights of four F-105Ds in a strike group (GREEN, RED, YELLOW). IRON HAND flight was to attack SAM sites in support of the strike group. See Events II-36 and II-37 for GREEN and YELLOW actions.

2. MISSION ROUTE

Departed Korat and refueled with airborne tankers at sea on northerly course. Made land fall at approximately 19°22'N/105°56'E at 4500 ft, 520-kt CAS. Proceeded westerly to vicinity of Kin Diem. Turned northerly and descended to the deck. At Hoa Binh turned northeasterly to the target area, which was southeast of Thud Ridge and north of Hanoi.

3. AIRCRAFT CONFIGURATIONS

F-105F BLUE 1

2 - SHRIKE (AGM-45)
2 - Rocket pods (2.75")
1 - 650-gal external fuel tank
Full 20mm ammunition

F-105D BLUE 2, 3, 4

2 - Rocket pods (2.75")
2 - 450-gal external fuel tanks
Full 20mm ammunition

F-105D GREEN, RED, YELLOW

Loading unknown. Expect external fuel and 750-lb bombs.

Camouflage

All airplanes had white underside and green top surface.

Avionics

BLUE 1 - WILD WEASEL
BLUE 2 - Radar - Stby; IFF - Stby; doppler - on
Others - Unknown

MIG-17 MIG 1, 2

Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered clouds, good visibility.
Altitude: 2000- to 5000-ft AGL, maneuvering to avoid SAMs.
Heading: In left turn to northerly heading from a southeasterly heading
Speed: 450- to 550-kt CAS; BLUE 1 in afterburner; BLUE 2 afterburner blown out by SAM.
Fuel State: Full internal; unknown amount in external tanks
Flight Formation: BLUE 1 and BLUE 2 in spread formation with BLUE 2 about 1000 ft on left wing of BLUE 1 during run-in to target. At the time of the MIG sighting BLUE 2 was ahead of BLUE 1. BLUE 3 and BLUE 4, GREEN, RED, and YELLOW flights were in the immediate area.

5. INITIAL DETECTION

MIGs were sighted visually in loose trail by GREEN 1 (Lead) as lead MIG attacked BLUE 1 from six o'clock. MIGs maneuvered in the vertical to prevent overrunning BLUE 1.

6. ACTION INITIATED

GREEN 1 called MIG at BLUE 2's 6 o'clock. Both BLUE 1 and BLUE 2 began maneuvering.

7. SITUATION DEVELOPMENT

BLUE 2 turned hard left when the MIG warning was called by GREEN 1. BLUE 2 saw the MIG was on BLUE 1 and called a left break for BLUE 1. BLUE 1 fired two SHRIKE missiles at a SAM site and jettisoned all remaining external ordnance and fuel tanks. BLUE 2 jettisoned external fuel tanks but retained his rocket pods. MIG was on the tail of BLUE 1 and shooting. BLUE 1 passed under BLUE 2 with the MIG in pursuit and shooting. BLUE 2 maneuvered into 6 o'clock position on the MIG and commenced firing with his 20mm gun. The MIG was destroyed by BLUE 2. Duration of the engagement was estimated to be less than 2 min.

[redacted]

[redacted]

8. ORDNANCE

Event II-35

BLUE 1 fired two SHRIKE AGM-45 missiles.

BLUE 2 fired about 200 rounds of 20mm ammunition at a MIG-17 while in 6 o'clock position on MIG at 400- to 600-ft range. Both in gentle left turn. BLUE 2 did not have a gunsight.

9. EQUIPMENT PROBLEMS

BLUE 2 ordnance switches were set up for air-to-ground attack mode. BLUE 2 did not sequence switches properly when switching to air-to-air mode, therefore, did not have a gunsight.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | Pilot was very experienced. This was about his 50th WILD WEASEL mission. Although this was his first MIG encounter, he had previously evaded SAMs. |
| BLUE 2 | 3000 | 600 | 102 Korea<br>51 Vietnam | Tactical reconnaissance and tactical fighter background. |
| BLUE 3, 4 | | | | Not interviewed |
| GREEN, RED, YELLOW | | | | Not interviewed |

Comments on this Encounter

BLUE 2 - Pilot was encumbered by the complexity of switchology in attempting to change from air-to-ground mode to the air-to-air mode.

Did not have use of the gunsight when needed.

MIG early warning would have been helpful.

Comments from Overall Experience

More turning capability in a fighter highly desirable.

Weapon system should provide range to the target.

Pilot experience was a predominant factor in the success of the engagement.

11. DATA SOURCES

Project Interviews: BLUE 1 (Lead), 14 Mar 1967; BLUE 2, 4 Jan 1967
Message Reports:

7th AF/OPREP-3/181520Z Aug 66/DOCO 2440

USAF Tactical Fighter Weapons School Bulletin No. 7

Gun camera film from BLUE 2.

12. NARRATIVE DESCRIPTION

The mission consisted of four flights of F-105Ds and one F-105F. The target was a POL installation north of Hanoi. The lead flight (BLUE) was followed by three other flights (GREEN, RED, YELLOW). BLUE 1 (IRON HAND) was the strike leader. BLUE 2 was wingman for IRON HAND and with the section, BLUE 3 and BLUE 4 were to provide protection for BLUE 1 (L) and to strike SAM sites in support of IRON HAND. BLUE 1 (L) was armed with two SHRIKE missiles, two 2.75" rocket pods and a 20mm Vulcan gun, and was carrying a 650-gal external fuel tank. BLUE 2 was carrying two 450-gal external fuel tanks, two rocket pods (2.75") and was armed with a 20mm Vulcan gun. Both airplanes were camouflaged with white underside and green top surface. The mission departed Korat, proceeded eastward, and rendezvoused with the airborne tankers. Refueling was completed on a northerly heading. The flight made landfall at approximately 19°22'N/105°56'E at 4500 ft, 520-kt CAS and turned westerly. The four flights (BLUE, GREEN, RED, YELLOW) were in trail at about five-minute intervals. As BLUE flight approached the second checkpoint, in the vicinity of Kin Diem a large thunderstorm blocked the desired course. After starting to circumnavigate the storm to the south, BLUE 1 (L) reversed his flight and passed the storm to the north. In maneuvering to avoid the thunderstorm BLUE 1 and BLUE 2 became separated from BLUE 3 and BLUE 4 and the following flights caught up. The strike flights were no longer in five-minute trail but were within visual range of each other. The flights descended to the deck and proceeded northerly and passed directly over Phuc Yen. BLUE 1 and BLUE 2 climbed to about 6000 ft maintaining 475-kt CAS as they approached the target area. There were scattered clouds with good visibility in the target area.

[redacted]

[redacted]

$T_0$ -- BLUE 1 was concentrating on firing a SHRIKE missile and BLUE 2 was flying wing as they passed through the primary target area. Electronic emissions received indicated SAMs had been launched. Visual sightings of the SAMs at 9 o'clock confirmed the electronic warning. The flight broke left and down and then pulled up into a climbing turn as a SAM passed underneath.

$T_1$ -- A SAM detonated between BLUE 1 and BLUE 2. At this time BLUE 2 was out in front of BLUE 1 and a little to the right. The concussion from the blast blew out the afterburner in BLUE 2. Another SAM passed over the flight and detonated. Two other SAMs were sighted but were no threat and disappeared in small clouds.

$T_2$ -- The area of launch was sighted and BLUE 1 pulled up and fired two AGM-45 missiles at the SAM site. A SHRIKE passed over the nose of BLUE 2. A friendly airplane in the area called, "BLUE 2 you have a MIG on your tail." BLUE 2 turned hard left and saw the MIG was on BLUE 1.

$T_3$ -- BLUE 1 was told to break left and did so as he jettisoned all remaining external ordnance and fuel tanks. BLUE 2 jettisoned his external fuel tanks and attempted to change his armament switches from air-to-ground mode to air-to-air mode. He did not obtain the use of his gunsight.

$T_4$ -- BLUE 1, with the MIG chasing him and firing at him, passed under BLUE 2 who was in a left turn. BLUE 2 broke hard left and maneuvered to a position behind the MIG at a range of 400 to 600 ft and fired his 20mm gun.

$T_5$ -- The MIG burst into flame and was observed to enter an inverted dive and impact with the ground.

$T_6$ -- A second MIG passed through the flight without engaging and departed the area.

BLUE 1 and BLUE 2 departed the area and returned to base. BLUE 1 had received very light damage from the MIG. BLUE 2 still had his two rocket pods. BLUE 2 had fired about 200 rounds of 20mm ammunition.

The pilot of BLUE 2 was encumbered by the complexity of switchology in attempting to change from air-to-ground mode to air-to-air mode. As a result the pilot did not have the use of a gunsight when he was in position to shoot. The pilot stated that early warning of MIG activity would have been helpful. He also expressed a desire that the weapon system provide range information. For air-to-air encounters the pilot stated he would like to have more turning capability. Pilot experience was a predominant factor in the successful destruction of the MIG.

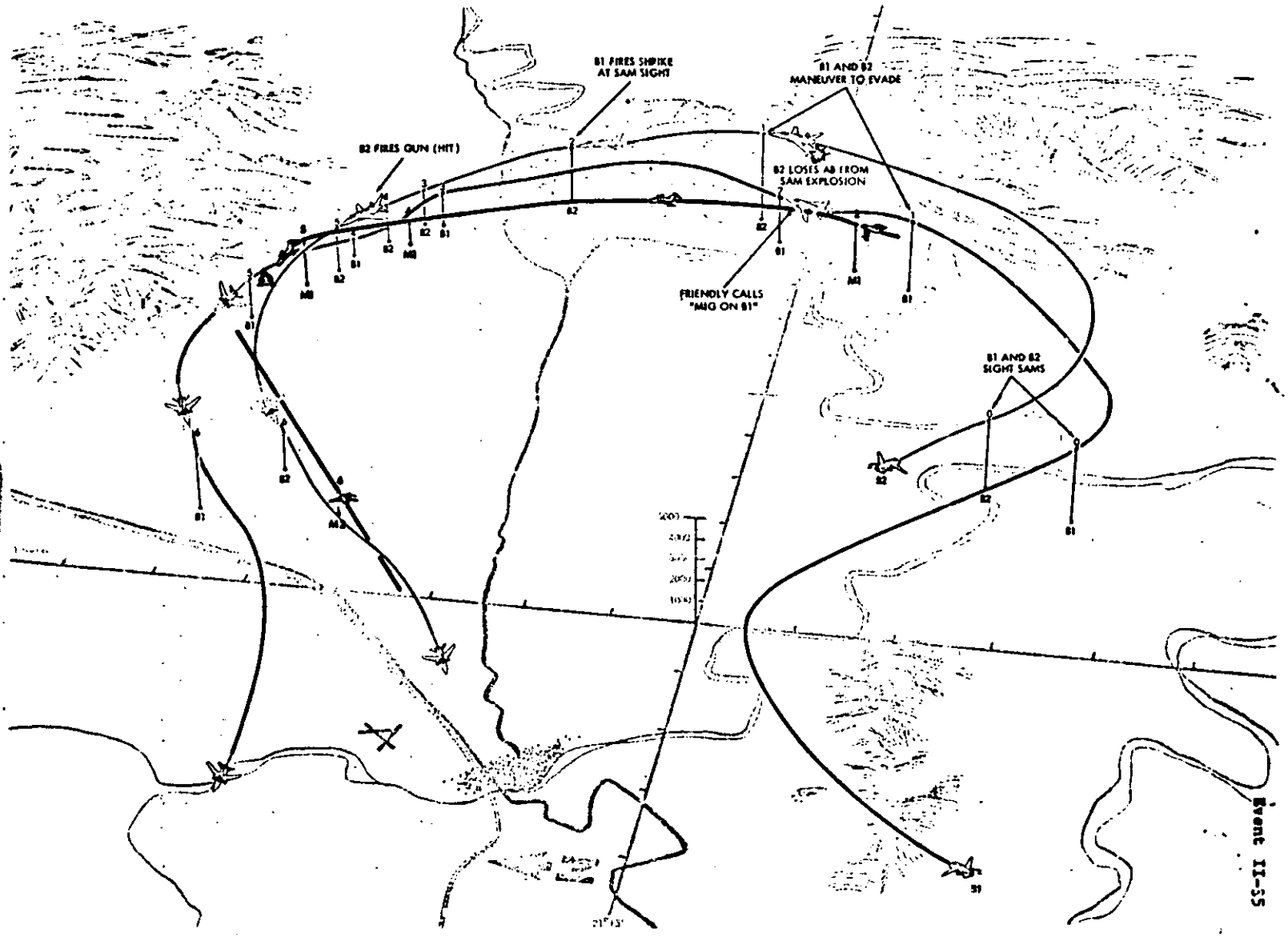
GREEN and YELLOW Flight actions contained in Events II-36 and II-37.

RED BARON EVENT II-35 SUMMARY

| Time Mark | Action Aircraft (BLUE 1,2) | | Other Friendly (GREEN 1) | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | B1 SHRIKE (2) External fuel tanks (2) 450 gal Full 20mm ammunition B2 2.75" rocket pods (2) External fuel tanks (2) 450 gal Full 20mm ammunition 3500 ft 525-kt CAS | B1,2 sight SAMs. Both into burner, begin diving turn to the left followed by climbing turn. | Commenced evasive maneuvers. | B1 alerted flight to launch of SAMs. | Launched SAMs. | |
| $T_1$ | 2000-ft to 5000-ft 450 to 550-kt CAS | B1 and B2 maneuvered to evade SAMs. B2 out in front of B1. SAM exploded between B1 and B2, blew out AB in B2. B1 maneuvering to fire SHRIKE. | | B1 was controlling flight with voice calls. | Launched SAMs. | |
| $T_2$ | | B1 launched SHRIKE. B2 hard left turn when alerted to MIG. Saw SHRIKE and MIG on B1. | G1 called, "B1 you have a MIG on your tail." | | MIG attacking B1. | |

RED BARON EVENT II-35 SUMMARY (CONT.)

| Time Mark | Action Aircraft (BLUE 1,2) | | Other Friendly (GREEN 1) | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_3$ | B1 jettisoned external ordnance and fuel tanks. B2 jettisoned external tanks and attempted to switch from A-G to A-A. | B2 in hard left turn. B1 broke left and down, accelerating in AB. | | B2 called B1 to break left. The MIG was on B1. | MIG attacking B1. | |
| $T_4$ | | B1 broke hard left, passed under B2. B2 from a position above and to the right of MIG maneuvered into firing position and opened fire. | | B1 called, "Get the MIG off my tail." | MIG pressing attack on B1 and firing. | |
| $T_5$ | | B2 firing at MIG, no gun-sight. Saw MIG burst into flame. | | | MIG burst into flame, rolled inverted and crashed. | |
| $T_6$ | | B1,2 joined and departed the area. | | B1 called alert that other MIG was in the area. | Second MIG passed close to B2 on opposite heading and cleared the area. | |


B1 FIRES SHRIKE AT SAM SIGHT
B1 AND B2 MANEUVER TO EVADE
B2 FIRES GUN (HIT)
B2 LOSES AB FROM SAM EXPLOSION
FRIENDLY CALLS "MIG ON B1"
B1 AND B2 SIGHT SAMS
B1
B2
M3

Event II-55

[redacted]

Event II-36

Aircraft Involved: Four F-105Ds vs two MIG-17s
Result: No damage
Vicinity of Encounter: 21°13'N/105°54'E

1. PRIMARY MISSION AND TACTICAL SITUATION

See Event II-35. GREEN Flight was a part of the strike group, 18 August 1966.

2. MISSION ROUTE

See Event II-35.

3. AIRCRAFT CONFIGURATIONS

F-105D

Unknown

MIG-17

One MIG was silver gray in color.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Unknown.

| | GREEN Flight |
|---|---|
| Altitude: | 200 ft |
| Heading: | 120° |
| Speed: | 500 KTAS |
| Fuel State: | Unknown |
| Flight Formation: | Unknown |

5. INITIAL DETECTION

While inbound to the target GREEN Flight sighted MIG 1 at 9 o'clock in a left turn at an estimated altitude of 100 ft. The flight lost sight of MIG 1 as it was turning through a heading of 090°.

6. ACTION INITIATED

No action taken. Flight lost sight of MIG 1.

7. SITUATION DEVELOPMENT

MIG 2 was sighted at 3 o'clock high (2000 ft). GREEN flight turned right 180°. MIG 2 made a quartering, head-on pass from GREEN's 10-11 o'clock. MIG 2 attempted to turn left into GREEN Flight as GREEN Flight turned about 30° left into MIG 2. While in a 90° bank, MIG 2 overshot GREEN Flight and disappeared at GREEN's 9 o'clock. The MIGs were not seen again.

11. DATA SOURCES

Messages:

7th AF/OPREP-3/181520Z Aug 66/DOCO 24441
7th AF/OPREP-4/181721Z Aug 66/DOCO 24447

[redacted]

[redacted]

Event II-37

Aircraft Involved: Two F-105Ds vs three MIG-17s

Result: No damage

Vicinity of Encounter: 21°22'N/105°50'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 18 August 1966/1603H

Two F-105D aircraft (YELLOW Flight) were the last of four flights into the target area (see Events II-35 and II-36). After looking 20 minutes for the target, the flight expended their bombs on a bridge and were egressing the area when three MIG-17s were encountered.

2. MISSION ROUTE

See Event II-35.

3. AIRCRAFT CONFIGURATIONS

F-105D YELLOW 1, 2

MER on centerline
2 450-gal external fuel tanks
M-61 cannon - full 20mm ammunition
Doppler - on
Camouflage paint

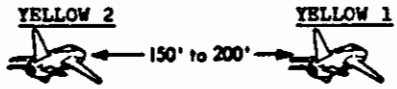
MIG-17 MIG 1, 2, 3

Silver color - No other configuration information.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Ceiling over Thud Ridge at 4 to 5,000 ft.

| | YELLOW 1 & 2 | MIG 1 | MIG 2, 3 |
|---|---|---|---|
| Altitude: | 3,000 ft AGL | climbing thru 4,000 ft | Unknown |
| Heading: | 310° | 310° | Unknown |
| Speed: | 450 KCAS | Unknown | Unknown |
| Fuel State: | Unknown | Unknown | Unknown |
| Flight Formation: | YELLOW 2 | YELLOW 1 | |




5. INITIAL DETECTION

YELLOW 2 saw a MIG-17 pass the flight 1-1-1/2 miles to the left and climb up into a 4 to 5,000 ft cloud layer. YELLOW 2 called the MIG out to YELLOW 1. YELLOW Flight had not received any MIG warnings but had overheard other flights engaging MIGs and had seen the airborne fireball of a MIG kill.

6. ACTION INITIATED

A few seconds after MIG 1 went into the clouds, it descended from the clouds about 1,000 ft in front of YELLOW 2 in a nose-low attitude. YELLOW 2 did not have an air-to-air sight so he pulled the nose up, pointed the pitot boom at the MIG and pulled the trigger. No hits were observed.

7. SITUATION DEVELOPMENT

MIG 1 pulled up in a barrel roll of sorts and was maneuvering for position on YELLOW 1. At this time YELLOW 2 saw two more MIG-17s (MIG 2 & 3) just pulling in on YELLOW 1's tail. YELLOW 2 warned YELLOW 1 and the flight jettisoned all stores, ignited afterburner and headed down and toward Thud Ridge. YELLOW 1 now had MIG 1, 2, and 3 behind him and could see tracers going over his canopy. YELLOW 1 and 2 successfully outran the MIG flight, and recovered at home base with no further incident and no aircraft damage.

8. ORDNANCE

| | No. fired/No. hits Cannon | Remarks |
|---|---|---|
| YELLOW 1 | 0/0 | |
| YELLOW 2 | 184 rd/0 | fired without gun sight |
| MIG 1, 2, 3 | Unknown rounds/0 | |

[redacted]

9. EQUIPMENT PROBLEMS

YELLOW 2 Air-to-air gun sight was out.
No other problems noted.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hrs | Combat Missions |
|---|---|---|---|
| YELLOW 1 | Unknown | Unknown | Unknown |
| YELLOW 2 | Unknown | 400 | 25 |

Comments on this Encounter

YELLOW 2 Very surprised at the maneuverability of MIG-17.

11. DATA SOURCES

Project Interviews: YELLOW 2, 13 Mar 1967.
Messages, Reports:

7th Air Force/OPREP-3/181825Z, Aug 66/DOCO, 2446.

12. NARRATIVE DESCRIPTION

YELLOW 1 and 2 were heading approximately 310° near Thud Ridge at 3,000 ft and 450 KCAS when a MIG-17 was sighted at 9 o'clock, 1 to 1-1/2 miles, climbing. MIG 1 then entered the overcast, cloud bases at 4 to 5,000 ft. A few seconds later MIG 1 descended out of the clouds in a shallow dive about 1,000 ft in front of and above YELLOW 2. Without benefit of an air-to-air gun sight, YELLOW 2 pulled up his nose and using the pitot tube for sighting fired a burst of 20mm. No hits were observed. MIG 1 pulled up into a barrel roll type of maneuver towards the 6 o'clock position of YELLOW 1. YELLOW 2 then saw two more MIG-17s closing on YELLOW 1 from the 6 o'clock. YELLOW flight descended to the deck while accelerating and disengaging as they departed the area.

RED BARON EVENT II-37 SUMMARY

| Time Mark | Action Aircraft (YELLOW 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| 0 | Y1, 2 (2) 450 gal external fuel tanks. MER on centerline 3,000 ft 450 KCAS Hdg 310° | Y2 sighted MIG 1 at 9 o'clock, level, in a climb. | Y1 150-200 ft at 3 o'clock, level | Y2 alerted Y1 of MIG at 10 o'clock | MIG 1 climbed into cloud layer at about 5,000 ft | No MIG alert received. |
| 1 | Same | Y2 fired hurried burst of 20mm at MIG 1. No hits observed. | | | MIG 1 descended out of clouds approximately 1,000 ft in front of Y2, slightly high. | Air-to-air gun-sight in Y2 malfunction. Used pitot boom for sighting. |
| 2 | Same | Y1 and Y2 jettisoned external fuel tanks and MER. Engaged A/B and descended to minimum altitude while accelerating Y2 sighted two more MIGs. | | Y2 called "Y lead you've got two MIG's on your tail. Jettison everything and go burner." | MIG 1 executed a barrel roll over Y1 and joined MIG 2 and 3 at 6 o'clock position of Y1 at about 2,000 ft range. | Y1 observed tracers pass his canopy but was not hit. |
| 3 | Accel from 450 KCAS to 600 KCAS Hdg 310° | YELLOW Flight disengaged by outrunning the MIGs. | | | MIGs discontinued the chase. | |
| | | | | | | |

[redacted]

Event II-38

Aircraft Involved: Four F-105Ds vs four MIG-17s

Results: Two F-105Ds damaged

Vicinity of Encounter: 21°15'N/105°47'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 August 1966/1626H

Four F-105s (BLUE Flight) on strike mission to JCS target 51. They were unable to locate target due to flooding and had just interdicted a road at approximately 21°11'N/105°51'E.

## 2. MISSION ROUTE

Departed Korat, 17,000 ft and 480 kt, direct to tanker in Laos direct to Red River at 21°58'N/104°34'E. After crossing the Red River the flight let down to 7000 ft, increased airspeed to 510 kt, flew east to the mountains, turned right 45 deg and flew down Thud Ridge to the target area. BLUE Flight joined to egress at 21°55'N/105°06'E and flew generally the same route back.

## 3. AIRCRAFT CONFIGURATION

F-105D BLUE 1, 3, 4

2 - 450-gal tanks
6 - M-117 (750-lb) bombs

F-105D BLUE 2

2 - 450-gal tanks
2 - CBU-24s

Radar, standby. TACAN - receive only, doppler off, IFF standby except BLUE 1, camouflage paint.

MIG-17s

Color unknown, tanks unknown, no missiles

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Overcast at 12,000 ft with 3-5 miles visibility

| | BLUE 1 2 3 4 | Remarks |
|---|---|---|
| Altitude: | 10,000 ft | BLUE Flight generally scattered and at different altitudes. Specific conditions given in narrative. |
| Heading: | Generally NW | |
| Speed: | 550 kt | |
| Fuel State: | 8000 to 10,000 lb | |
| Flight Formation: | | |

BLUE 1, 3 and 4 had just dropped ordnance and were not rejoined yet. BLUE 2 and 3 were about 1 mile apart, about 4 miles from BLUE 4. BLUE 1 was behind by about 5 miles; all heading NW.

## 5. INITIAL DETECTION

No MIG warnings were heard. BLUE 3 saw a MIG at his 6 o'clock, 3000 ft range.

## 6. ACTION INITIATED

BLUE 3 broke, left and down. BLUE 2 saw a MIG below and left. He rolled inverted and dived on the MIG.

## 7. SITUATION DEVELOPMENT

The MIG moved quickly inside BLUE 3's turn and started to fire. BLUE 2 dove toward the MIG and fired at him. BLUE 4 turned right and crossed behind BLUE 3 and the MIG, firing at a high angle off and under heavy g load. The MIG was driven off by BLUE 4, but not before he scored hits on BLUE 3's right flap. A second MIG attacked BLUE 4 and shot up his vertical stabilizer. BLUE 4 broke right as the MIG was shooting. At the same time BLUE 1 turned into the MIG firing 150 rounds before his gun jammed, and the MIG disengaged. Meanwhile, BLUE 2 was under attack but was able to evade the MIG by selecting afterburner and diving away.

[redacted]

[redacted]



8. ORDNANCE

| | No. Fired/No. Hits | |
|---|---|---|
| | Cannon 20mm | Remarks |
| BLUE 1 | 150/0 | Fired on MIG attacking BLUE 4; gun jammed after 150 rounds |
| BLUE 2 | 1 burst/0 | |
| BLUE 3 | 0/0 | |
| BLUE 4 | 1 short burst/0 | Snapshot at MIG on BLUE 3 |
| | Cannon 23mm | Remarks |
| MIG 1 | Fired cannon causing damage to BLUE 3's right flap. | |
| MIG 3 | Fired cannon causing damage to BLUE 4's vertical fin. | |

MIGs also fired on BLUE 2 in two instances and on BLUE 1 in one instance.

9. EQUIPMENT PROBLEMS

BLUE 1 - Gun jammed after firing 150 rounds.
BLUE 2 - Pitch mechanical advantage shifter motor out. This was known before takeoff but BLUE 2 assumed he would not be going over 540 knots.

10. AIRCREW COMMENTS

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 2 | 1400 | 550 | 80 | Had experience in F-86 and F-100. Has always been in TAC. Has air combat maneuver training in F-86 and F-100. The only ACM training in F-105 was non-scheduled training within the flight. Most of F-105 ACM was due only to squadron initiative. Was qualified on the DART. |

Comments on this Encounter

BLUE 2: Has read MIG-17 flight manual at 7th AF which helped to develop jinking escape maneuver since MIG had airspeed limit and needs 3-4 second tracking time.

In post-flight briefing decided that flak suppression aircraft should bomb with strike aircraft rather than split up and lose flight integrity. Was set up for bombing required three switch changes to go to air-to-air mode.

11. DATA SOURCES

Project Interviews: BLUE 2, Dec 66.
Letter: BLUE 4, 2 Mar 67.
Messages, Reports:

7AF 2221518Z Aug 66 DOCO 24595 Aug 66 OPREP-3
7AF 221534Z Aug 66 OPREP-4
7AF 222250Z Aug 66 DIO 30284 Aug 66
USAF Air Staff Box Score

12. NARRATIVE DESCRIPTION

BLUE Flight was on a strike mission, JCS Target 51, in Route Package VI-A. They were the last flight into the area and saw the IRON HAND flight on ingress. However, they were unable to locate the target, due to flooding in the target area; therefore, BLUE Flight elected to interdict a road near the assigned target and had not yet rejoined in formation. BLUE 1, 3 and 4 dropped on the road but BLUE 2 was carrying two CBU 24s which he did not drop. He was staying high to use them for flak suppression in the target area. All of BLUE Flight was between 10,000 and 12,000 ft heading NW at between 500 and 550 knots. BLUE 2 and BLUE 3 were about line abreast with about one mile lateral separation, with BLUE 2 on the right or east side. BLUE 4 was flying in the same direction but SW of them about four miles.

BLUE 3, at 21°15'N/105°47'E, heading 320° at 11,000 ft and 550 knots saw a MIG-17 at his 6 o'clock position, 3000 ft range. He called out the MIG and broke down and to the left.

[redacted]

[redacted]



BLUE 2 at 21°16'N/105°48'E, heading 315° at 10,000 ft heard the MIG call by BLUE 3, rolled inverted and saw the MIG under him and off to the left. The MIG was at about 8000 ft altitude, 4000 ft behind BLUE 3 and shooting. BLUE 2 then went into a steep dive to the left and fired a "snapshot" at the MIG, overshot, pulled out at 4000 ft altitude and turned back north. Meanwhile, BLUE 3 was turning left with the MIG following around the turn, shooting and scoring hits in his right flap.

As BLUE 4 pulled off his bomb run he saw a MIG-17 closing on BLUE 3 from BLUE 3's 7 o'clock. BLUE 4 was higher than BLUE 3 and BLUE 4 turned right into BLUE 3 and the MIG. As they passed in front of BLUE 4 at 21°12'N/105°44'E at 2000 ft altitude, BLUE 4 fired a short burst at a high angle off under heavy g load. BLUE 4 pulled up just over the top of the MIG and as he did, he observed two MIG-17s at his 7:30 o'clock. He then rolled and broke left and down at over 500 knots, pulled up from the deck and lost them. However, a BLUE 4 saw the MIGs making a pass at BLUE 1 and BLUE 2.

The MIG disengaged from BLUE 3 after BLUE 4 made the firing pass at him.

BLUE 2, now heading 320° at an altitude of 4000 ft observed a MIG-17 on his tail (6 o'clock), approximately 3000 aft. BLUE 2 selected afterburner, unloaded and continued heading NW, while jinking, thus evading the MIG. The evasive maneuver consisted of a rapid roll and a quick pull to two to three g's then off to 1/2 g. He knew the MIG had no missiles. The MIG fired at BLUE 2 but scored no hits. (This may or may not have been the same MIG who hit BLUE 3).

When the MIGs were called, BLUE 1 was at 10,000 ft in a right turn at 21°10'N/105°50'E heading 300°. At the call BLUE 1 descended on down with BLUE 4, and was to the right, behind and above BLUE 4. BLUE 4 observed another MIG-17 at 6 o'clock and broke right and down. The MIG moved to the inside of the turn, fired and hit BLUE 4 in the vertical fin knocking six inches off the top.

BLUE 1, who was at 5000 ft heading 320° at 21°17'N/105°43'E breaks left and down firing at the MIG who was firing at BLUE 4, forcing the MIG to disengage. BLUE 1's gun jammed after firing 150 rounds. BLUE 1 then observed a MIG at his 6 o'clock position 3000 ft aft and firing. BLUE 1 went to 100 ft AGL and egressed at Mach 1.0.

All BLUE Flight continued to egress at a high rate of speed. BLUE 3 at 21°19'N/105°45'E observed four more MIGs, one at 6 o'clock, low, at 4000 ft altitude; one at about 7 o'clock, low, at 4000 ft altitude; and two at 8 o'clock, high, at approximately 10,000 ft altitude. However, these MIGs were not engaged and it is not known if they saw BLUE Flight at this time. BLUE Flight joined at approximately 21°55'N/105°06'E.

MIGCAP of F-104s were available but they were orbiting too far north of the target area to see the MIGs. MIG calls were given by BLUE Flight but apparently the CAP flight did not receive the calls as they did not respond.

Despite a few contacts of Firecan radars during the earlier part of the ingress, the last 20 miles into the target was free of Fansong contacts and except for some sporadic firing, flak. Even in the pop-up to attempt to acquire the primary target, no flak or SAMs were observed. While searching for the road to bomb, no flak was observed.

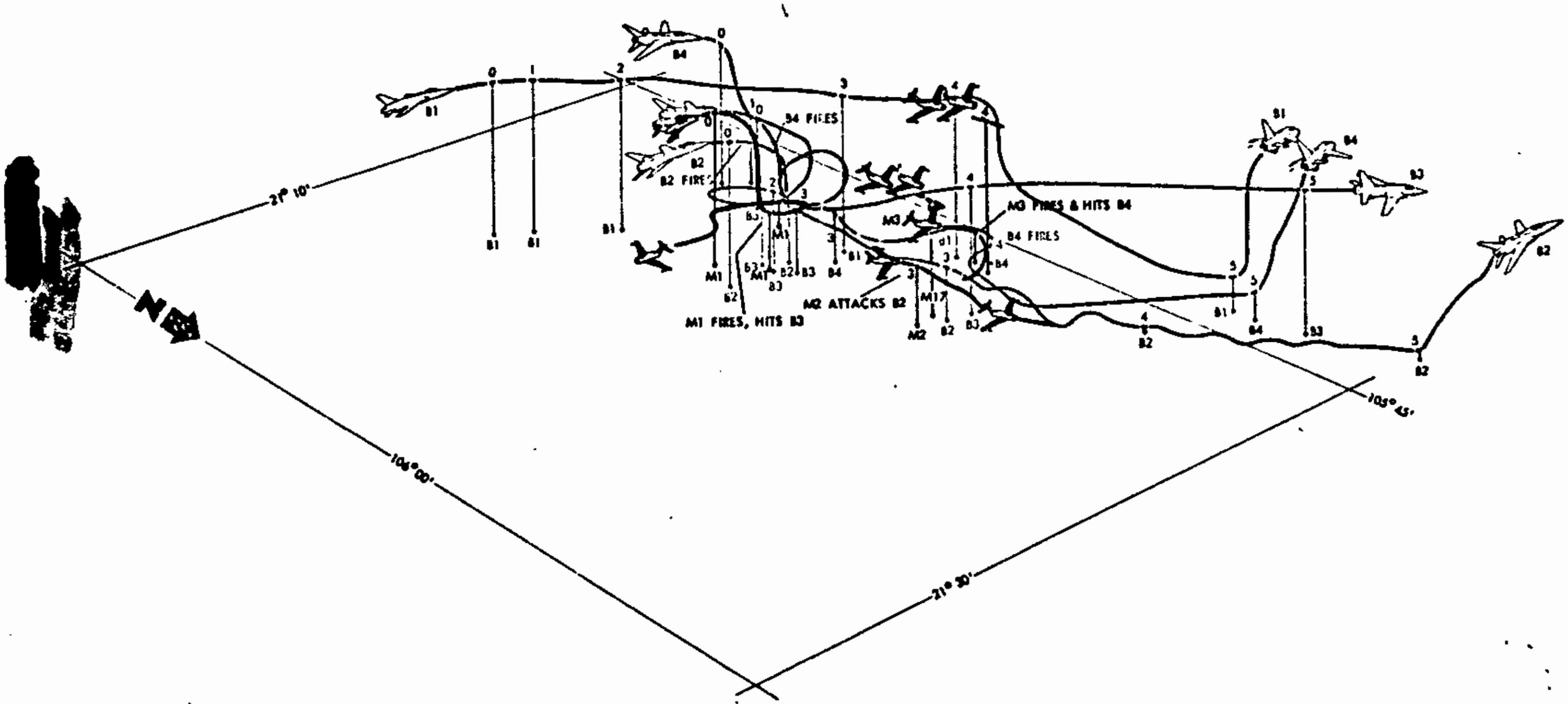
[redacted]

RED BARON EVENT II-38 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Eremy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_2$ | Same<br>B3 damage to right flap. | B4 turns into B3 and M1 and crosses behind them and fired with no hits observed; B4 pulled up over M1 and saw two more MIGs at 7 o'clock continued left and down at over 500 kt, pulled up from the deck and lost them. | | | M1 disengaged after B4 made a firing pass. | It is not known where M1 went. However, he may have switched to B2 after B4 fired on him. B4 was forced into a high angle pass - fired one short burst under heavy g load. |
| $T_3$ | Same<br>Jettisoned CBU-29s | B2 level at 4000 ft 320°. MIG-17 at his 6 o'clock, 3000 ft aft. Went afterburner, jinked and egressed to 21°55'N/105°43'E.<br>B4 saw MIG at B2's 6 o'clock after rolling out of left turn heading 315°. | B3 had completed 360° and heading 320°. | B4 said, "He is on you now, 2." | MIG-17 trying to close on B2. MIG closed to 500 ft firing. | This MIG-17 may or may not be the same one who broke off B3 - MIG disengaged when B2 went afterburner - tried to drop ordnance armed. |
| $T_4$ | Same | B4 has MIG at 6 o'clock. Breaks right and down. B1 is above to the right and behind. Breaks left and down and fires on the MIG who disengaged. B3 saw four MIGs, one low 4000 ft 6 o'clock, one low 7 o'clock, two high 10,000 ft 8 o'clock. MIG on B1. | | B4 called, "MIG on my tail." | MIG firing on B4 scoring hits in the vertical stabilizer.<br><br>B2 loses MIG.<br><br>MIG 3000 ft behind. | B1 fired 150 rounds of 20mm when gun jammed. He did not hit the MIG.<br><br>B2 finally jettisoned ordnance by using master panic button. Flak fired at B2 on egress. |
| $T_5$ | Same<br>B4 damage to vertical stabilizer. | BLUE Flight egress area. | | | | Flight egresses to 21°55'N/105°06'E. |

RED BARON EVENT II-38 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | BLUE 1, 3, 4 just bombed target. B2 had two CBU-24s Fuel 8000 to 10,000 lb | B1 11,000 ft, 300°, 550 kt; B2 10,000 ft, 315°, 550 kt; B3 11,000 ft, 330°, 550 kt; B4 11,000 ft, 330°, 550 kt; B3 saw one MIG-17 at his 6 o'clock | Had just come off target - not yet rejoined B2. Still had two CBU-24s. Was saving for flak suppression | | One MIG 3000 ft behind B3 | |
| $T_1$ | Same | B3 breaks left and down into MIG 1. B2 sees M1 left and below set up the clck-pit rolls inverted and dives on M1, fires and misses. Leveled at 4000 ft. B2 did not use afterburner. B2 overshot, was level with MIG | | B3: "Get him off my tail." B2: "I see him. I am coming in." | One MIG shooting at B3, scoring hits in the right flap. | No hit observed from B2's firing |
| | B2 at 1-1/2 g | | | | MIG pulls up and to the left | B2 had to: (1) shift radar mode from ground map to air-to-air by pushing a button. (2) rotate weapon mode selector two clicks to guns-air position. (3) depress action - reject button. |



B4 FIRES
B2 FIRES
M1 FIRES, HITS B3
M2 ATTACKS B2
M3 FIRES & HITS B4
B4 FIRES
21° 10'
106° 00'
21° 30'
105° 45'


Event II-38

Aircraft Involved: One F-105F and one F-105D vs three MIG-21s

Result: No damage

Vicinity of Encounter: 21°20'N/107°15'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 9 September 1966/0900H

BLUE Flight was 60 n mi northwest of Hanoi on an IRON HAND mission departing the target area. BLUE 3 and 4 had left the target earlier due to low fuel.

2. MISSION ROUTE

Unknown. Egress was east to the Gulf of Tonkin.

3. AIRCRAFT CONFIGURATIONS

Unknown. WILD WEASEL aircraft in lead (F-105).

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

| | BLUE 1 and 2 | MIG , 2, and 3 |
|---|---|---|
| Airspeed: | 425 kt | Unknown |
| Heading: | 090° | About 100° |
| Altitude: | 6000 ft | About 6000 ft |

Formation: BLUE 2 on right side in tactical formation.

MIGs silver; no markings seen. No radar return on F-105 vector box; no missiles observed; no external stores observed.

5. INITIAL DETECTION

BLUE 2 noticed three MIG-21s at 6 to 7 o'clock high and 2000-3000 ft out while 37mm was exploding at 3 o'clock and in front of BLUE 2. No indication of MIGs from vector box. No MIG warnings were heard.

6. ACTION INITIATED

BLUE 2 called for a left break, and BLUE 1 and 2 broke left and down. BLUE 1 and 2 jettisoned ordnance.

7. SITUATION DEVELOPMENT

BLUE 1 and 2 broke down and left, and MIG 1, 2 and 3 followed BLUE 2. BLUE 2 leveled at 2000 ft. BLUE 1 says, "MIGs behind you, break right." BLUE 2 breaks right and down to the deck. Evades MIGs and exits to the east. About one minute later BLUE 1 sighted a MIG in front of him and above. BLUE 1 closed and fired 600 rounds 20mm in two separate bursts. No hits observed. MIG 4 started right turn. BLUE 1 returned to the deck and exited to the east. No damage. BLUE 1 and 2 exited to the water and refueled.

8. ORDNANCE

BLUE 1 expended 600 rounds of 20mm in two bursts.

MIG 1, 2 and 3 fired at BLUE 2; no hits.

BLUE 2 states he was sure the shells were airbursts and were from MIGs (white puffs of smoke).

9. EQUIPMENT PROBLEMS

None noted.

10. AIRCREW COMMENTS

| | Total Hours | 105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 1 (Back) | 2000 | 300 | 50 |

BLUE 2 - MIGs were believed to be under GCI control. Visibility was bad.

11. DATA SOURCES

Project Interviews: BLUE 1 (Back), 9 March 1967

Messages, Reports: PACAF 17 0255Z DOCCO 064 Sept 66; 7AF 09118Z DOCO 25649 Sept 66; CINCPAC 170246Z Sept 66; 7AF 090933Z Sept 66 DOCO 25259 OPREP-3; 7AF 091251Z Sept 66 DOCO 25308 OPREP-4

Letters: BLUE 1 Front, Mar 67
BLUE 1 Back, Mar 67
BLUE 2 Front, 22 Mar 67

[redacted]



12. NARRATIVE DESCRIPTION

BLUE Flight was on an IRON HAND mission. BLUE 3 and 4 left due to Bingo fuel. BLUE 1 and 2 were out bound from the target heading 090°, at 6000 feet. BLUE Flight was in a tactical formation with BLUE 2 on the right wing. BLUE 2 saw white puffs of smoke off his right wing and ahead; he then saw three MIG-21s who were approaching from 6-7 o'clock high, 2000-3000 feet away, tracking and firing.

BLUE 2 called a left break and the flight broke left and down and jettisoned ordnance. After about 90 degrees of turn, at 2000 feet, BLUE 2 and all three MIGs had overshot BLUE 1 and were at his 3 o'clock position. The MIGs were still in trail of BLUE 2 at 2000 ft altitude and 2000 ft distance, firing at BLUE 2.

BLUE 1 then called for BLUE 2 to execute a right break which he did, with the MIGs following BLUE 2 in the break BLUE 2 descended to the deck in afterburner and accelerated to Mach 1.2 heading east toward the water. While the MIGs continued to follow, they fell behind and were lost from sight. BLUE 2 then headed to the Gulf of Tonkin for refueling.

During BLUE 2's break back to the right, BLUE 1 continued in a left turn but lost sight of BLUE 2 and all three MIGs as they disappeared behind the hills on the ridge line. BLUE 1 then reversed and followed down the same valley at 100 feet AGL, 650 ktas. About one minute later, at 0903H, BLUE 1 sighted one MIG-21 at his 12 o'clock position about 5000 feet range. Both BLUE 1 and the MIG were heading approximately east with the MIG at 2000 feet altitude. The MIG did not initially see BLUE 1 and was apparently looking for BLUE 2. BLUE 1 pulled up behind the MIG until he had closed to about 2500 feet and fired one burst scoring no hits. BLUE 1 then closed to 1000-1500 feet range and fired another burst again with no hits. The MIG broke hard left, indicating to BLUE 1 that he had been seen. BLUE 1 then rolled off to the right and accelerated away to the east for egress. No hits were received by BLUE 1 or 2.

The F-105s were never warned of the presence of the MIG-21's from any radar vector gear. Due to the low altitude of operation, the EC-121(BIG EYE/Ethan Alfa) orbiting at 20°N/107°E contained no radar plots of this engagement.

At refueling BLUE 1 had 1000 pounds of fuel.



[redacted]

[redacted]

Event II-40

Aircraft Involved: Three F-105s vs an unidentified aircraft

Result: Sighting only

Vicinity of Encounter: 20°50'N/107°15'E to 21°00'N/107°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 11 September 1967/unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

| | BLUE Flight | Bogeys |
|---|---|---|
| Altitude: | 19,000 ft | 1,000 ft |
| Heading: | 010° | Unknown |

5. INITIAL DETECTION

No MIG warnings. BLUE Flight saw bogey. Slant range approximately 15 n mi.

7. SITUATION DEVELOPMENT

No further sighting. Oriental radio chatter heard on 253.5 UHF frequency in normal tone; two voices. Signals appeared to originate in Red River delta area.

11. DATA SOURCES

Messages, Reports: 388th OPREP-4/238, 11 September 1966.

12. NARRATIVE DESCRIPTION

After BLUE Flight hit the coast they observed unidentified aircraft paralleling their course between 20°50'N/107°15'E to 21°00'N/107°20'E.

[redacted]

[redacted]

Event II-41

Aircraft Involved: Four F-105s vs two Mig-17s
Result: No damage
Vicinity of Encounter: 21°13'N/106°10'E
21°12'N/106°35'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 September 1966/1643H and 1647H (approximately)

Four F-105s (BLUE flight) on a flak suppression mission as part of a strike against the Dap Cau Railway Bridge. The flight had hit the target and was egressing.

2. MISSION ROUTE

Takeoff from Korat refuel on Brown Anchor over the Gulf and ingress over the mountains. Therefore, ingress and egress was north of Haiphong.

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 2, 3, 4

2 450-gal tanks
Expended CBU
No ECM pods
Camouflage paint

MIG-17 MIG 1, 2

Silver color
1 missile under right wing

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear with visibility 10 miles.

| | BLUE 1, 2 | BLUE 3, 4 |
|---|---|---|
| Altitude: | 2000 ft AGL | 3000 ft AGL |
| Heading: | 095° | 092° |
| Speed: | 500 KTAS | 500 KTAS |
| Fuel State: | | Approx. 9000 pounds |

Flight Formation:

In a type of staggered string on trail position with BLUE 1 and 2 in reasonably close but BLUE 3 and 4 were strung out over several miles farther back and did not have visual contact.

5. INITIAL DETECTION

BLUE 1 had finished a right turn to 095° after pulling off a run on the target. Two MIG-17s were detected at BLUE 1's 6 o'clock position 600 yards behind but no firing was observed.

6. ACTION INITIATED

BLUE 1 accelerated to 600 kts and 500 ft AGL while jinking and the two MIGs broke off contact heading north.

7. SITUATION DEVELOPMENT

BLUE 2[1] subsequently acquired two MIG-17s at 2 o'clock at 5 miles range and attacked but his gun jammed. BLUE 3 and 4 were later attacked by two more MIGs.

8. ORDNANCE

(No. fired/No. hits)

| | Cannon | Remarks |
|---|---|---|
| BLUE 2 | 1/0 | Gun jammed due to part failure. |
| MIGS 3, 4 | 1/0 | Fired at BLUE 3 and BLUE 4 |

9. EQUIPMENT PROBLEMS

BLUE 2 - gun malfunction

[1] The OPREP-3 and the RED BARON interview conflict, in that the OPREP-3 says BLUE 2's gun jammed and that later BLUE 3 and 4 were attacked by MIGs. The interviewee claimed to be BLUE 4 and that while he attacked 2 MIGs and his gun jammed, BLUE 1, 2 and 3 never saw MIGs and he was never attacked. The reconstruction assumes that the interviewee was BLUE 2 (since it is judged unlikely that two such occurrences could happen on the same day) and he never saw BLUE 1 during egress.

[redacted]

10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 2 | 2800 | 950 | 6 | Background was all TAC. Fighter Weapons School graduate. |

Comments on this Encounter:

Too many switches to throw to go from bombing mode to a full computing air-to-air sight.

High speed at low altitude of the F-105 was a good asset.

The enemy pilots were poor.

There were MIG days and SAM days. The generalized MIG warnings were indicative since if MIGs were up, then SAMs were not likely.

11. DATA SOURCES

Project Interviews: BLUE 2, 17 January 1967
Messages, Reports: 388TFW OPREP-3, 14 September 1966, PINNACLE/308
7AF DAI 142335Z, September 1966 DIO 30050
7AF OPREP-3 142022Z, September 1966 DOCO 25526
7AF OPREP-4 141737Z, September 1966 DOCO 25527
7AF OPREP-4 142024Z, September 1966 DOCO 25532

12. NARRATIVE DESCRIPTION

BLUE flight had delivered its flak suppression ordnance and was pulling off the target. The flight was spread out and receiving quite a bit of flak.

After hitting the target, BLUE 1 finished a tight turn to a heading of 095°, he was at 500 KTAS and 2000 ft AGL. At this time he was jumped by two MIG-17s. The MIGs were first detected at 6 o'clock 600 yards behind. No firing by the MIGs was observed. BLUE 1 accelerated to 600 KTAS and 500 ft AGL while jinking, and the MIGs broke contact by turning north.

As BLUE 2 pulled off the target he saw two MIG-17s and called them out. The MIGs appeared to be after the rest of the flight (although BLUE 2 did not remember seeing any other flight member at this time). The MIGs appeared at 2 o'clock at 5 miles, level heading in the same direction as BLUE 2. BLUE 2 closed on the MIGs who were flying straight and level and did not appear to be aware of his presence. BLUE 2 caged the sight, went to guns/air, and then went to search and attack in order to get a computing sight. He did not have an analogue because he was inside of break away range. At 2000 ft range he hit the afterburner and closed to 1000 ft at dead 6 o'clock. The MIGs were in fairly close formation with the wingman 500 ft out in a typical fighting wing. Each MIG had one missile halfway out on the right wing. BLUE 2 overled MIG 2 and attempted to let the bullet steam wipe through him on a quick burst and then intended to switch to the lead MIG.

After squeezing the trigger, the gun fired about 6 rounds and stopped firing due to a shear pin failure.

The MIGs then lit their afterburners and executed a lazy chandelle. BLUE 2 rolled off jettisoned his stores, passed out in front of them and egressed on the deck. The MIGs did not follow.

All during BLUE 2's attack on the MIGs he was receiving 85mm fire, in barrage-type bursts.

After BLUE 2's encounter, BLUE 3 and 4, at 21°12'N/106°35'E, heading 092°, 500 KTAS at 3000 ft AGL, observed two MIG-17s (MIG 3 and 4) coming from the north, and falling in at BLUE 3 and 4's 6 o'clock position. BLUE 3 and 4 descended to the deck in afterburner and pulled away from the MIGs, who were able to close to no more than 900 yards and then gave up the chase. Although the MIGs fired, no hits were received. BLUE 3 and BLUE 4 did not engage due to fuel state.

BLUE flight did not receive any MIG warnings. In this period of time a new MIG warning code was initiated. In addition to the geo-ref coordinates (e.g. AG-4 or Alfa Golf) a code was called, giving the base that the MIGs departed from and three key areas of MIG location called Little, Small and Big Box.

[redacted]

Event II-42

Aircraft Involved: Four F-105Ds vs three MIG-17s
Result: No damage
Vicinity of Encounter: 21°20'N/106°10'E

1. PRIMARY MISSION

Date/Time: 14 September 1966/1636H

Four F-105D aircraft (BLUE Flight) on a strike flight against the Dap Cau Highway Bridge 15 n mi northeast of Hanoi. This was one flight of four attacking the bridge and other flights were also operating in the area, some ahead and some behind, including an F-4 flight.

2. MISSION ROUTE

Korat direct to Brown Anchor east coast of North Vietnam west along the ridge line into the target. The egress route was the reverse of the inbound route. See Figure 1 for mission route.

3. AIRCRAFT CONFIGURATION

BLUE 1, 3 and 4

2 3000-lb bombs
1 650-gal centerline tank
1000 rounds 20 m.m. ammo

BLUE 2

2 CBU-24s
1 650-gal centerline tank
1000 rounds 20 m.m. ammo

MIG 17

Ordnance unknown
Silver color (did not see markings)

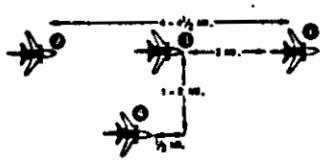
4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered thunder storms. 2-3 miles visibility but clear in the target area.

| | BLUE 1 | BLUE 3 | BLUE 4 | BLUE 2 |
|---|---|---|---|---|
| Altitude: | | 4500 ft | | 800-1000 ft |
| Heading: | | 090° | | 090° |
| Speed: | | 550 KIAS | | 550 KIAS |
| Fuel State: | | Unknown | | Unknown |

Flight Formation:

Flight was in a right turn strung out, lead aircraft in front and BLUE 3 and 4 cutting off on the inside to join up. See sketch.



5. INITIAL DETECTION

BLUE Flight was in a right turn. BLUE 1 sighted three MIG-17s heading east. Two MIGs were on BLUE 3 and one MIG at BLUE 4's 6 o'clock position. The flight had not received any MIG warnings prior to this.

6. ACTION INITIATED

BLUE flight accelerated and continued to turn to egress heading.

7. SITUATION DEVELOPMENT

The MIGs pursued BLUE flight for about two minutes, but never approached closer than 5000 ft. During egress BLUE 2 attempted to attack one of the MIGs but could not attain position. BLUE 4 was shot down by ground fire after the MIGs broke off but was rescued.

[redacted]

8. ORDNANCE

No ordnance expended.

9. EQUIPMENT PROBLEMS

None.

10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 4000 | 900 | Unknown | Considerable fighter experience F-86, F-100, F-105, F-9, F-11. |
| BLUE 2 | 400 | 300 | 75 | Completed F-105 gunnery school at Nellis. This was his first assignment. |
| BLUE 3 | 2600 | 650 | 70 | |
| BLUE 4 | Unknown | Unknown | 26 | |

11. DATA SOURCE

Project Interviews: BLUE 1, 16 March 1967
BLUE 2, 17 February 1967
BLUE 3, 6 January 1967

Messages: 7AF 151718Z, September 1966 DOCO FASTEL NR 106
388th TFW OPREP-3 PINNACLE 317
7AF 142335, September 1966 DIO 30450

12. NARRATIVE DESCRIPTION

BLUE flight had just pulled off from their bombing run on the Dap Cau Highway bridge and were in a right turn joining up about 4500 ft, altitude 500-550 KIAS. BLUE 1 was in front followed by BLUE 3 and BLUE 4. BLUE 2, with flak suppression ordnance, had hit a flak site about 2 miles north of the target and was trailing BLUE 1 by 4 to 4-1/2 miles and BLUE 3 and 4 by about 2 miles. BLUE 1 saw three MIG-17s attacking from the west heading 090° and alerted the flight. The MIGs came out of the sun and two attacked BLUE 3 from his 6 o'clock and 8 o'clock while the third attacked BLUE 4. When the MIGs were observed the flight was in the vicinity of 21°20'N/106°10'E heading 090° and BLUE 1, 3 and 4 were at 4500 ft and 550 KTAS. BLUE 2 was about 800-1000 ft AGL. The MIGs were at approximately the same altitude as BLUE flight.

The MIGs were also seen by BLUE 2 who was trailing the rest of the flight at 800-1000 ft AGL. He called them out but the rest of the flight had already seen the MIGs.

BLUE 1 kept the MIGs and the rest of the flight in sight, while egressing. The egress was made at low altitude and high speed with horizontal jinking, BLUE 1 observed the two MIGs break off BLUE 3. BLUE 1 also observed the MIG break off from BLUE 4.

BLUE 2, after calling the MIGs and seeing none on himself, cleaned off the in-board pylons and accelerated in afterburner in an attempt to attack one of the MIGs that was at 8 o'clock high on BLUE 3, and about one mile away from BLUE 3. BLUE 2 started to close on the MIG which was at about 5000 ft altitude (about 1000 ft higher than BLUE 3) and about 2 miles away. BLUE 2 climbed and closed on the MIG until the range was about a mile. The MIG then started a left hand hard turn (not a break). BLUE 2 who had came out of burner at this time had a good closure rate and started to turn with the MIG. The MIG was about 5000 to 6000 ft out and BLUE 2 was turning left at about 3 gs. The MIG turned rapidly. BLUE 2 ended up at about 110 degress angle off from the MIG. It became evident that the MIG and BLUE 2 would end up in a head on pass, so BLUE 2 broke off to the right. BLUE 2 had passed just ahead of BLUE 3 since BLUE 2 had used afterburner. BLUE 3 was at this time descending in a slight left turn. BLUE 2, in turning right, went under BLUE 3's nose at a track crossing angle of 90°, about 3000 ft in front. As soon as BLUE 2 crossed under BLUE 3's nose he reversed and climbed back to the left bleeding off airspeed to sandwich the remaining MIG on BLUE 3. As BLUE 2 picked up BLUE 3, he saw that the MIG-17 had broken off and was headed back toward Kep.

BLUE 3 heard BLUE 1's initial call. As BLUE 3 looked back to pick up BLUE 4, he saw a MIG at 6 o'clock to himself at a slightly lower altitude and about 4000 ft range. BLUE 3 accelerated slightly. BLUE 3 also saw BLUE 4 with a MIG-17 at BLUE 4's 6 o'clock. The MIG was a mile or so aft of BLUE 4.

BLUE 3 had been looking aft to observe BLUE 4 and on looking right he saw a silver MIG-17 at his 3 o'clock. The MIG is 4000 to 5000 ft out and within 1000 ft of BLUE 3's altitude. BLUE 3 turned slightly into the MIG and when the MIG responded BLUE 3 dived away jinking to the left in afterburner. BLUE 3 at this time still retained two pylons and a centerline tank. During the acceleration and descent to 2000 ft, BLUE 3 crossed BLUE 2's path, but never saw the MIG-17 which BLUE 2 was engaging. BLUE 3, despite his

fient toward the MIG, did not set up the sight for guns air. After some distance, BLUE 3 went back to 5000 ft and continued to egress.

The MIG on BLUE 4 was a mile or more away, sliding into a 6 o'clock position. BLUE 4 was instructed to break right and descend in afterburner, continuously jinking. BLUE 4 did this and after traveling some distance lost the MIG while heading in a southeast direction. BLUE 4 was directed by BLUE 1 to turn back to the northwest in order to rejoin the rest of the flight.

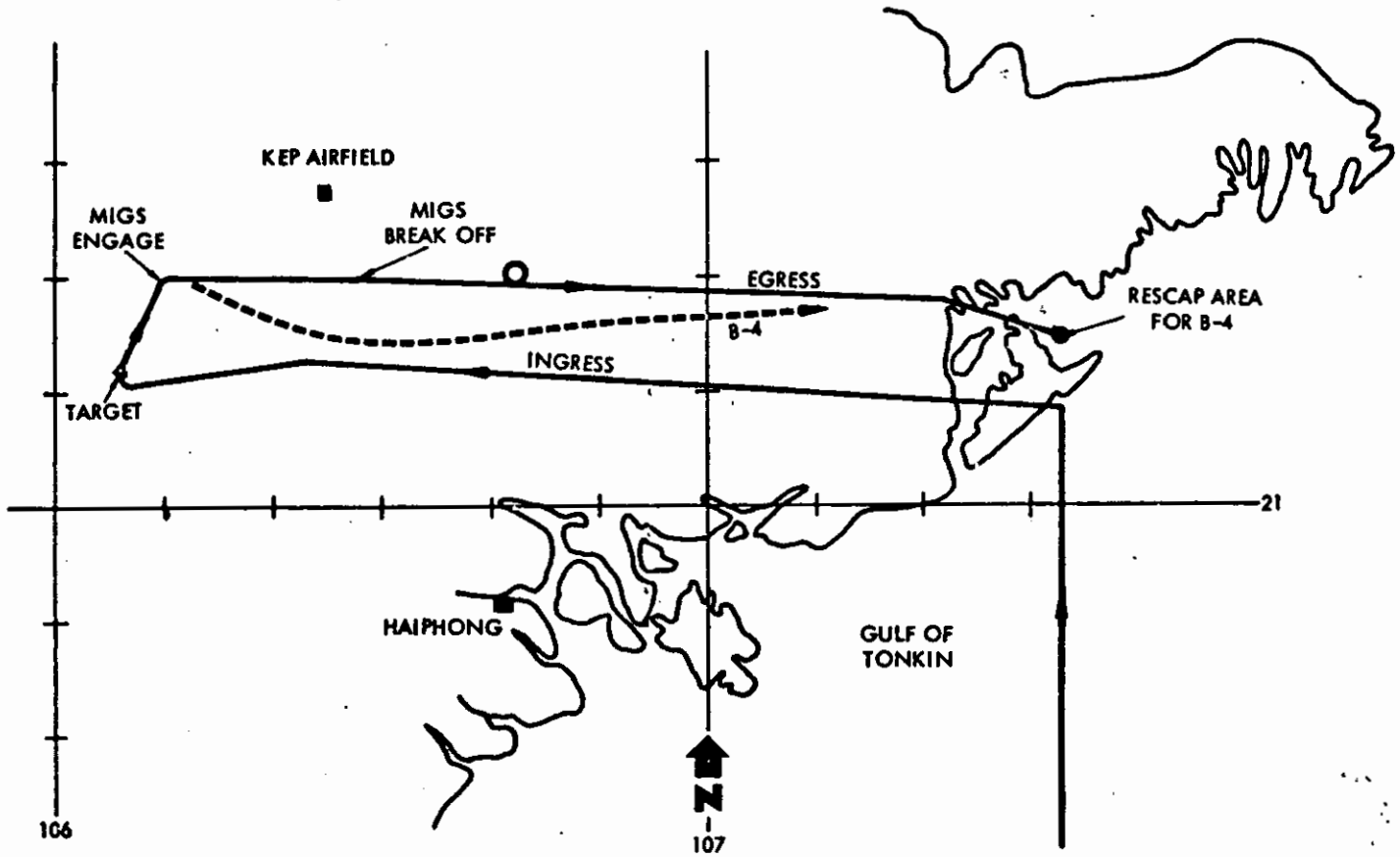
BLUE 1, 2, and 3 joined and about half way to the coast they made a 360 orbit to pick up BLUE 4. Due to the speed of BLUE 4, he passed the rest of the flight so that when contacted on the radio, a DF reading put him east of the rest of the flight. BLUE 1, 2 and 3 then climbed and also started egressing at 600 kts to catch BLUE 4.

BLUE 4 pulled up just before reaching the coast and BLUE 1 saw him get hit by flak (57mm). Half of BLUE 4's right wing was knocked off and the engine was damaged. BLUE 4 ejected in the water close to land and the rest of the flight provided RESCAP. BLUE 4 was subsequently recovered.

BLUE 1 noticed that the flak stopped just as he was rolling in on the target although it was surmised that this was due to the presence of MIGs.

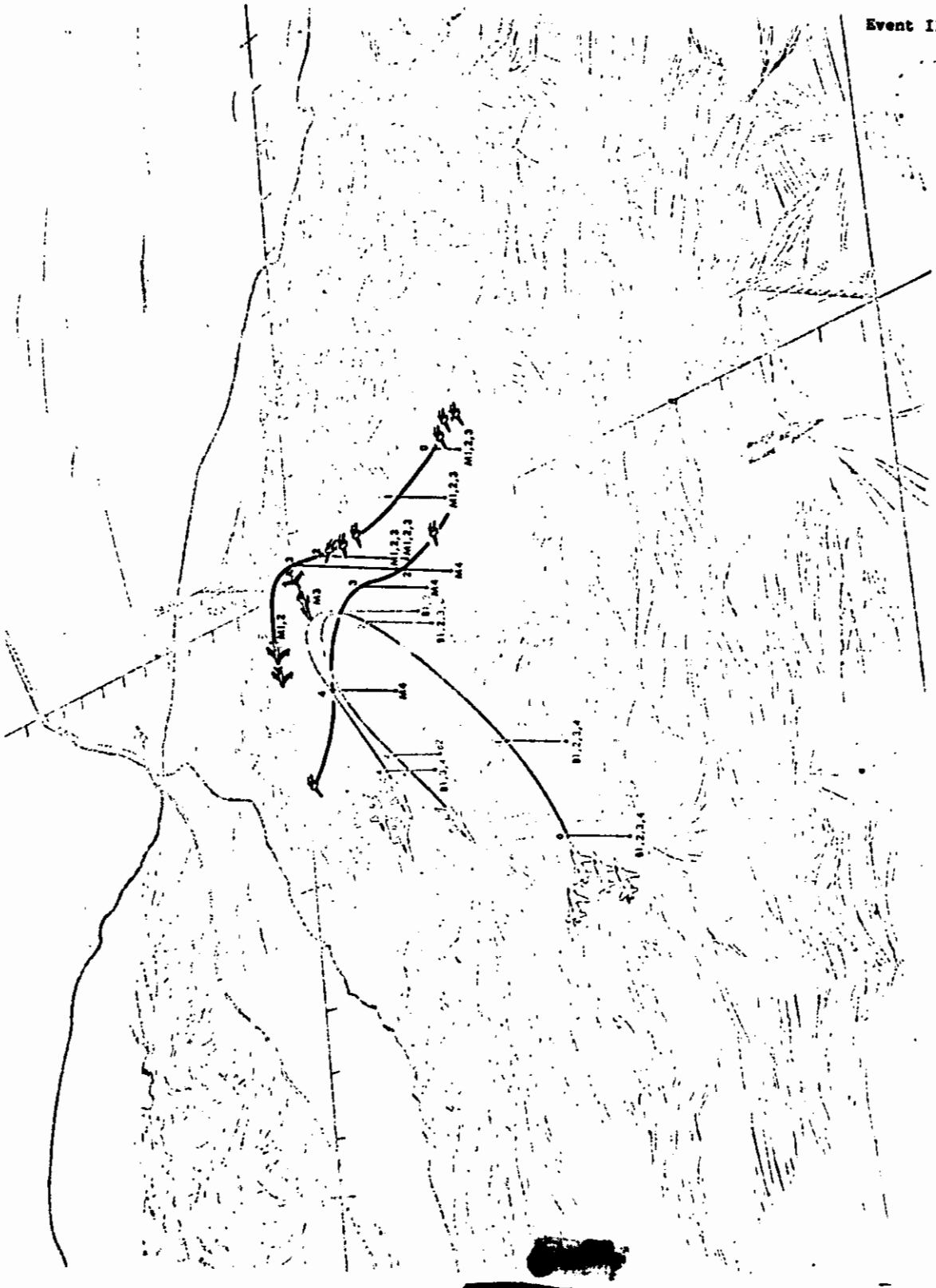
RED BARON EVENT II-42 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | 550K<br>B1, 3, 4 at 4500'<br>B2 at 800-1000'<br>Flight in right turn. | BLUE Flight starts to accelerate and descend with constant S turns to keep the MIGS from tracking.<br>B1 continues to egress<br>B2 accelerates in A/B after the MIG at 8 o'clock high to B3<br>B3 accelerates slightly<br>B4 dives away in A/B | | B1 sees MIGS and calls to the flight.<br>B2 also sees the MIGS and calls to the flight.<br>B4 is called to descend and accelerate. | 3 MIG-17s attack BLUE Flight. MIGs coming from out of the Sun, heading East at about 5000' MIGS are about 1 mile away from B4 and B3.<br>1 MIG stayed with B4 and 2 MIGs go after B3. One at 8 o'clock at one at 6 o'clock about 1 mile away. | All members of the flight saw the MIGS. |
| $T_1$ | B3 600K<br>5000' | B3 sees a MIG at 3 o'clock, 5000' out.<br>B 3 turns in toward the MIG and when the MIG reacts, dives away. | | | M2 at about 5000' alt. | |
| $T_2$ | B2 about 4500'<br>about 600 K | B2 closes to within 1 mile of M1 comes out of A/B and starts a 3g turn to track M1. | | | M1 starts a hard left hand turn | |


KEP AIRFIELD
MIGS ENGAGE
MIGS BREAK OFF
EGRESS
B-4
INGRESS
TARGET
RESCAP AREA FOR B-4
HANOI
HAIPHONG
GULF OF TONKIN
N
106
107
21

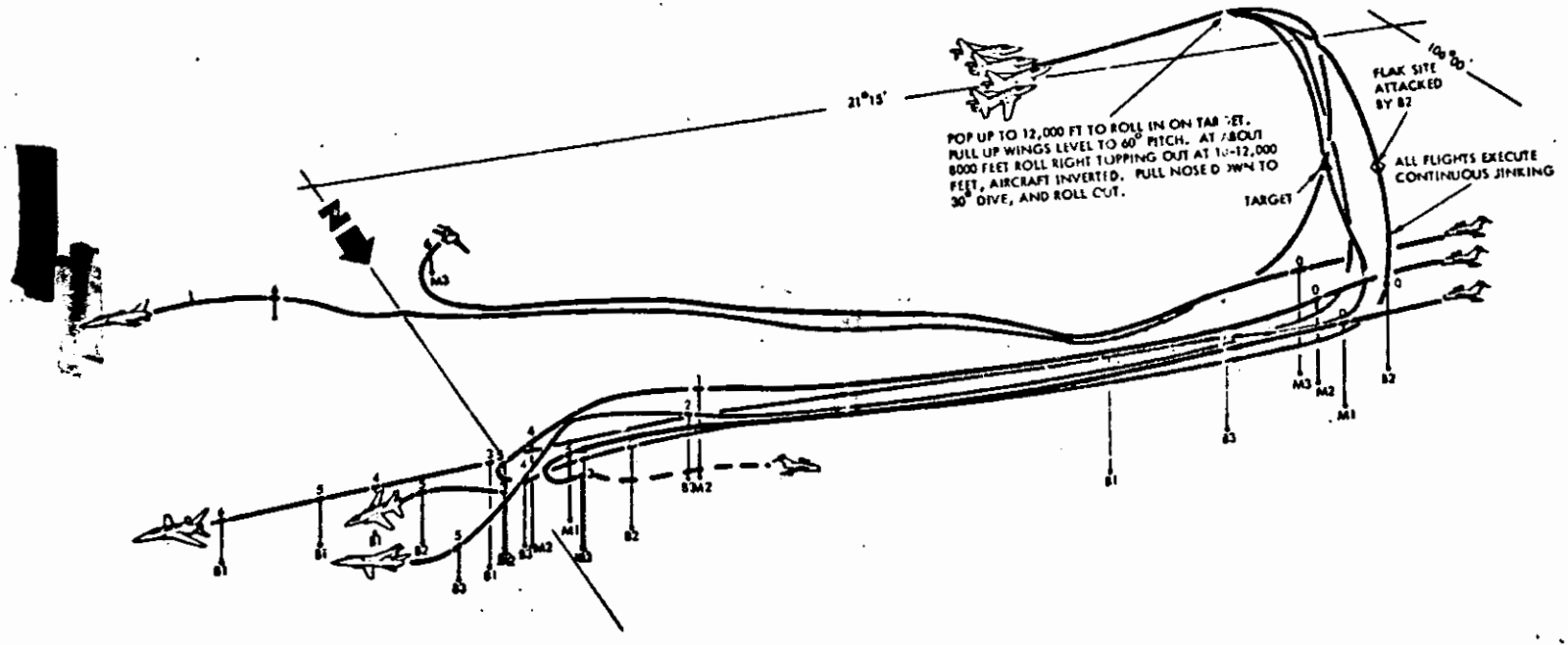
Event II-42a

Event II-47



RED BARON EVENT II-42 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_3$ | B2 at 3g<br>B3 was 110° angle off from MIG. | B2 breaks right and descends away from M1. | | | M1 has turned until he is heading back toward B2. | |
| $T_4$ | B3 descending away from M1 in A/B.<br>B2 descending away from M2 in A/B. | B2 passes in front of B3, 90° TCA, 3000' away. | | | | |
| $T_5$ | B3 continues on. | B2 pulls up to B1 observes M1 and 2 break off. | | | M2 breaks off. | |
| $T_6$ | | B1, 2, 3 egressing to join up. | | B1 calls B4 that M3 has broken off and for B4 to turn to NW heading. | | |


21°15'
N
POP UP TO 12,000 FT TO ROLL IN ON TARGET. PULL UP WINGS LEVEL TO 60° PITCH. AT ABOUT 8000 FEET ROLL RIGHT TUPPING OUT AT 10-12,000 FEET, AIRCRAFT INVERTED. PULL NOSE DOWN TO 30° DIVE, AND ROLL OUT.
TARGET
FLAK SITE ATTACKED BY B2
ALL FLIGHTS EXECUTE CONTINUOUS JINKING
M3
M2
M1
B1
B2
B3

Event II-42b

[redacted]

[redacted]

Event II-43

Aircraft Involved: Four F-105s vs two MIG-17s

Result: Sighting only

Vicinity of Encounter: 21°20'N/106°45'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 September 1966/1638H

This was a strike mission. Four F-105s (BLUE Flight was inbound to the target Chiang Mai petrol storage.) The IRON HAND support aircraft was leaving the area so BLUE Flight aborted at 21°12'N/106°50'E.

2. MISSION ROUTE

Unknown

3. AIRCRAFT CONFIGURATIONS

BLUE 1, 2, 3 and 4 carried iron bombs. One flight member had two CBU-24s.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Haze, with thunderstorms.

BLUE Flight - 9000 ft AGL at 360°

5. INITIAL DETECTION

BLUE Lead sighted two MIGs at 12 o'clock high (15,000 ft). MIGs were in a hard right turn.

6. ACTION INITIATED

BLUE Flight jettisoned ordnance and evaded.

7. SITUATION DEVELOPMENT

BLUE Flight position now 21°20'N/107°00'E at 4000 ft, heading 122°, when MIGs were again spotted at flight's 8 o'clock position, 5000 AGL. Flight passed through thunderstorms and exited area.

11. DATA SOURCES

Messages, Reports:

388th Wing, OPREP 4/313, 14 Sept 1966

12. NARRATIVE DESCRIPTION

BLUE Flight was inbound to the target. The setting sun in haze dropped visibility, and the IRON HAND support was leaving the target area so Lead decided to abort the mission at 21°12'N/106°50'E. The Flight turned right and at 21°20'N/106°45'E, heading 360 degrees, and at 9000 feet AGL, Lead observed two MIG-17s. The MIGs were at BLUE Lead's 12 o'clock position in the vicinity of 21°30'N/106°45'E, at 15,000 feet, in a hard right descending turn. The MIG wingman was sliding to the outside of the turn.

BLUE 1 called MIGs at 12 o'clock, and the Flight went to afterburner and began a tighter descending right turn.

The MIGs were lost momentarily but were sighted again by BLUE 1 immediately before going through a southern fringe of a thunderstorm. BLUE Flight's position was then at 21°20'N/107°00'E and BLUE Flight was 4000 ft AGL heading 122 degrees. The MIGs were at BLUE Flight's 8 o'clock position at approximately 5000 ft AGL.

BLUE Flight passed through the thunderstorm, jettisoned ordnance (iron bombs and CBUs) and returned to post-strike tankers.

[redacted]

Aircraft Involved: Three F-105s vs two MIGs
Result: Sighting only
Vicinity of Encounter: 21°00'N/107°37'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 15 September 1966/1555H

2. MISSION ROUTE

Unknown

3. AIRCRAFT CONFIGURATIONS

Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Unknown

| | BLUE 1, 2, 3 |
|---|---|
| Altitude: | 13,000 ft |
| Heading: | 360° |
| Speed: | 450 kt |
| Fuel State: | Unknown |

Flight Formation:

Finger tip

5. INITIAL DETECTION

Was made on their vector box gear which indicated X-band radar at their 12 o'clock position.

6. ACTION INITIATED

None

7. SITUATION DEVELOPMENT

Unidentified aircraft flew by BLUE Flight and turned to their 6 o'clock position. BLUE Flight then broke right and observed two aircraft two nautical miles behind. BLUE Flight continued turn into possible MIGs and MIGs went into a descending left turn and were lost in the haze at about 2,000 ft AGL.

8. ORDNANCE

| BLUE 1, 2, 3 | MIGs |
|---|---|
| Unknown | Unknown |

9. EQUIPMENT PROBLEMS

None

10. AIRCREW COMMENTS

Experience

Unknown

Comments on this Encounter

BLUE 1: MIGs could have been F-4s.

Comments from Overall Experience

BLUE 1: F-4s should be briefed on routes to be flown by F-105s and that they call F-105s if they are making identification passes.

[redacted]

[redacted]



11. DATA SOURCES

Messages: OPREP-4/237 388TFW 15 Sep 1966

12. NARRATIVE DESCRIPTION

BLUE Flight was inbound to a target at 13,000 feet, location 20°40'N/107°37'E heading 360°, 450 knots when they got X-band indications on their vector at 12 o'clock, strength one ring. The signal became stronger and unidentified aircraft passed above or beneath BLUE Flight. No visual was acquired at this time. The unidentified aircraft did a 180° turn and began closing on BLUE Flight at their 6 o'clock. BLUE Flight broke right and observed two unidentified aircraft approximately 2 nautical miles behind them at their flight level, 13,000 feet. When possible MIG-21s saw BLUE Flight turning into them, they made a hard descending left turn. BLUE Flight continued turn into possible MIGs, and MIGs continued descending left turn to approximately 2,000 ft AGL, where they were lost in haze. Possible MIGs not seen again. The flight leader assumed that the unidentified aircraft were MIG-21s although he admitted they may have been U.S. F-4s.

[redacted]

[redacted]

Event II-45

Aircraft Involved: Four F-105s vs four MIG-21s
Result: Sighting only
Vicinity of Encounter: 21°09'N/106°45'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 September 1966/1645H

Four F-105s were on a strike mission on the Dap Cau Railroad and Highway Bridge (21°12'N/106°06'E).

3. AIRCRAFT CONFIGURATIONS

BLUE 1, 2, 3, 4

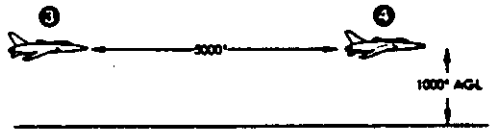
20mm Cannon (1,029 rounds)
Rest of ordnance unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Unknown

Altitude: 1,000 ft AGL
Heading: 092°
Speed: 551 ktas
Fuel State: Unknown

Flight Formation:




5. INITIAL DETECTION

BLUE-3 visually observed four MIG-21s, 4000 ft to his right and 4000 ft above him in a left turn passing through 060° heading.

6. ACTION INITIATED

BLUE-3 went into afterburner and egressed area.

7. SITUATION DEVELOPMENT

BLUE Flight egressed without further incident.

11. DATA SOURCE

Messages:

7AF, OPREP 3 1619472 Sept 1966 DOCO 25603

12. NARRATIVE DESCRIPTION

BLUE Flight was outbound from the target area heading 092° at 1000 ft AGL, at 550 KTAS. BLUE 3 was 5000 ft behind BLUE 4 when he saw four MIG 21s 4000 ft to his right and 4000 ft higher than BLUE 3 in a left turn, passing 060°. BLUE 3 then selected afterburner and egressed the area jinking at 650 KTAS. MIG-21s did not engage nor follow BLUE 3. No damage to the aircraft or encounter logged and aircraft retreated safely to home station.

[redacted]

[redacted]

Event II-46

Aircraft Involved: Four F-105Ds vs two MIG-17s
Result: No damage
Vicinity of Encounter: 21°18'N/106°17'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 September 1966/1650H

Four F-105Ds (BLUE Flight) on a strike target (JCS #16 - Dap Cau railroad and highway bridge near Bac Ninh). Aircraft were in a Fluid-4 with BLUE 2 probably on the right. An EB-66C and an EB-66B were on station 21°15'N/105°35'E and an EB-66B was on station at 20°40'N/107°20'E.

2. MISSION ROUTE

Depart Korat AB, Thailand. Exact route is unknown but was over the Gulf, then a 270° heading at 6,000 ft and 540 KTAS east of Hanoi and inbound to target.

3. AIRCRAFT CONFIGURATION

F-105D BLUE 1, 2, 3, 4

2 - 450-gal wing tanks
4 - CBUs (1 each wing station, 2 center line)
1 - gun

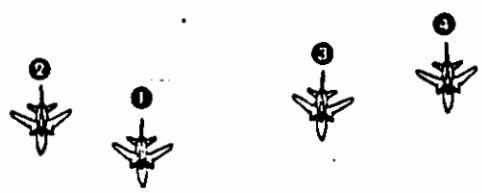
MIG-17s MIG 1, 2

Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 7-mile visibility, scattered clouds.

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 6000 ft | 5500 ft | Unknown | Unknown |
| Heading: | 270° | 270° | Probably the same 270° | 270° |
| Speed: | 540 KTAS | 540 KTAS | 540 KTAS | 540 KTAS |
| Fuel State: | Unknown | Unknown | Unknown | Unknown |
| Flight Formation: | | | | |




5. INITIAL DETECTION

Received warning from ETHAN BRAVO at 1645H. At 1648H at 21°10'N/106°15'E, heading 270°, 6000 ft, 540 KTAS observed two missile contrails at 1 o'clock. Received warnings from ETHAN BRAVO at 1650H. At 21°08'N/106°17'E, 1650H, saw two MIG-17s at 10:30 o'clock position approximately 4000 ft alt, 1 to 1-1/2 miles away. BLUE Flight heading 270°, 540 KTAS, 6000 ft alt. MIGs observed visually and called out by flight Lead (BLUE 1). The MIGs were in a right turn passing through 330° at 4000 ft altitude. All flight members saw the MIGs.

6. ACTION INITIATED

BLUE Flight jettisoned ordnance and dropped tanks, broke left into MIGs, and descended slowly. BLUE 2 followed lead. It is unknown as to what BLUE 3 and 4's actions were.

7. SITUATION DEVELOPMENT

BLUE 1 and 2 broke hard into MIG 1 and 2 who were in a right bank passing 330°. BLUE 1 made a quartering head-on pass and fired 66 rounds of 20mm at MIG 1 from a distance of 2500 to 2000 ft out. Engagement was then broken off.

[redacted]

8. ORDNANCE

(No. fired/No. hits)

| | 20mm Gun | Remarks |
|---|---|---|
| BLUE 1 | 1/0 | No hits were recorded by BLUE 1. 66 rounds fired. |
| BLUE 2, 3, 4 | None | |
| MIG 1, 2 | None | |

10. AIRCREW COMMENTS

Comments on This Encounter

BLUE 1: Caged his gun sight when he first visually spotted MIGs. He did not pursue MIGs after turning on a southerly heading due to the high SAM threat in the Hanoi area where the MIGs were heading.

BLUE 2: I could have gotten a shot at MIG 1 if I'd just been a little bit faster, I flew head on. Our break was tight enough to thwart their pass and he (MIG 1) went about 500 ft or less directly below me. Wingman was pretty far out of position and he passed to my right.

Comments from Overall Experience

BLUE 2: They (MIGs) accomplished their mission, we jettisoned our ordnance. It wasn't a bad decision, we had to be able to turn or they would have gotten a shot. As soon as we dropped ordnance, they took off, which is what they always did. Later on some of the guys got the idea of dumping their tanks to make it look like they dumped their bombs, and then go on to their targets. Tanks are usually empty by then.

11. DATA SOURCES

Project Interviews: BLUE 1 (Lead), 13 Mar 67; BLUE 2, 13 Mar 67
Messages, Reports:

DTG 162356Z Sep 66 7AF Tan Son Nhut AB DIO 30456 Sep 66

Cont. No. C21542/1/NF 161947Z Sep 66 7AF Tan Son Nhut DOCO 25603 Sep 66

Letter from BLUE 2

12. NARRATIVE DESCRIPTION

BLUE Flight was heading 270° at 6000 ft and 540 KTAS enroute to JCS #16. ETHAN BRAVO gave a MIG warning at 1648H at which time BLUE 1 observed contrails at 1 o'clock but unable to identify aircraft. At 1650H again ETHAN BRAVO gave a MIG warning and BLUE 1 observed two MIG-17s (in extended trail) at his 10:30 o'clock position slightly low in a climbing right turn into the formation and passing 330°. Position at this time was 21°08'N/106°17'E. BLUE 1 called the MIGs to the rest of the flight, called for ordnance jettison and a break left into the MIGs. BLUE 2 followed BLUE 1 and jettisoned his ordnance and followed BLUE 1 into a tight left turn. What happened to BLUE 3 and 4 and what action they took is unknown. BLUE 1 then pulled lead on MIG 1 and made a quartering head-on pass firing 66 rounds of 20mm cannon at a distance of 2000 to 2500 ft out. BLUE 1 and MIG 1 then passed each other at the same altitude (about 5000 ft) with 3000 ft approximate separation. BLUE 2 then would have had a MIG 1 but was not fast enough and passed directly over MIG 1 with approximately 500 ft separation in altitude. No hits were observed by either aircraft nor was cannon fire observed coming from the MIGs. BLUE 1 then broke right to reengage and BLUE 2 followed at which time he then saw MIG 2 off his right wing and out of position. Both BLUE 1 and 2 observed MIGs continue their turn to a northerly[1] heading and BLUE 1 and 2 rolled out and themselves headed southerly to 21°04'N/106°21'E and then to 21°07'N/107°33'E.

[1]OPREP quotes a southerly heading but considering the location, and interviews, a northerly heading was chosen.

RED BARON EVENT II-46 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | Alt 6000 ft<br>Hdg 270°<br>Speed 500 KTAS | B1 sees two MIGs at 10:30 o'clock, 1 to 2 miles away. | B3, 4 on left. | MIGs called by B1 | Two MIG-17s (M1,2) in right turn passing through 330 to 300 degrees. One MIG slightly high and another low. Lower MIG in lead. MIGs about 4000 ft altitude. | B2 saw only one MIG-17.<br>The lower MIG is climbing slightly. |
| $T_1$ | Alt 6000 ft<br>Speed - increasing<br>Breaking left | BLUE Flight jettisoned tanks and ordnance and went to afterburner.<br>B2 sees second MIG (M2) high and to the right less than a mile from M1. | | B1 calls jettison ordnance and break left. | Continue to turn right. | |
| $T_2$ | Alt 5000 ft<br>Speed - increasing<br>LH bank | B1 fires at M1, range 2500 to 2000 ft. Quartering head-on pass.<br>B2 does not fire. | | | MIG passes. | B1 fired 66 rounds. |
| $T_3$ | Alt 5000 ft | B1 passes M1 with about 3000 ft lateral separation.<br>M1 then passes below B2 about 500 ft vertical and 200 ft horizontal, head on. | | | | |
| $T_4$ | | Flight breaks right.<br>B2 then sees M2. | | | M2 off to the right 45° from B2, 1 mile away and 1000 ft above B2. | |
| $T_5$ | Alt 5000 ft | BLUE Flight exits | | | MIGs roll out of turn on a northerly heading. | |

Event II-47

Aircraft Involved: Four F-105Ds vs four MIG-17Ds

Result: No damage

Vicinity of Encounter: 21°08'N/106°55'S

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 September 1966/1647H

BLUE Flight (four F-105Ds) were on a strike mission against JCS 16.00 (the Dap Cau inland highway bridge) 21°12'11"/106°05'44". BLUE Flight was the last of several flights that attempted to attack this target on this date. Three of the other flights can be found in Events II-45, II-46, and I-56.

## 2. MISSION ROUTE

Departed Korat and proceeded over the Gulf of Tonkin to refuel at approximately 19°N/108°E then proceeded north to Isle de Madelene and thence due west on the north side of Haiphong Ridge to the target area. Return by the same route with post-strike refueling.

## 3. AIRCRAFT CONFIGURATION

F-105D BLUE 1, 2, 3 and 4

2 - 3000 lb bombs (one under each wing)
1 - Centerline fuel tank and bomb bay tank
1062 rounds ammunition - 20mm
Camouflage paint
Radar turned off

MIG-17 (with afterburner) MIG 1, 2, 3 and 4

Camouflage paint
No guns or ordnance reported

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Good visibility.

| | BLUE 1, 2, 3 and 4 |
|---|---|
| Altitude: | 3000 ft MSL 500 ft AGL |
| Heading: | 275° |
| Speed: | 540 KIAS |
| Fuel State: | Unknown but not a consideration in this event. |

Formation: Approximate

## 5. INITIAL DETECTION

Three MIGs initially detected by BLUE 1 Lead against terrain background at the 2 o'clock position, range estimated about "10 miles." Note: See Pilot Comments (Note d).

## 6. ACTION INITIATED

BLUE Flight assessed the situation as follows:

1. The MIGs were not yet aware of the presence of BLUE Flight.
2. BLUE Flight could not continue to target without permitting the MIGs to attain a favorable 6 o'clock position on BLUE Flight.

On this basis the decision was made to turn and attempt to engage the MIGs from their 6 o'clock.

## 7. SITUATION DEVELOPMENT

BLUE Flight turned on the MIGs 6 o'clock and closed to a range of 5000 ft when:

1. BLUE 1 sights MIG 4 at 4 o'clock, low range.
2. MIG 3 made an abrupt reversal of flight path toward BLUE Flight.
3. BLUE Flight now broke down and left, and egressed the area.

## 10. AIRCREW COMMENTS AND EXPERIENCE

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 3200 | 1200 | 85 | One training firing of a SIDEWINDER; sixteen gun firings on low targets. |

Comments on this Encounter

a. Attained position to permit effective use of a missile. Missiles were not carried since AIM-9 pylon was a high-drag device that could not be jettisoned. Also the installation and weight decreased the F-105 bomb-carrying capacity.

b. The radar was turned off since it triggered the radar warning gear. The procedure was for an individual to alert other flight members before turning on radar and then to make only a few sweeps.

c. Navigation was done by dead reckoning. The doppler was fixed as the flight passed the coast.

d. The MIGs were seen initially against a terrain background even though camouflaged. BLUE 1 stated that he was able to sight the MIGs due to the fact that he had acquired considerable experience attempting to keep track of camouflaged F-105s which seem to disappear if not continuously observed. However, by looking for movement instead of changes in color they could be detected.

e. BLUE 1 felt that MIG 4 was an instructor and the other three MIGs were students on a training mission. The presence of BLUE Flight warned by MIG 4.

Comments on Overall Experience

f. Guns were his best weapon.

g. The gunsight cameras were bad and the film not exposed correctly.

h. Camera pods were heavy and created too much drag. Also switching was too complicated.

i. Would prefer nonreflective silver paint on bottom of aircraft. Blends with sky better than grey or white.

j. Likes F-4 SPARROW installation since it can always be carried.

## 11. DATA SOURCES

Project Interviews: BLUE 1, 5 January 1967
Messages, Reports: 7AF 162356Z Sept 66 DIO 30 456 Sept 66
7AF 161947Z Sept 66 DOCO 25603 Sept 66
388TFW OPREP 4/257 16 Sept 66
7AF 161724Z Sept 66 OPREP-4 DOC 02560

## 12. NARRATIVE DESCRIPTION

BLUE Flight was one of four flights directed against JCS 16.00/616 the Dap Cau railway and highway bridge. Two other flights were F-105 (Events II-45 and II-46) and one was a flight of F-4s (Event I-56). The F-4s were carrying ordnance and at this time had just started accompanying the strike groups. The speed incompatibility, for best cruise between the F-105s and F-4s, made the F-4s short on fuel, consequently the flight timing was important.

By the time BLUE Flight had progressed to the vicinity of the target, the F-4 aircraft which had been scheduled to precede BLUE Flight to the target, was behind the flight. The F-4s had been included with the strike group in order to provide protection but did not do so that day.

BLUE Flight proceeded to the target, staying just below the ridge line in order to protect themselves from SAMs. As they neared the target, three MIG-17s in trail were observed. The MIGs were in a gentle climbing turn. BLUE Flight determined that they could not hit the target without permitting the MIGs to gain BLUE 6 o'clock. Therefore a decision was made to engage the MIGs.

The plan was for BLUE Flight to close on the MIGs from the 6 o'clock position and attack MIGs. BLUE Flight therefore started a climbing left hard turn. The BLUE formation was held and, at a speed of 540 knots, closed fairly rapidly on the MIGs, who continued their right hard climbing turn.

BLUE 1 put his pipper on MIG 3 as BLUE Flight closed to within 5000 ft of MIG 3. The F-105 was equipped with a lead computing gunsight set up for a range of 1500 ft.

At this time BLUE 1 sees a single MIG at 4 o'clock low approaching the flight. BLUE 1 then called BLUE 3 and informs BLUE 3 that he will continue to attack the third MIG and for BLUE 3 and 4 to sandwich the lone MIG between the elements of BLUE Flight. Later playback of WILD WEASEL tapes indicated that BLUE 3 never received this transmission due

to radio interference. Since BLUE 1 had not asked for confirmation from BLUE 3 he was not aware that BLUE 3 did not understand the role he was to play.

BLUE Flight continued to close on MIG 3 while MIG 4 closed on the flight. MIG 3 suddenly executed a very hard left turn (described as an about-face by BLUE 1) back into BLUE Flight, but lost airspeed in the maneuver.

Due to the position of MIG 3 and 4, BLUE Flight decided to disengage and broke off to the left. BLUE 1 jettisoned everything but pylons while the rest of the flight jettisoned both stores and pylons. MIG 4 stayed inside the turn for a few seconds and then broke off. MIG 1 and 2 made a less abrupt turn than MIG 3 in order to backup MIG 3.

BLUE Flight's turn after the initial break is not made too rapidly since BLUE 2 could not light his afterburner. Consequently, BLUE 2 turn was made in military power. BLUE Flight still stayed together and due to their speed advantage, MIG 3 did not pose a threat.

As the turn was completed the MIGs were lost, but flak is noticed, with 37mm bursts at 3000 ft. The flight leveled off above the flak and proceeded out.

At the time that BLUE Flight became engaged with the MIGs, BLUE 1 heard the F-4s talking and they acknowledged the MIG call that BLUE Flight made. Shortly after that the F-4s announced that they were at Bingo fuel and departed.

## RED BARON EVENT II-47 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | Alt 3000 ft (about 500 ft AGL) Speed 540 KTAS Heading 275° radar off | Lead sights 3 MIG-17 aircraft. Flight starting left turn | | B2 calls "MIGs" three times B1 (L) instructs B2 to be quiet. B2 also calls "Bogeys" at 2 o'clock | MIGs in climbing right turn at about 500 ft AGL Speed about 900 knots. MIGs are in trail about 200 ft apart | Decision is made to attack MIGs. Particularly M3. |
| $T_1$ | Closing on MIGs. In full military power. 540 KTAS 3000 ft Maintaining formation. | Flight starts climb after MIGs. Sets up air-to-air sight | | | MIGs continuing gentle climbing turn to right MIGs 2500 AGL MIGs now at 11 o'clock | |
| $T_2$ | Alt 4000-5000 ft maintaining formation. Velocity 540 KTAS | B1 sights lone MIG closing on flight from 4 o'clock behind and below | | B1 calls B3 and announces plan to continue after 3 MIGs and let B3 and B4 sandwich lone M4. B1 does not ask for conformation | | B3 never received the communication since radio transmission was blocked. |
| $T_3$ | Range to MIGs - 4000 ft 80° angle off. Velocity 540 KTAS | B1 starts left descending turn starts to light afterburner and then does not. B1, B2 B3, B4 jettison bombs at start of turn. B1 did not clean off pylons. B2 tries to light afterburner and it will not light. B3 and B4 stay with B1 and B2. | | B1 calls for break | M3 lights afterburner and breaks back into the flight. M4 at 3000 ft and 4 o'clock. M1 and M2 go into turn. M4 stays inside turn for few seconds and then breaks off. | |
| $T_4$ | Descending H = 3000 ft Speed 540 kt | B1, B2, B3, B-4 lose sight of MIGs. Flight returns to coast as they entered | | | Flak, 37mm, bursts at 3000 ft | |

[redacted]

[redacted]

Event II-48

Aircraft Involved: Three F-105s vs one MIG-19 and three MIG-?

Result: No damage

Vicinity of Encounter: (1) 21°30'N/107°20'E
(2) 21°33'N/106°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 17 September 1966/0927H

F-105s on a strike mission, target being railroad bridge (21°33'N/106°30'E).

2. MISSION ROUTE

Departed Korat for Brown Anchor refueling over Gulf of Tonkin. Tanker drop off direct 21°06'N/107°27'E. Direct 21°37'N/106°45'E direct target. Egress by reverse route.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 2, 3, 4

1 gun (1029 rounds full)

MIG

2 unknown 1 MIG-19

Silver in color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear, visibility 7 miles, and haze.

| | BLUE 3 4 | BLUE 2 |
|---|---|---|
| Altitude: | 9000 ft | 15,000 ft |
| Heading: | -110°-- | --180°--- |
| Speed: | .9 Mach | -.9 Mach- |
| Fuel State: | -----Unknown------ | |

Flight Formation:

Unknown

5. INITIAL DETECTION

BLUE 2 saw a MIG-19 with a Red Star on tail at his 5 o'clock position. BLUE 3 visually sighted three MIGs at 5000 ft AGL heading 180°.

6. ACTION INITIATED

BLUE 2 executed a Split-S to 2000 ft. BLUE 3 and BLUE 4 selected afterburner and dove to the deck.

7. SITUATION DEVELOPMENT

BLUE 2: While in split, MIG fired at BLUE 2 who saw cannon fire passing over both sides of wing. When level at 2000 ft and .95 Mach MIG made another pass at BLUE 2, firing his cannon. BLUE 2 lit afterburner and egressed area.

BLUE 3 and 4

Egressed the area without contact.

8. ORDNANCE

| | |
|---|---|
| BLUE 2, 3, 4 | Cannon, None |
| MIG-19 | Cannon, 2/0 |
| MIGs ? | Unknown |

9. EQUIPMENT PROBLEMS

Horizontal situation indicator was inoperative.

11. DATA SOURCES

Messages, Reports:

OPREP-3 Z171355Z Sept 66 DOCO 25648

COMUSMACV MACOI Soe Z P171252Z Sept 66

TBIS OKINAWA P172045z Sept 66

[redacted]

[redacted]

[redacted]

12. NARRATIVE DESCRIPTION - Event II-48

BLUE Flight was outbound from the target when BLUE 1 was hit and BLUE 2, 3, and 4 orbited to follow BLUE 1 who impacted the ground. BLUE 3 and 4 then headed toward the coast and lost sight of BLUE 2 whom they thought was following them. BLUE 2 lost BLUE 3 and 4 and was following an inaccurate heading. BLUE 2 was at approximately 15,000 ft and .9 Mach when he saw a MIG-19 at his 5 o'clock position. BLUE 2 then went into a Split-S maneuver. The MIG fired at BLUE 2 during this maneuver and BLUE 2 saw cannon fire going over his left and right wing. BLUE 2 recovered at 2000 ft at .95 Mach. He asked for a DF steer which he received and headed again approximately 180°, 2000 ft and .95 Mach when the MIG again made another firing pass. BLUE 2 then selected afterburner and egressed the area. No damage to the aircraft.

Meanwhile BLUE 3 spotted three MIGs of unknown model and type heading 180° at 5000 ft AGL. BLUE 3 and 4 hit afterburner and accelerated away from the area at 1.2 Mach. No damage to the aircraft was recorded and no encounter logged.

[redacted]

[redacted]

[redacted]

[redacted]

Event II-49

Aircraft Involved: Three F-105Ds vs three MIG-17s

Result: No damage

Vicinity of Encounter: 21°39'N/106°37'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 18 September 1966/0931H

Three F-105Ds (BLUE Flight) departed Korat AB on a mission into Route Package VI-A. Their target was the southwest Dao Quan POL storage.

2. MISSION ROUTE

See Event II-52

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 2, 3

Unknown external stores

MIG-17 MIG 1, 2, 3

External fuel tanks

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear, visibility 5-6 mi in haze.

BLUE 1, 2, 3

| | |
|---|---|
| Altitude: | 7-8,000 ft |
| Heading: | 290° |
| Speed: | 480 kt |
| Fuel State: | Unknown |

Flight Formation

Unknown

5. INITIAL DETECTION

BLUE 3 sighted three MIGs in the 10 o'clock position from BLUE Flight. The MIGs were at about 6-7,000 ft, heading 060°.

6. ACTION INITIATED

At a range of approximately one mile the MIGs jettisoned their external tanks and turned into the flight of F-105s.

7. SITUATION DEVELOPMENT

BLUE Flight jettisoned all external stores and turned into the MIGs. When the MIGs saw BLUE Flight jettison ordnance the MIGs executed a Split-S and departed the area. BLUE Flight lost sight of the MIGs and continued in a 360° turn. BLUE Lead sighted the MIGs ahead approximately 4-5 miles. In full A/B, the flight accelerated to 1.1 Mach. The MIGs were low, 2-3,000 ft, while the F-105s were at 5-6,000 ft. As BLUE Flight passed Kep the antiaircraft flak was very heavy and although the MIGs were only about 1 to 1-1/2 miles ahead, BLUE Flight broke off the chase and headed for the coast. There was no exchange of gun fire. The MIGs were last sighted in the vicinity of 21°30'N/106°26'E. The closest approach of the MIGs was approximately one mile.

8. ORDNANCE

None expended.

9. EQUIPMENT PROBLEMS

None reported.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 1 (Lead) | 1750 | 950 | 70 |

[redacted]



[redacted]

Comments on this Encounter

BLUE 1 (Lead) expressed his opinion that the MIGs were highly successful in making F-105 flights jettison their ordnance prior to reaching their target. The MIGs would then depart the area.

11. DATA SOURCES

Project Interviews: BLUE 1 (Lead) 5 Jan 1967.
Messages, Reports: 7AF/OPREP-3/180750Z Sep 66/DGCO 25685

12. NARRATIVE DESCRIPTION

See paragraphs 5, 6 and 7.

See also Events II-50, II-51, and II-52.

[redacted]

Event II-50

Aircraft Involved: Two F-105Ds vs four MIG-17s

Result: No damage

Vicinity of Encounter: 21°12'N/106°19'E.

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 18 September 1966/1648H

BLUE Flight, two F-105D aircraft, were en route on a strike mission against the Dap Cau Highway/Railroad Bridge in Route Package VI-A. Prior to reaching the target the flight encountered four MIG-17 aircraft and jettisoned all external stores as the MIGs attacked.

2. MISSION ROUTE

After departing Korat the route of the flight is unknown. The encounter occurred in the vicinity of 21°12'N/106°19'E.

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 2

Unknown ordnance load, reference was made to external stores.

MIG-17 MIG 1, 2, 3, 4

External fuel tanks.

Guns.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Unknown

| | BLUE 1, 2 |
|---|---|
| Altitude: | 1,500 ft |
| Heading: | 254° |
| Speed: | 540 kt |
| Fuel State: | Unknown |

Flight Formation:

Unknown

5. INITIAL DETECTION

Four MIG-17 aircraft were sighted in the 9 o'clock position of BLUE Flight. The MIGs were on an easterly heading in a loose echelon formation at about 2,000 ft, 3-4 miles away.

6. ACTION INITIATED

The MIGs jettisoned their external fuel tanks and made a hard left turn into BLUE Flight. BLUE Flight went into a shallow, left downward spiral as they jettisoned external stores and accelerated to 600 kt.

7. SITUATION DEVELOPMENT

As the lead MIG approached the 8 o'clock position on BLUE Flight, he fired a five-second gun burst. No hits were reported. The closest approach of the MIGs was 3,000 ft.

8. ORDNANCE

| | No. fired/No. hits | Remarks |
|---|---|---|
| MIG-1 | 1/0 | No hits |

9. EQUIPMENT

None reported.

10. AIRCREW COMMENTS

None obtained.

11. DATA SOURCES

Project Interviews: None

Messages, Reports:

7AF/OPREP-3/181638Z Sep 66/DOCO 25701 Sep 66.

7AF/DAI/182319Z Sep 66/D10 30479 Sep 66.

[redacted]

12. NARRATIVE DESCRIPTION

Two F-105D aircraft departed Korat AB on a mission into Route Package VI-A. In the vicinity of 21°12'N/106°19'E the flight encountered four MIG-17 airplanes at about 1648 hours. The flight was heading 254° at an altitude of 1,500 ft when the MIGs were sighted at the 9 o'clock position on an easterly heading at approximately 2,000 ft. When the MIGs sighted the F-105s, they jettisoned their external fuel tanks and turned hard left, from an echelon formation, to attack the F-105s. BLUE Flight entered a shallow, left spiraling descent as external stores were jettisoned and speed was increased to 600 kt. As the lead MIG reached the 8 o'clock position on BLUE Flight he fired a five-second burst from his guns. No hits were reported. The closest point of approach of the MIGs was about 3,000 ft.

BLUE Flight continued their turn toward the hills in the vicinity of 21°15'N/106°20'E. The MIGs did not follow the F-105s. BLUE Flight then made a 180° turn to see if the MIGs were following any of the other strike flights as they were coming off the target. The MIGs had departed the area and although the direction was unobserved it was estimated that they departed to the south. No distinctive markings were observed on the MIGs.

See also Events II-51 and II-52.

Aircraft Involved: Four F-105s vs two MIG-17s.
Result: Sighting Only
Vicinity of Encounter: 10 mi from Dap Cau Railroad/ Highway Bridge

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 18 September 1966/1644H

A flight of four F-105s were on a strike mission against the Dap Cau Railroad/Highway Bridge.

2. MISSION ROUTE

Probably similar to Event II-52.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 3, 4

2 - 3000 lb bombs
1 - 650 gal centerline tank
1 - M-61 gun with full ammo (1029 rd 20mm)

BLUE 2

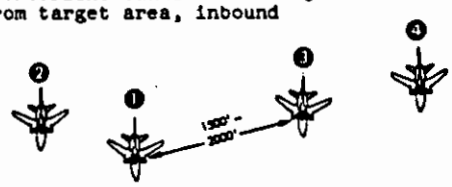
4 - CBU-27
1 - 650 gal centerline tank
1 - M-61 gun with full ammo

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Unknown

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 6000 ft |
| Heading: | 254° |
| Speed: | 550 kt |
| Fuel State: | Unknown, centerline tanks had been jettisoned 30 mi from target area, inbound |

Flight Formation:




5. INITIAL DETECTION

Two MIG-17 fighters were sighted by BLUE 2 in the 9 o'clock position of the flight at a range of approximately 6 miles, level in altitude.

6. ACTION INITIATED

BLUE Flight engaged afterburners and continued to the target accelerating to 675 KCAS.

7. SITUATION DEVELOPMENT

As BLUE Flight accelerated, the MIGs were no threat. Heavy 85mm AA gunfire was encountered so the flight descended to minimum altitude, approximately 50 ft.

8. ORDNANCE

None expended.

9. EQUIPMENT PROBLEMS

None reported.

10. AIRCREW COMMENTS

No specific comments.

11. DATA SOURCES

Project Interviews: BLUE 2, 15 March 1967
Messages, Reports: 7AF/DAI/182319Z Sep 1966/ DIO 30479

12. NARRATIVE DESCRIPTION

BLUE Flight was inbound to the target when BLUE 2 sighted two MIGs at 9 o'clock from the flight. Immediately the flight engaged afterburner and accelerated in a shallow descent. The MIGs were easily outdistanced. Heavy AA fire in the target area probably caused the MIGs not to follow the F-105s. No specific markings were identified on the MIGs and they were not sighted again.

[redacted]

Event II-52

Aircraft Involved: Four F-105Ds vs four MIG-17s

Result: No damage

Vicinity of Encounter: 21°08'N/106°17'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 18 September 1966/1645H

Four F-105Ds (BLUE Flight) were the last of approximately eight flights striking the Dap Cau bridge in Route Package VI-A (21°12'N/106°05'E). BLUE Flight had split into two elements, and was accelerating for their bomb run.

2. MISSION ROUTE

Flight departed Korat, refueled on the Brown Anchor track; then headed north up the Gulf of Tonkin, and west into the target area. Egress was made on the same general route.

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 2, 3, 4

Unknown - General purpose bombs
2 - 450-gal drop tanks
Camouflage paint
IFF on; TACAN and radar on standby

MIG-17 MIG 1, 2, 3, 4

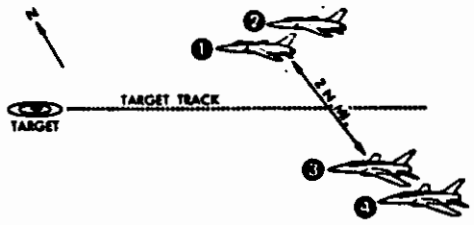
Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Unknown along route - estimated scattered to broken, 2 to 5-mile visibility in target area.

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 6 to 7,000 ft--------- | | | |
| Heading: | 280°---------- | | | |
| Speed: | 500 kt ---------- | | | |
| Fuel State: | Approx. 10,000 lb ---- | | | |

Flight Formation: Elements had separated approximately 2 n mi with BLUE 1 and 2 running north of track, and BLUE 3 and 4 running south of track. Elements were flying at the same altitude.




5. INITIAL DETECTION

BLUE 3 and 4 sighted four MIG-17s at 9 o'clock, level, heading 090°, approximately 400 kt. MIGs were about 1 n mi south of BLUE 3 and 4, and flying in a loose right echelon formation. MIGs made a left turn in and behind the BLUE 3 element.

6. ACTION INITIATED

BLUE 3 and 4 jettisoned their ordnance, nosed over for acceleration, and made a hard left turn back to the northeast. BLUE 1 and 2 were already in a pop-up maneuver on the target; however, they dropped short when the MIGs were called, and turned back left to pick up the MIGs.

7. SITUATION DEVELOPMENT

BLUE 3 and 4 accelerated and descended to the deck heading back out 050°. The MIGs had rolled into their 6 o'clock position and MIGs 1 and 2 fired their cannons as they rolled out of the turn. BLUE 3 and 4 received no hits as they had already accelerated well out of gun range. BLUE 1 and 2 dropped their ordnance in the vicinity of the target, and then broke back left to assist BLUE 3 and 4. BLUE 1 acquired the MIGs during his

[redacted]

turn, but his element rolled out 7 to 8 n mi in trail. BLUE 3 and 4 continued their egression heading 050°. The MIGs, unable to close, gave up the chase and turned off toward the south. BLUE 1 and 2 were unable to close within firing range before they lost visual contact with the MIG flight. BLUE Flight rejoined and returned home safely.

8. ORDNANCE

MIGs 1 and 2 fired their cannons, but made no hits.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 1 | 6100 | 500+ | (560 hours) |

Comments on this Encounter

BLUE 1 expressed the need for an aircraft with a much greater turn capability than the F-105. He also stated a desire for greater acceleration, rate of climb, and endurance under combat conditions. He believes the F-105 needs better cockpit visibility, especially between 5 and 7 o'clock. Once again switchology was a factor in the difficulty in changing the FCS from the comb mode to the air-to-air mode.

BLUE 1 also feels there must be a reduction of the radio chatter in the combat area. An improvement in our own GCI to facilitate a better and more specific MIG warning system is required.

11. DATA SOURCES

Project Interviews: BLUE 1, 5 Jan 1967
Messages, Reports:

7th AF OPREP-3, 181737Z Sept 66, DOCO 25699
388th TFW OPREP-4/297, 18 Sept 66 (Resume)

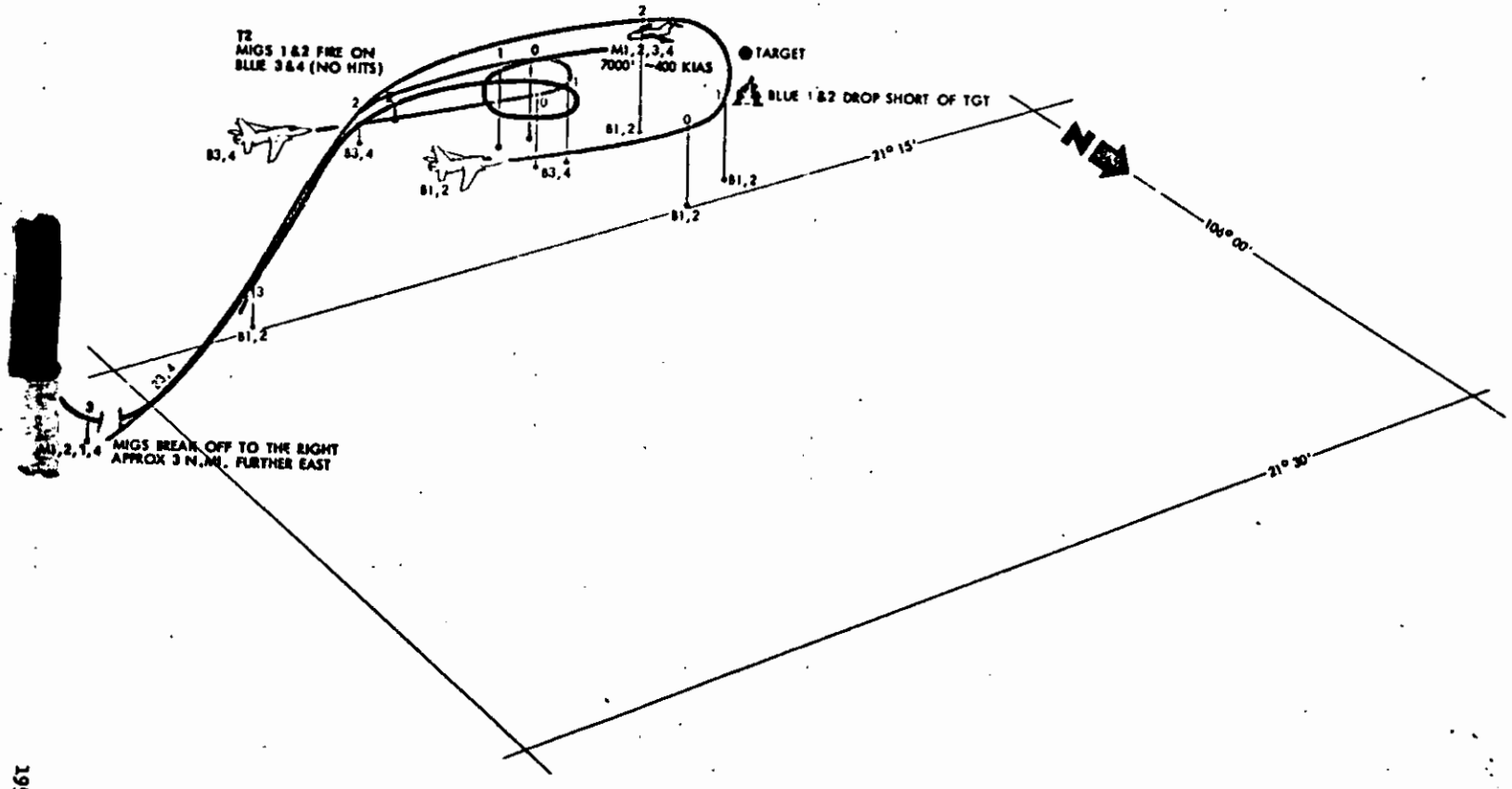
12. NARRATIVE DESCRIPTION

Items 4-7 adequately describe the narrative of this event; however, a question as to relative positions of all aircraft at initial sighting should be mentioned at this point. This outline generally follows the information contained in the interview with BLUE 1. The OPREP-3 differs in the following manner: BLUE 3 and 4 made initial sighting when on a heading of 050°, altitude 3 to 4,000 feet. MIGs were heading approximately 240° and co-altitude. BLUE 3 and 4 were supposedly in a 360° turn taking spacing from other flights already on the target. The possibility exists that BLUE 3 and 4 were actually taking spacing on the lead element (BLUE 1 and 2), as confirmed by BLUE 1's statement that he had split his elements. The OPREP could then be picking up this event as the MIGs were already rolling in on 3 and 4 since all following information is in correlation.

See also Events II-50 and II-51.

RED BARON EVENT II-52 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | BLUE Flight Alt. 6 - 7,000 ft 500-550 kts Heading 280° Full Ordnance load and 10,000 lb of fuel. | B1 and 2 accelerating just prior to pop-up maneuver. | B3 and 4 sighted 4 MIG-17s in loose R echelon at 9 o'clock, level, 400 kt. | B3 and 4 called MIGs at 9 o'clock. | MIGs were in loose right echelon heading 090° at about 7000 ft. Speed about 400 kt. | |
| $T_1$ | Same as $T_0$ | B1 and 2 pop-up to 12,000 ft but drop short of target when they hear MIG call. | B3 and 4 observe MIGs turning in on them. 3 and 4 jettison ordnance dump the nose, AB, accelerate, and begin hard left turn to heading 050°. | B3 and 4 call MIGs rolling into their 6 o'clock. | MIGs peel off and roll in behind B3 and 4. | |
| $T_2$ | Unknown Both flights descending and accelerating. | B1 (L) acquire visual contact with MIGs chasing 3 and 4. BLUE 1 and 2 roll in trail with MIGs at approx. 7 n mi range | B3 and 4 hold heading 050° and attempt to outrun the MIGs. | | MIGs 1 and 2 fire cannons at B3 and 4. The MIGs are out of range and B3 and 4 receive no hits. | BLUE 3 and 4 are accelerating on the deck and observe ordnance from MIG 1 and 2 splashing into the paddies below them. |
| $T_3$ | 550 kt 3,000 ft alt. 6,500 - 7,000 lb of fuel. | B1 and 2 are in trail and closing on MIGs, however MIGs turn off to the south and are lost in the haze. | B3 and 4 continue egression on 050° heading. | | MIGs break off attack and turn off toward the south. | MIGs could not close on B3 and 4. |
| | | | | | | |


T2
MIGS 1&2 FIRE ON
BLUE 3&4 (NO HITS)
M1,2,3,4
7000' ~400 KIAS
TARGET
BLUE 1&2 DROP SHORT OF TGT
B3,4
B3,4
B1,2
B3,4
B1,2
B1,2
B1,2
B1,2
21° 15'
N
100° 00'
21° 30'
23,4
M1,2,1,4
MIGS BREAK OFF TO THE RIGHT
APPROX 3 N.MI. FURTHER EAST

Event II-52

[redacted]

Event II-53

Aircraft Involved: Eleven F-105s vs four MIG-17s

Result: No damage

Vicinity of Encounter: Approximately 21°50'N/105° 30'E[1]

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 September 1966/1645H

GREEN Flight (three F-105Ds) and BLUE Flight (four F-105Ds) bombed a highway bridge fifteen miles northeast of Thai Nguyen. (JCS 78.62 at 21°44'50"N/106°04' 16"E) PURPLE Flight (two F-105Ds and two F-105F Wild Weasel) was an IRON HAND Flight supporting GREEN Flight, BLUE Flight and a flight of three F-4Cs on strike/CAP. BLUE Flight was 3-5 minutes (approximately 30 miles) behind GREEN Flight and PURPLE Flight was 8-10 minutes behind GREEN Flight crossing the Red River near Yen Bai. The flight of three F-4C aircraft were assigned strike/CAP with their primary target in the same area and at approximately the same TOT as the F-105s.

2. MISSION ROUTE

GREEN and BLUE Flights departed Takhli about the time PURPLE Flight departed Korat. PURPLE 1 was delayed ten minutes at takeoff after aborting his first aircraft. All flights refueled on their scheduled tankers and proceeded north-northwest to cross the Red River in the vicinity of Yen Bai. GREEN 3 aborted while attempting to refuel and GREEN 4 then moved up to fill in as GREEN 3. The flights flew east from Yen Bai passing north of Thai Nguyen and then southwest to the target. Egress was via the reverse route to post-strike tankers and then recovery at their respective bases. GREEN Flight descended to 8 to 10,000 ft altitude after crossing the Red River while BLUE Flight descended to tree-top level (approximately 3500 ft MSL). PURPLE Flight also descended to 8 to 10,000 ft.

3. AIRCRAFT CONFIGURATIONS

F-105D GREEN 1, 3

5 - 1000 lb bombs
2 - 450 gal drop tanks
20mm ammo (1029 rounds each)

F-105D GREEN 2

4 - CBU-24s (flak suppression)
IFF, TACAN, and radar-off camouflage paint
20mm ammo (1029 rounds)

F-105D BLUE 1, 3, 4

5 - 1000 lb bombs
2 - 450 gal drop tanks
20mm ammo (1029 rounds each)

F-105D BLUE 2

4 - CBU-24s (flak suppression)
IFF, TACAN, and radar-off, camouflage paint
20mm ammo (1029 rounds)

F-105F/F-105D PURPLE 1, 2, 3, 4

2 - AGM-45s (SHRIKE missiles)
2 - LAU-3 (rocket pods)
20mm ammo (1029 rounds)
1 - 650 gal centerline tank
IFF, radar, and TACAN-off, camouflage paint

MIG-17 RED 1, 2, 3, 4

Not given - but only gunfire was observed. Silver color on right wing perpendicular to leading edge (as reported by GREEN 3). One MIG was light gray-blue in color with RVN markings.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear with haze layer up to 10,000 feet

| | BLUE 1, 2, 3, 4 | GREEN 1, 2, 3 | PURPLE 1, 2, 3, 4 |
|---|---|---|---|
| Altitude: | 100/150 ft AGL (Grd. level approx. 3500 ft) | 8-9000 ft left orbit | 8 to 10,000 ft |

[1] See text for locations of specific encounters.

[redacted]



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| | BLUE 1, 2, 3, 4 | GREEN 1, 2, 3 | PURPLE 1, 2, 3, 4 |
|---|---|---|---|
| Heading: | 300° | 300° | 090° |
| Speed: | 500 KCAS-plus | 450 KCAS | 450-480 KCAS |
| Fuel: | 10-11,000 lb | 10-11,000 lb | 9,000 lb |
| Flight Formation: | Defensive spread | In trail (rejoining) | Fluid-four (fighting) Second element 2-3000 ft lower than lead and 4-5 miles in trail |

5. INITIAL DETECTION

Area MIG warnings had been transmitted while GREEN Flight was inbound to the target. After pulling off of his dive bomb run, GREEN 1 orbited the target one time in order to check BDA and then departed on a 300° heading at about 5500 ft MSL as BLUE Flight approached the target. GREEN 3 delayed his dive bomb run for better position and after completing the run pulled up into a left orbit to rejoin his flight at about 8000 ft, 350 KCAS, west of the target and was turning from west to south when he first saw a flight of four MIG-17s passing few hundred feet below him at his 3 o'clock beam position.apparently headed northwest in a left turn. GREEN 3 lost the four MIGs in the sun and haze as he attempted to turn and accelerated after them. Very shortly thereafter, GREEN 2 called that GREEN Flight was being tounced by MIGs and GREEN 1 acquired the MIGs at his 7 o'clock high, 2 miles back in a left turn, with one element peeling off for attack. BLUE Flight is on target and PURPLE Flight is about thirty miles west of GREEN Flight at this time. The F-4C flight position is unknown but in the area. (No F-4C/MIG encounters were reported in this area on this date. Thus it is assumed that the F-4C flight was unable to establish contact with the enemy after cleaning their aircraft off.)

6. ACTION INITIATED

GREEN Flight jettisoned pylons and tanks. GREEN 1 held course after sighting two of the four MIGs peeling off for attack. GREEN 2 initiated an attack on the high MIG element. GREEN 3 is approximately six miles behind his flight. BLUE Lead coming off of target is made aware that he has a hung 1000-lb bomb on an outboard station and will be unable to maneuver in a turning engagement. He elected to egress on the deck and attempt to avoid the MIGs. BLUE 1 ordered his flight to remain with him and egress. PURPLE Flight, coming into the area, jettisoned fuel tanks and turned to aid GREEN Flight.

7. SITUATION DEVELOPMENT

GREEN 1 waited until the two MIG-17s were close to firing range (~3000 ft) with a high overtake speed, and then performed a high-g roll to the right followed immediately by a high-g reverse roll back to the left. At least one of the MIGs fired a cannon burst at GREEN 1 as he broke right. The MIGs are at GREEN 1's 11 o'clock position in a tight left turn as GREEN 1 completes his high-g break and reversal, but the MIGs dive for the deck and GREEN 1 cannot track them in the turn or accelerate fast enough to close on them. GREEN 1, 2, and 3 elect to egress at high speed and rejoin on the south side of the Red River. BLUE 1 sees F-105s and MIGs hasseling overhead but elects to egress on the deck supersonic because of the hung bomb on BLUE 1. One MIG dives after BLUE Flight but cannot close due to BLUE Flight's high speed. PURPLE 1 sees two MIGs at his 12 o'clock and engages. PURPLE 1, 3, and 4 fire their cannon at MIGs and three MIGs fire at PURPLE Flight members with no apparent hits. PURPLE Flight terminated the engagement by jettisoning ordnance and accelerating to supersonic speed.

8. ORDNANCE

| | No. fired/No. hits (CANNON) | Remarks |
|---|---|---|
| GREEN 1, 2, 3 | 0/0 | |
| BLUE 1, 2, 3, 4 | 0/0 | |
| PURPLE 1 | 460/0 | |
| PURPLE 2 | 0/0 | |
| PURPLE 3 | 150/0 | |
| PURPLE 4 | 200/0 | |
| MIG 1 | Twice/0 | At GREEN 1 and PURPLE 2 |
| MIG 2 | ?/0 | |
| MIG 3 | Twice/0 | At PURPLE 1 and PURPLE 3 |
| MIG 4 | Once/0 | |

9. EQUIPMENT PROBLEMS

GREEN 3 - Could not complete refueling inbound.
BLUE 1 - Armament bolt failed in outboard wing pylon causing 1000 lb bomb to hang up.
PURPLE 1 - Delayed ten minutes at take-off after aborting first aircraft.
PURPLE 4 - No sight reticle during flight.

10. AIRCREW COMMENTS

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| GREEN 3 | 1600 | 100 | 8 | 2-1/2 yrs ADC in F-101 and F-102, no missile firing, fired at DART two times. |
| BLUE 1 | Unknown | Unknown | Unknown | Previous F-105 instructor at Nellis |
| PURPLE 1 | 4000 | 1100 | 57 | Wild Weasel School, F-105 IP at Nellis |
| PURPLE 3 | Unknown | Unknown | Unknown | TAC background, much F-105 time, Wild Weasel School |
| PURPLE 4 | 1750 | 950 | 70 | TAC background, Fighter Weapons School Graduate |

Other flight members unknown. F-4 Flight - not interviewed.

Comments on this Encounter:

BLUE 1: Gun site camera produces hazy images. F-105 a good aircraft for this type war but any new aircraft should be able to maneuver in high "g" condition. Would like tracer ammunition in guns. F-105 can fight with MIG-21 at low altitudes according to Maj. John Boyd's Energy Manueverability Charts.

GREEN 3: F-105 needs a quick sure method to select gun-air without changing so many switches.

PURPLE 1: F-105 is an excellent airplane in carrying heavy loads to distant targets. F-105 has outstanding performance at low altitudes at high speeds. F-105 pilots entered SEA combat without any air-to-air fighter vs fighter training. Combat is a tough place to learn what a pilot must know to survive in engagements with enemy fighters. F-105 can hassel with MIGs when in clean configuration and light fuel load (5000 lb or less).

11. DATA SOURCES

Project Interviews: BLUE 1, 6 Jan 67
GREEN 1, (Letter)
GREEN 3, 4 Feb 67
PURPLE 1, 14 Mar 67
PURPLE 4, 5 Jan 67

Messages: 7AF 201500Z Sept 66 OPREP-4 DOCO 25793

12. NARRATIVE DESCRIPTION

T GREEN Flight: GREEN Flight heard MIG alert calls on Guard Channel while inbound to the target heading Southeast at 8 to 10,000 feet MSL, 480 knots ground speed. Mountail tops were about 3500 ft in this area. GREEN Flight took no action on the MIG alert call.

BLUE Flight: BLUE Flight, about 3-5 minutes behind GREEN Flight, was going to bomb the same target, a highway bridge fifteen miles northwest of Thai Nguyen. BLUE Flight descended to 150 ft AGL for ingress.

PURPLE Flight: PURPLE Flight was an IRON HAND Flight with a Wild Weasel F-105F flying lead position. PURPLE Flight's purpose was to suppress SA-2 radars and attempt to restrict SAM firing at the other flights. This flight was three minutes late entering the target area due to PURPLE 1 aborting his first aircraft. There was one other F-105 flight on the target before GREEN Flight and an F-4C flight assigned Strike/CAP with the primary target in the same area, but to the west of the eventual action.

$T_1$ GREEN Flight: GREEN Flight struck the target and GREEN 2 expended his ordnance on trucks. Since the tactic was for lead to hit the target followed after a short period by 3 and 4, the three aircraft ended up as essentially three separate aircraft. GREEN 1 was in front, outbound from the target, at 500 kt CAS, 2000 ft AGL, and heading 300°. GREEN 2 was high to the right of GREEN 1 and a few miles to the rear. GREEN 3 came off of his bomb run, pulled up to 8000 feet in a left turn attempting to rejoin.

GREEN 3's airspeed was down to 350 KCAS as a result of the climb. As GREEN 3 was turning from west toward south, he saw four MIG-17s passing beneath him several hundred feet on his beam at 3 o'clock. The MIGs were in a fingertip formation. He attempted to turn and accelerate after them but lost them in the haze and sun. GREEN 2 then called, "GREEN Flight is being bounced by MIGs."

BLUE Flight: BLUE Flight was just coming off target when GREEN 2 made his call. BLUE 1 was acutely aware of a hung 1000-pound bomb on an outboard wing pylon. He elected to avoid confrontation with the MIGs if possible because he could not maneuver with the asymetric ordnance load. GREEN 1 called his flight to egress at high speed and descended to 100 ft AGL at least 500 KCAS and headed 300°.

PURPLE Flight: PURPLE Flight heard the call that MIGs had bounced GREEN Flight, and turned to proceed to the area. The F-4C flight on a strike/CAP mission in the area called to clean off their aircraft but apparently were unable to make contact with the MIG.

$T_2$ GREEN Flight: GREEN Lead saw four MIG-17s at his 7 o'clock, high about 2 mi range and GREEN Lead felt that he was boxed in as he watched two of the MIGs peeling off in a left descending turn. GREEN Flight jettisoned pylons and tanks. GREEN Lead held his course while the two MIGs closed to firing range at a high overtake speed. When one of the MIGs fired, GREEN Lead did a high g half-roll to the right, followed quickly by high g reverse roll to the left. Both MIGs were then in front of GREEN Lead at 11 o'clock in a tight turn to the left. He lit afterburner and went high on the MIGs because he could not stay with them in the turn for tracking. The two MIGs continued down from about 2000 ft AGL to treetop level heading south. GREEN 2 made one pass on the two high MIGs, but did not obtain a firing position. GREEN Flight then returned to course, exited the area, and rejoined south of the Red River prior to refueling and return to base.

BLUE Flight: BLUE Flight rejoined near the target and descended to 100-150 ft AGL in full military power, accelerating until they had about 600 KCAS. The flight path took them under the engagement[1] and BLUE Lead could see the F-105s and MIG-17s above him. BLUE Lead observed a MIG-17 drop down toward his flight, but it was unable to close to firing range and slowly fell behind. BLUE Lead estimated that the MIG started about 1 mile at 6 o'clock and was observed until he dropped below the rear of the canopy frame at roughly 3 miles, still losing ground.

PURPLE Flight: PURPLE Flight continued inbound at 480 KCAS, 8 to 10,000 ft, heading 090° with the element spread about a mile behind PURPLE Lead. PURPLE Lead saw two MIG-17s at 12 o'clock in close formation headed south in a left turn at 4 to 5 miles range, and slightly low. The sun, at PURPLE Flight's 6 o'clock, glinted off of the MIGs and aided detection. PURPLE Lead called "MIGs at 12 o'clock level, tanks off and afterburner now." PURPLE Flight jettisoned fuel tanks (with about 1000 lb in each tank), retained their ordnance and accelerated in afterburner to 600 KCAS. [Note: PURPLE Flight never saw any member of the other flights during the encounter.]

$T_3$ GREEN Flight: GREEN Flight egressing individually at 600 kts ground speed.

BLUE Flight: BLUE Flight egressing at 600 kt ground speed at 100 ft AGL. BLUE Lead still has a hung 1000-lb bomb on his outboard wing pylon.

PURPLE Flight: PURPLE Lead closed on the two MIGs in the vicinity of 21°50'N/105°15'E (about fifty miles west of the bridge target) as they turned back and forth between 140 and 190 degrees. PURPLE Lead attacked from the MIGs' 3, 4, 5, and, finally, 6 o'clock position. PURPLE Lead attempted to change his gun sight from "bombs" to "guns-air" as he was closing on the MIGs, but inadvertently stopped the switch at "rockets" and obtained 40 mils sight depression where 0-10 mil depression would be normal for 1-2 g maneuvering. As PURPLE Lead closed to 3000 ft on MIG 1, he opened fire with 20mm cannon. PURPLE Lead fired two long bursts at MIG 1 with no visible damage, when he noticed that he was rapidly closing on MIG 2 in his 1 o'clock position. MIG 1 entered a slow right turn from south to east as PURPLE Lead now at 700 KCAS opened fire on MIG 2 at about 1500 ft range. PURPLE Lead had fired 460 rounds at the two MIGs with no visible damage and was preparing to fire another burst at MIG 2 at about 500 ft range when MIG 2 pulled his aircraft straight up and back over PURPLE Lead. PURPLE 2 saw a third MIG at his 4 o'clock, diving at 40° for PURPLE Lead's tail firing and called "PURPLE Lead, there is a third MIG trying to get on your tail." PURPLE Lead could not see MIG 3 and called back that the MIG could not close since he had now accelerated to 700 KCAS. PURPLE Lead entered a descending left-hand turn, jettisoned his ordnance (two LAU-3s and two AGM-45s) accelerated to 750 KCAS on the deck and headed back up Thud Ridge.

$T_4$ PURPLE Flight: The MIGs then attacked PURPLE 2, and closed to 2000 ft firing as PURPLE 2 jettisoned his ordnance, accelerated after PURPLE Lead and outran the MIGs.

$T_5$ PURPLE Flight: PURPLE 3 and 4 were about 4-5 miles in trail of the lead element at the outset and now had closed the range with PURPLE 4 about one mile behind PURPLE 3. PURPLE 3 closed rapidly on MIG 3 who apparently did not know anyone was behind him, made

[1] It is not exactly clear from the data whether BLUE Flight observed the actions of PURPLE or GREEN Flight. BLUE 1 interview indicated GREEN Flight.

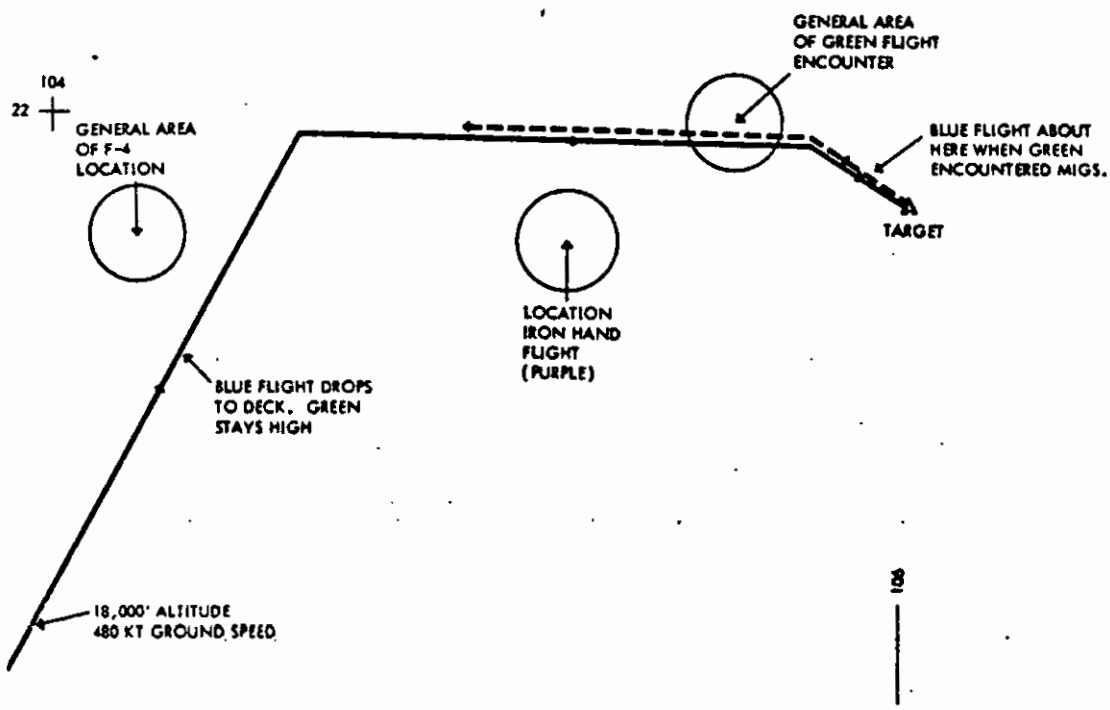
a high angle descending pass, closing to 2000 feet and fired 150-200 rd with no visible damage. MIG 3 realized he was being fired at and broke in a hard, high g pullup to the left. PURPLE 3 and 4 were in a shallow right turn and PURPLE 4, who was a mile astern, had trouble matching the MIGs zoom. Once the MIG was on top and had forced PURPLE 3 to overshoot, he relaxed "g" and held his position until he obtained separation and then rolled off to fall in behind PURPLE 3 apparently not realizing that PURPLE 4 was behind him. PURPLE 4 was closing on MIG 3 with at least 200 kt overtake, at 650-700 KCAS. PURPLE 4 opened fire at 2000 feet with no reticle (known at take-off) in a right 20-30° nose high, turning pass, and fired 200-300 rounds as he kicked rudder and stirred the stick around in his attempt to hit the MIG but saw no visible damage.

$T_6$ PURPLE Flight: As PURPLE 4 passed 200 feet to the left of MIG 3, MIG 3 rolled to the right and down, fell in behind PURPLE 3 and began firing. PURPLE 4 observed the MIG to be light blue-gray in color with RVN markings as the MIG fired approximately 40 to 50 rounds at PURPLE 3 from 1500 to 2000 ft range without any hits.

$T_7$ PURPLE Flight: PURPLE 3 was in a descending, jinking, less than one g maneuver to accelerate and outrun the MIG. PURPLE 4 made a barrel-roll to the outside in an attempt to achieve a 6 o'clock position on MIG 3, but MIG 3 broke off to the southeast and PURPLE 4 could not relocate him upon completion of this maneuver. He headed west to rejoin the flight and PURPLE 3. MIGs 1 and 2 broke off to the southeast when PURPLE 1 and 2 outran them. This engagement started at 8000 ft and ended at about 1000 ft (about 2500 ft MSL) and is estimated to have lasted 4 minutes.

This time marks in reference to the above narrative signify only a period during which certain actions transpired, and are not accompanied by a drawing.

The overall mission route and general location of aircraft are shown in Figure 1, while the detailed actions of PURPLE Flight are shown in the sketch.



## RED BARON EVENT II-63 SUMMARY

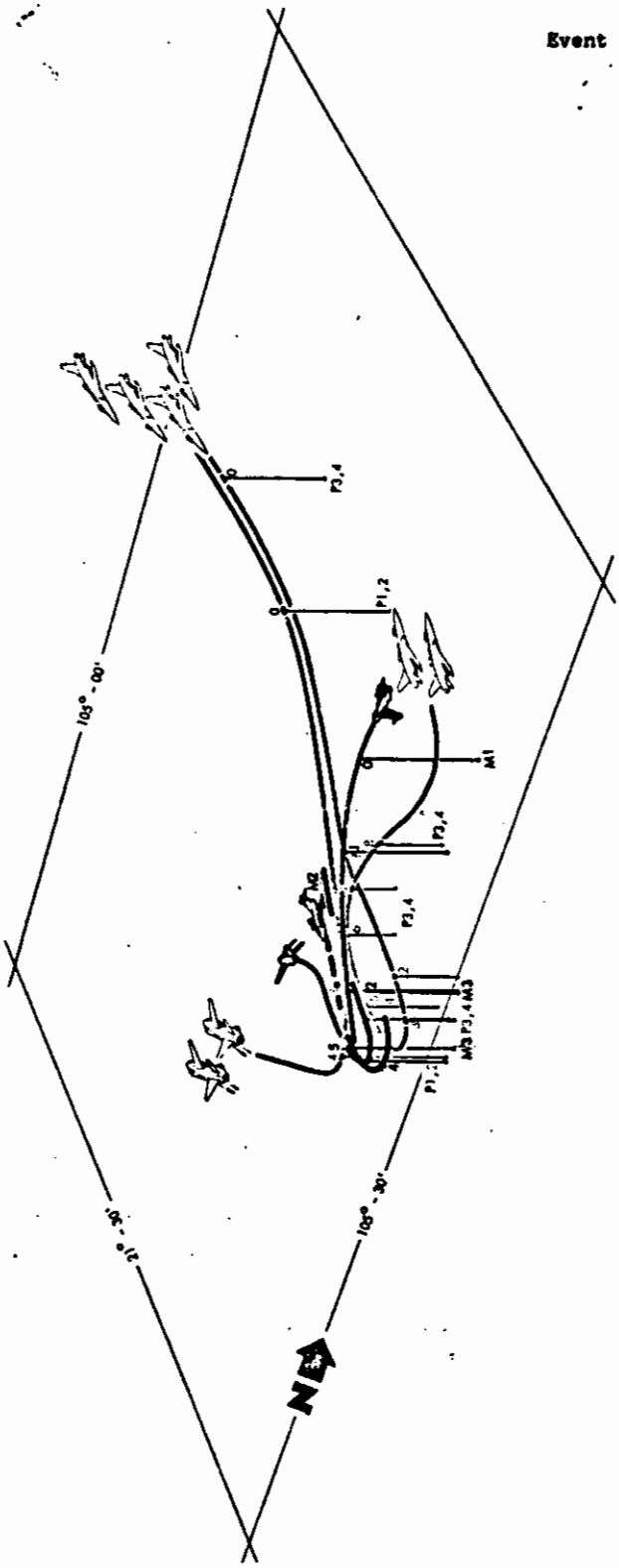
| Time Mark | Action Aircraft (PURPLE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| Before $T_{0_P}$ | | | G1 "We are being bounced by MIGs." | | | PURPLE flight had heard GREEN flight encounter MIGs, and is heading toward the general area of GREEN's target. |
| $T_{0_P}$ | Heading: 090°<br>Alt: 8-10,000 ft<br>Speed: 450 KCAS<br><br>Full internal fuel | P1 sees a glint at 12 o'clock, range 4-5 mi. He sees that it is a MIG-17. P1 then saw another MIG-17 below. P1-4 drop tanks and go to afterburner. | P3 and 4 following a bit lower and 4-5 miles back in trail. | P1 has MIGs 12 o'clock. | Two MIG-17s in a gentle left turn heading south at 5000 ft. | P1 looks down momentarily to set up sight. Gets only rockets, with a fixed 40 mil sight depression. He did not want radar ranging due to low alt. The sight makes P1 shoot too high. PURPLE closed from MIG's 4 to 6 o'clock. |
| $T_{1_P}$ | P1 2 to 3000 ft behind MIG-1<br>Hdg: 120°<br>Speed: 550 KCAS<br>Alt: 8000 ft<br>Closing rapidly | P1 opens fire on lead MIG | P2 following P1, P3 and 4 in trail. | | MIGs continue on. M2 is wingman and is on the right. | P1 fires 2 long bursts of 20mm. No hits. |
| $T_{2_P}$ | P1 closing rapidly on M2.<br>Alt: 8000 ft<br>Speed: 600 KCAS | P1 switched his attack from M1 to M2. Range 1500 ft down to 500 ft. | Rest of P-Flight following. | | M2 now on the right side of P1 (at about P1's 1 o'clock). M1 started a slow right turn. | P1 fired one long burst at M2. No hits. |
| | | | | | | |

RED BARON EVENT II-53 SUMMARY

| Time Mark | Action Aircraft (PURPLE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{3_P}$ | P1 still closing. P3 and 4 about Mach 1.0. | P1 starts to fire again at M2 but MIG breaks away before he can. | P2, 3, 4 still following P4 about 1 mile in trail of P3. | P2 and 3 call a third MIG trying to close on P1. | M2 breaks straight up and over the top to the rear of P1. A third MIG-17 (M3) at 4 o'clock to P2 and 3, diving at 40°, alt 7000 ft. | Third MIG is pale blue color and is hard to see |
| $T_{4_P}$ | P1 at 700 KCAS. | P1 jettisoned ordnance, breaks for the deck, and then departs the area. On departure P1 had bingo fuel. | P2 following P1 also drops ordnance. | P1 indicates to P2 that M3 cannot close on them. | M3 closes to 2000 ft of P2 but could not catch him. | |
| | The action from this point on describes only the P3 and P4 aircraft. | | | | | |
| | | P3 starts to attack M3. | | | M3 continues right turn | |
| $T_{5_P}$ | P3 and 4 in right turn slightly descending. | P3 fires at M3 from 2000 ft range. | | | When fired at M3 pulls up hard with high g. | P3 fired 150 rounds. |
| $T_{6_P}$ | P4 - 20 to 30° nose high in full afterburner. | P4 fired at the MIG. Range 200 ft. P4 had 2000 knots overtake on the MIG. | | | M3 pulled up and then rolled off left behind P3. | P4 fired 200 to 300 rounds. No hits. |
| $T_{7_P}$ | | P4 passed 200 ft to MIG's left as he overshot P3 jinking away. | | | M3 fires at P3 at 2000 ft range. No hits. | |
| $T_{8_P}$ | | P4 does a barrel-roll but the MIG breaks off and is lost from sight. | | | | |
| $T_{9_P}$ | | P3 and 4 rejoin and egress. | | | | |
| | | | | | | |

[redacted]

Event II-53

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Event II-54

Aircraft Involved: Four F-105s vs two MIG-21s

Result: No damage

Vicinity of Encounter: 21°15'N/106°45'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 September 1966/1027H*

Three F-105Ds and one F-105F WILD WEASEL aircraft on an IRON HAND support flight for strike aircraft in Route Package VI-A.

2. MISSION ROUTE

Departed Korat then direct to Brown Anchor Tanker direct to 21°12'N/107°34'E, direct to 21°15'N/106°45'E. Egress generally the same route. Altitude 8,000 ft, 450 kts.

3. AIRCRAFT CONFIGURATION

F-105F BLUE 1, F-105D BLUE 2

2 AGM-45
2 LAU-3
650-gal centerline tank
20mm ammo

BLUE 1

IFF operating; TACAN, radar, and doppler standby
Camouflage paint

F-105D BLUE 3

4 LAU-3
650-gal centerline tank
20mm ammo

F-105D BLUE 4

4 CBU-24
2 450-gal tanks on wing pylons
20mm ammo

MIG-21 MIG 1

Silver Color

MIG-21 MIG 2

2 AAM
Silver Color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear; visibility 5 mi. in haze.

| | BLUE | | | | GREEN | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 |
| Altitude: | | 8,000 ft | | | | 6,000 ft | |
| Heading: | | 260° | | | | 040° | |
| Speed: | | 450 kts | | | | 550 kts | |
| Fuel State: | | Full Internal (10,000 lb) | | | | Unknown | |

Flight Formation:

Normal tactical formation with element almost line abreast 1000 ft to 1500 ft to the rear and 2500 ft to the right.

5. INITIAL DETECTION:

A MIG call was received from another F-105 flight while BLUE flight was inbound to the target area.

MIGs were sighted by BLUE 1, 12 o'clock low, 2 to 3 mi. flying from left to right at 1027H. MIG warnings had been received, prior to sighting.

6. ACTION INITIATED

BLUE flight jettisoned stores and started right turn falling in trail with MIG 1.

7. SITUATION DEVELOPMENT

MIG 1 made a hard 180° turn passing BLUE flight almost head on. BLUE 1 fired 100 rounds of 20 m.m. HEI in front of MIG 1 with no apparent hits. BLUE 4 observed MIG 2 at 3 o'clock high 1000 ft out armed with missiles, attacking BLUE 3. On BLUE 4's call,

*NOTE: Time in OPREPS given as 0927H.

[redacted]



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BLUE 3 broke hard right into MIG 2 and down, and then reversed. BLUE 4 and MIG 2 jockeyed for position in a brief semi-scissors maneuver, with neither adversary being able to gain a tactical advantage. BLUE 4 broke off the encounter by breaking hard left and down, and accelerated to 740 kts CAS at 500 ft AGL. BLUE 1, 2 and 3 pursued MIG 1 for about 4 minutes and broke off with MIG 1 two to three miles in front of them opening range.

8. ORDNANCE

| | (No. fired/No. hits) 20mm |
|---|---|
| BLUE 1 | 100/0 |
| BLUE 2 | 0/0 |
| BLUE 3 | 0/0 |
| BLUE 4 | 0/0 |
| MIG 1 | None observed |
| MIG 2 | None observed |

9. EQUIPMENT PROBLEMS

BLUE 1 – Gun jam at 120 rounds
BLUE 3 – Had difficulty seeing MIG 2 due to vapor from canopy at high air speed and g loads.
BLUE 4 – Was unable to outmaneuver MIG 2.

10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 3 | 3400 | 780 | 80 TAC recorded and TAC FTR background |

Comments on this Encounter:

BLUE 1 EWO rear cockpit, poor visibility from aft cockpit -- hard to tell what is going on.

11. DATA SOURCES

Project Interviews: BLUE 1 (rear cockpit EWO)
Messages, Reports: OPREP-3 2114332, September 1966 from 7AF
DOCO 25835, September 1966
OPREP 4/359, 21 September 1966 from 388 FTR Wing Korat
Letters: BLUE 4

12. NARRATIVE DESCRIPTION

BLUE flight, consisting of one F-105F WILD WEASEL in lead position and three F-105Ds, was on an IRON HAND mission in Route Package VIA. Inbound to the target area in the vicinity of 21°15'N/106°45'E, BLUE flight heard another F-105 flight call MIGs. BLUE flight was at 8,000 ft altitude, heading 260 at 425 KCAS when two F-105Ds were observed at 12 o'clock, 2,000 ft low heading northeast with a MIG-21 about 2,000 ft behind them. A third F-105D was observed about one mile behind the MIG-21. BLUE flight jettisoned ordnance and tanks and started a right diving turn to break up the MIG attack and pursued the MIG about fifteen miles to the vicinity of 21°24'N/106°58'E. BLUE lead was closing on a heading of 040°, 6,000 ft, 550-600 KTAS at the MIG-21's 4-5 o'clock position range 10-14,000 ft when the MIG broke in a hard left turn and almost met BLUE flight head-on. BLUE lead in a slight left turn, still heading about 040° fired 100 rounds of 20 m.m. at the MIG with no apparent hits as the MIG turned through 270° in a shallow climb. The MIG was 1500-2000 ft ahead of BLUE lead when he fired. BLUE flight made a left 150° whifferdil turn and pursued the MIG to the north northwest toward Kep Airfield.

Separation between elements was now about 7,000 ft and between aircraft about 4,000 ft. After the turn, BLUE 3 sighted a silver colored object at his 3 o'clock a few thousand ft high. BLUE 3 broke into the object and identified it as a drop tank floating down. BLUE 3 started to turn back to rejoin the pursuit of MIG 1, as BLUE 4 sighted a second MIG-21, 1000 ft off of his right wing and high. The element was in the vicinity of 21°29'N/106°52'E, with MIG 2 attacking BLUE 3 from 5 o'clock high.

BLUE 4 called the break and BLUE 3 broke right and down forcing MIG 2 to overshoot. BLUE 4 tried to get behind MIG 2 and both jockeyed for firing position in three or four scissor maneuvers with neither being able to attain a firing position. BLUE 3 lost sight of BLUE 4 and instructed him to depart the area. BLUE 4 then broke left and down and exited Route Package VI-B from 21°30'N/106°49'E to 21°11'N/107°30'E in afterburner at 740 kts, 500 ft AGL.

Meanwhile BLUE 3, after evading MIG 2, rejoined BLUE 1 and 2 at 21°34'N/106°44'E as they pursued MIG 1. MIG 1 was two to three miles in front of BLUE 1 when BLUE 1 broke off the chase at 21°35'N/106°42'E and exited with a right turn direct to 21°11'N/107°30'E. BLUE 4 exited Route Package VI approximately two minutes ahead of the rest of BLUE Flight and rejoined during rendezvous with the post-strike tanker.

Aircraft Involved: Four F-105 vs one MIG-17

Results: One MIG damaged

Vicinity of Encounter: 21°12'N/106°43'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 September 1966/1015H

BLUE Flight was one of several F-105 flights in a strike against JCS 16, a railroad/highway bridge 17 miles northeast of Hanoi. There were also two flights of F-4s orbiting east of the target area as MIG CAP.

2. MISSION ROUTE

Aircraft departed Takhli, Thailand, direct air-to-air refueling out over the Gulf of Tonkin, north to 21°13'N/107°24'E, west along the ridge line to the target. Egress route was the reverse course.

3. AIRCRAFT CONFIGURATION

F-105 BLUE 1, 3, 4

5 - 1000-lb bombs
2 - 450-gallon wing tanks
1029 rounds 20mm

F-105 BLUE 2

4 - CBU-24s
2 - 450-gallon wing tanks
1029 rounds 20mm

All F-105 aircraft camouflaged.

MIG-17

Ordnance unknown.
Camouflaged.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered clouds 3-5 miles in haze. Haze layer to 6000 ft, clear above haze.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 4000-5000 ft |
| Heading: | 080° |
| Speed: | 480-500 kt |
| Flight Formation: | Flight in process of joining up after bomb run. BLUE 2 1500 ft back on the left side of BLUE 1. BLUE 3 4000 ft behind lead and BLUE 4 1000 ft behind BLUE 3 on right side. |

5. INITIAL DETECTION

BLUE 3 calls bogeys at 10 o'clock. Lead rogers the call and identifies the bogeys as a MIG in trail of a F-4 approximately 2000 ft back. (See Event 46, Volume I.) MIG calls had been heard in the area prior to this sighting. Also BLUE Flight sighted two flights of four MIGs each, earlier, as they were coming into the target.

6. ACTION INITIATED

The MIG rolled out of its turn almost directly in front of BLUE 1. BLUE 1 moved up to 2000 ft and began to fire.

7. SITUATION DEVELOPMENT

The F-4 was in a left turn when sighted at 10 o'clock. The F-4 rolled out almost directly in front of BLUE Flight. BLUE 1 just moved up into the MIG's 6 o'clock and at 2000 ft out began firing. At approximately 300 ft range the MIG broke hard left and down. BLUE Flight lost sight of the MIG in the haze near the ground.

8. ORDNANCE

BLUE 1 568 Rounds 20mm expended.

MIG-17 Not observed to fire.

9. EQUIPMENT PROBLEMS

The only problem area noted during this encounter was: BLUE 1 did not appear to cause the damage expected from 568 rounds of 20mm - possible sight problem.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | REmarks |
|---|---|---|---|---|
| *BLUE 1 | 4000 | 800 | 70 | These figures are estimated. BLUE 1 was not interviewed. He did have considerable fighter experience. |
| *BLUE 2 | 500 | - | - | BLUE 2 was a junior officer, approximately 500 hrs total flying time. This was his first unit assignment out of Nellis Gunnary School. |
| BLUE 3 | ---------Unknown---------- | | | |
| *BLUE 4 | 3000 | 375 | 60 | Fighter experience 1400 hrs F-100 and approximately 350 hrs F-86. |

Comments:

BLUE 2 - remarked that a AAM probably would not have been a good weapon to use during this encounter. The MIG was quite close and the proximity of the F-4 would have restricted using a missile.

BLUE 3 - the turning capability of the MIG 17 made following him during his break almost impossible.

11. DATA SOURCES

Project Interviews: BLUE 2, 13 March 1967.
BLUE 3, 13 March 1967.
BLUE 4, 6 February 1967.

Messages, Reports:

7AF OPREP-3 258 27 September 1966.

7AF 0212352Z, DOI30492 September 1966.

12. NARRATIVE DESCRIPTION

BLUE Flight had just completed its bombing run on the Dau Cau highway and rail bridge and was in the process of joining up. The flight had just rolled out on a heading of approximately 080° altitude 4-5000 ft airspeed 500 kt. BLUE 3 called bogeys at 10 o'clock. BLUE 1 identified the bogeys as a MIG chasing an F-4. The F-4 and MIG were in a left turn at this time so that their bellies were up to BLUE Flight and they could not see them. It is believed that the F-4 did not know the MIG was at his 6 o'clock position. The MIG was 2000 ft behind the F-4 and in a very good attack position. The left turn carried the MIG almost directly in front of BLUE 1, about 2000 ft. BLUE 1 moved into position and began firing, and continued firing down to 300 ft at which time the MIG broke hard left in what amounted to a Split-S and dove to the deck. BLUE Flight turned left, attempting to keep the MIG in sight but lost sight of him in the haze as he neared the ground. The flight then turned back right and continued to egress the area. BLUE 1 fired 568 Rounds of 20mm at the MIG. He and BLUE 3 saw hits (flashes) on the MIG's right wing. The MIG was camouflaged - black, green, and red.

* Estimated from author's personal knowledge.

RED BARON EVENT II-55 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | Head ~ 080<br>Speed ≈ 500 KIAS<br>Alt. ≈ 4000 ft | Kept tanks - closed in on MIG-17 | BLUE Lead closed in on MIG. | BLUE Lead called "Bogeys 12 o'clock." MIG clearing F-4C. | MIG was chasing F-4C. | BLUE Flight was just off target and rejoining.<br>Everyone set up for air/air as soon as off target. |
| $T_1$ | BLUE 1 beginning to approach firing range.<br>In right turn (30° bank) about 2000 ft range. | BLUE Flight following B1. | BLUE Lead getting ready to fire. | B3 and B4 watching for other MIGs. | MIG-17 about 200 ft behind F-4C. | |
| $T_2$ - | BLUE Flight had increased g's as much as 5 g. | B4 turned a bit just to see what was happening.<br>Did not attempt firing pass. | BLUE Lead fired on MIG-17. | | MIG-17 broke to left and down. | |
| $T_3$ | | | | | MIG recovered about 100 ft above trees and was pulling up.<br>No smoke visible. | B3 thought the MIG might have hit but B2 thought he had recovered.<br>(F-4C may have been shot down, but got to coast?) |
| | | | | | | |

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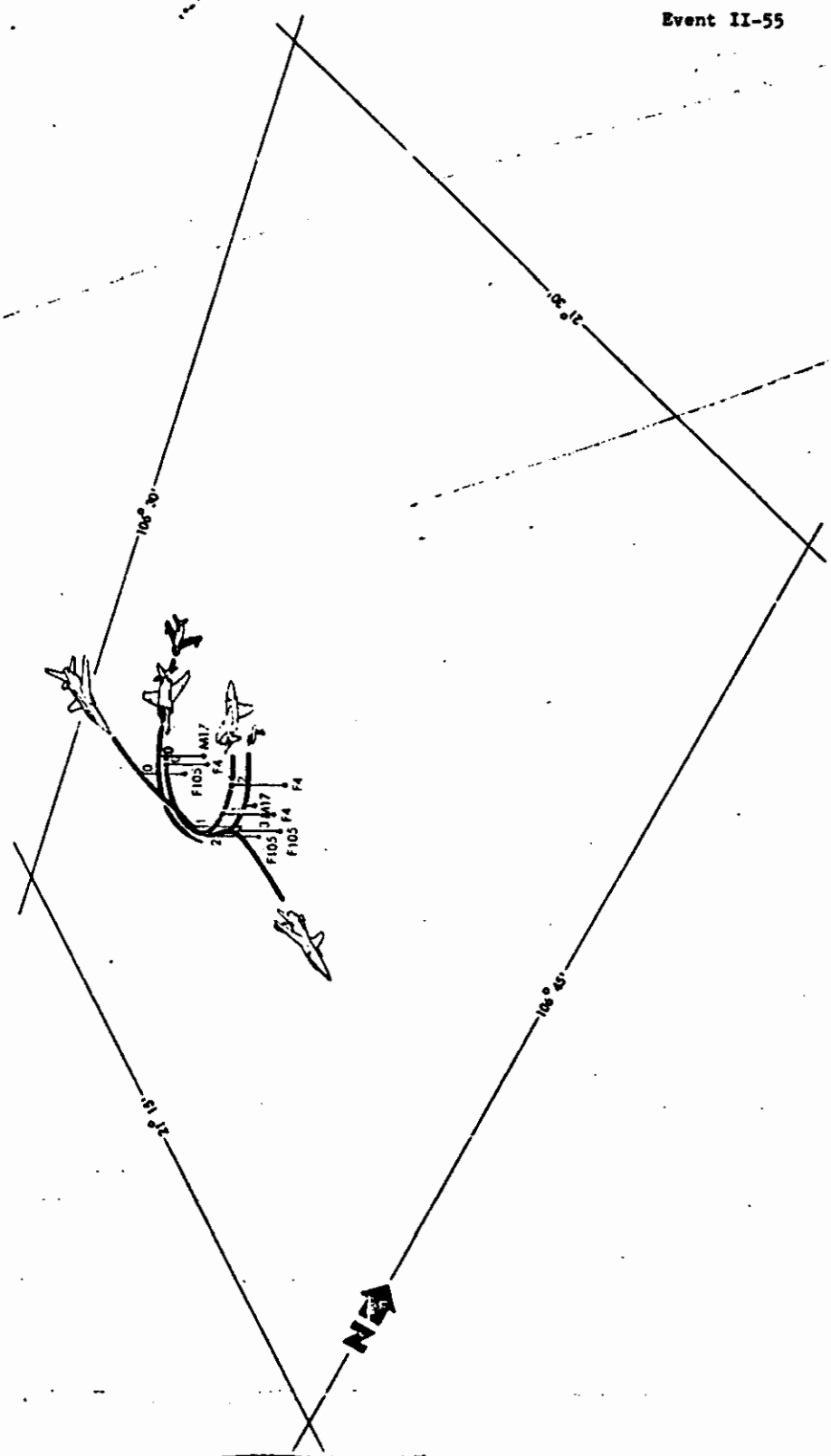
Event II-55

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Event II-56

Aircraft Involved: Four F-105s vs two MIG-17s
Result: One MIG-17 destroyed
Vicinity of Encounter: 21°20'N/106°17'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 September 1966/1000H

One F-105F and three F-105Ds (BLUE Flight) were on an IRON HAND mission with an initial orbit point at 21°14'N/106°25'E. The IRON HAND Flight was to attack SAM sites in support of the strike group consisting of a total force of forty F-105s and eight F-4Cs. The target was JCS 16, the Dap Cau HW/RR bridge.

2. MISSION ROUTE

Departed Korat on a northeast heading to the Gulf of Tonkin for an air-to-air refueling with Brown Anchor. Entered NVN just northeast of Cam Pha Harbor on a heading of 275° altitude 6-9000 ft, and speed of 520 kt. Then proceeded to assigned orbit point.

3. AIRCRAFT CONFIGURATION

F-105F BLUE 1, F-105D BLUE 2

2 - SHRIKE (AGM-45)
2 - Rocket pods (2.75") LAU-3A
1 - 650 gal centerline tank
Full 20mm ammunition - 1029 rounds
BLUE 1 had IFF - on, TACAN - off, doppler - on, radar - standby
All F-105 aircraft camouflaged

F-105D BLUE 3 and 4

4 - Rocket Pods (2.75") LAU-3A
1 - 650 gal centerline tank
Full 20mm ammunition - 1029 rounds

MIG-17

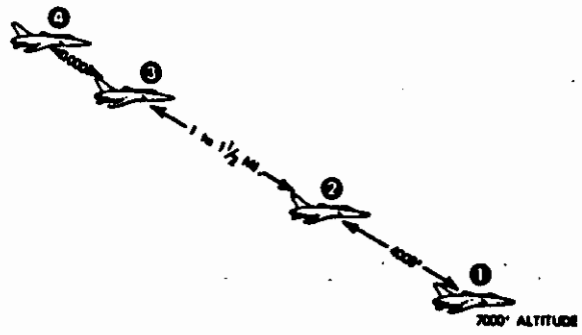
Guns probably
Silver in color
No external stores

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: One-eight scattered clouds with haze below 6000 ft. Visibility unlimited above 6000 ft, 4-5 miles in the haze.

| | BLUE 1 | 2 | BLUE 3 | 4 |
|---|---|---|---|---|
| Altitude: | -------7000 ft--------- | | ---6000 ft--- | |
| Heading: | ------110° to 120°------ | | -110° to 120° | |
| Speed: | ----------.83---------- | | ---Unknown--- | |
| Fuel: | 10,000 lbs approx. (B-1) | | -Tanks empty- | |

Flight Formation

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5. INITIAL DETECTION — Event II-56

MIGs were sighted visually by BLUE 4 at 4000 ft, in BLUE 1's and 2's 6 o'clock position and closing. BLUE 1 and 2 were in a right turn. BIG EYE gave MIG warnings during the encounter.

6. ACTION INITIATED

BLUE 4 told BLUE 1 to go to afterburner and go into an easy right turn. BLUE 1 complied and departed the area.

7. SITUATION DEVELOPED

BLUE 3 and 4 then turned into MIGs who went into a left turn after not being able to overtake BLUE 1 and 2. BLUE 3 got angle off on MIG-1 and fired hitting him. MIG-1 leveled off, then went into a shallow right turn. MIG-2 broke left and in front of BLUE 3 and 4. BLUE 4 fired a burst at MIG-2 but stayed with BLUE 3. BLUE 3 again got angle off and distance on MIG-1, fired and knocked a part off the right wing tip. MIG-1 pilot ejected and BLUE 3 and 4 followed it until impact. BLUE 3 and 4 then switched leads at which time MIG-2 was seen at 7000 ft (5000?), and 5 o'clock to BLUE 3 and 4. BLUE 3 and 4 then lit burners and egressed the area.

8. ORDNANCE

| | Gun fired/hit |
|---|---|
| BLUE 1, 2 | 0/0 |
| BLUE 3 | 1029/yes |
| BLUE 4 | 150/0 |
| MIG-1, 2 | ?/0 |

9. EQUIPMENT PROBLEMS

BLUE 1 - Did not load tape recorder.

BLUE 3 - Could not jettison centerline tank.

BLUE 4 - Gun camera was not loaded with fresh film.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | 3800 | | | F-80, 86, 100, 105 (in Germany) |
| BLUE 2 | Unknown | | | |
| BLUE 3 | 600 | 30 | about 75 | |
| BLUE 4 | 3500 | 400 | about 50 | Fighter Weapon School Instructor |

Comments on this Encounter

BLUE 3 would have had a pretty fair chance of getting MIG-2 if he had a missile. Praised B-4 for staying with him and clearing his 6 o'clock position, watching for other MIGs.

BLUE 1 does not believe MIGs were GCI controlled. Believes that all the MIGs were trying to do was to set up in a normal pursuit curve. He lost his rate of closure and tried to gain it back by only going on the inside of the turn.

BLUE 4 - MIGs probably did not see BLUE 3 or 4 when they went after BLUE 1 and 2. BLUE 1 and 2 did not see MIG due to poor visibility to the rear.

Comments from Overall Experience

BLUE 1 - A TOT of two minutes apart works good. In this way we do not have to get to minimum fuel before we leave the area. Therefore, before, if we had gotten bounced by MIGs and forced to use afterburner, we would have been on fumes when we hit the tanker. Lack of tracking flares on AGM-45 severely reduces its effectiveness.

BLUE 4 - Gun camera is no good, too many prisms, light quality is poor. To switch from "air-to-ground" to "air-to-air" ought to be on one switch. A number of elements in a flight increase range pick-up; F-4 was poor, due to its visibility. Radar-directed AAA was not leading properly. As the B-66s moved farther away, their jamming became less effective. QRC-160 looked good but didn't like it as a pod; felt it should be built into aircraft. There was a problem on engine wear due to excessive high power settings when some squadrons would not use water injection because runway was sufficient for takeoff.

BLUE 3 - Felt training was not adequate for MIG encounters. Pilot has to throw too many switches. Felt he could use more acceleration. Couldn't understand why MIGs don't look for the other element since everyone knows they fly in fours.

11. DATA SOURCES Event II-56

Project Interviews: BLUE 1 (Front), 3 Feb 1967; BLUE 3, 17 Feb 1967; BLUE 4, 6 Jan 1967.
Messages, Reports:

7AF OPREP-3, 2211124Z; DOCO 25830 Sept 66.
7AF 0212352Z; DOI 30492 Sept 66.

12. NARRATIVE DESCRIPTION

BLUE Flight was on a WILD WEASEL Mission, northwest of Haiphong. BLUE 1, with BLUE 2 about 4000 ft back, just finished firing at a suspected SAM site and was in a right turn to come around for another shot. BLUE 2 and 3 were about 3000 ft low during the fire and continued on the firing heading of 310° for a few seconds to see if they could see the missile hit, climbing to an altitude of 9000 ft. BLUE 3 and 4 then also went into a right turn 90° bank and descended down to 6000 ft. On reaching 4000 ft both BLUE 3 and 4 saw two MIG-17s at 4000 ft closing in at the 6 o'clock position of BLUE 1 and 2 who were at 7000 ft in a right shallow turn. BLUE 3 then went to setting up his switches while BLUE 4 called out the MIGs to BLUE 1 and 2 telling them to go into an easy right turn. BLUE 4 then asked BLUE 3 if he had the MIG to which he said, "Yes." BLUE 1 and 2 then rolled wings level, nose up 10°, and jettisoned their tanks, keeping their ordnance. BLUE 1 and 2 then nosed over, went into a right 30° bank turn in afterburner and tried to keep the MIGs at 4000 ft distance while BLUE 3 and 4 attacked them. BLUE 3 and 4 meanwhile jettisoned their ordnances but only BLUE 4 could jettison his tank. They themselves then went into afterburner and rolled in on the MIGs. The MIGs stayed with BLUE 1 and 2 for a short period descending and then broke to the left in a tight turn. By this time BLUE 3 and 4 were within 2000 ft range and BLUE 3 led MIG-1 and fired. BLUE 1 and 2 were descending to the deck and out of the area. BLUE 3 hit MIG-1 and MIG-1 rolled out level and then into a 1-1/2g turn to the right. MIG 2 broke sharply to the left, passing in front of BLUE 3 and 4. BLUE 4 shot at him but did not record any hits. BLUE 4 stayed with BLUE 3 and BLUE 3 again drew angle and lead on MIG-1 who was in a right turn. BLUE 3 fired again and this time cut off a portion of MIG-1's right wing tip. Pilot's canopy was then observed to be jettisoned and pilot ejected past BLUE 3. BLUE 4 saw pilot in chute. Both BLUE 3 and 4 followed aircraft to the ground at an altitude of 1000 ft and impact. At this time BLUE 3 and 4 swapped leads. MIG-2 was then seen again closing at the 5 o'clock position at 5000 ft. BLUE 3 and 4 lit afterburner and egressed the area rejoining with BLUE 1 and 2 before reaching the coast. BLUE Flight then refueled and returned to home base.

## RED BARON EVENT II-56 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | Head 310°<br>Alt. 3000 ft | B3 and 4 continued after launch on 310° to see if they can see SHRIKE impact. Climb to 9000 feet, then turn right and descend to 6000 feet. | B1 and 2 are at 7000 ft and launch a SHRIKE at a SAM site, then start right descending turn. | | | |
| $T_1$ | Head 120°<br>Alt. 6000 ft | In right turn. B3 sees MIG, as does B4, at 2 o'clock, B3 starts setting up switches. | B1 and 2 level wings, slight nose-up, and jettison tanks. Then B1 and 2 drop nose, go into a descending right 300° turn and engage afterburner. | B4 calls Lead, "You have two MIG-17s on you. They're well out. Just light the burner, and start an easy right turn." "Do you have them 3?" B3 "R, I've got 'em." "Say again alt." B3, "Roger, 4000 ft." | MIG in right turn, 8000 ft out, 6 o'clock to B1 and 2 at 4000 ft. | WEASEL tape was not loaded.<br>In turn B1 sees MIG 1. |
| $T_2$ | Alt. 3000 ft<br>Speed 550-575 | B3 and 4 closing on MIGs in afterburner. B3 and 4 both jettison their ordnances and B4 his tank. | B1 sees B3 and 4 closing to the inside of MIGs. B1 and 2 passing 3000 ft at a ground speed of 645. | B3 to 4, "Clear out from behind me." "ok, I'm punching it." "Burner." B1 to 3, "Do you have him 3?" B3, "yes." B1, "I'll hold him here if you can get on him." | MIGs not gaining on B1 and 2 but holding approximately 4000 ft out. Then MIGs break off to the left and descends. | B3 is unable to jettison his centerline tank. B4 jettisons everything. |
| $T_3$ | Alt. 2000 ft<br>A/S 550-575<br>3g turn | B3 is now 3000 ft out and fires ahead of MIG 1 and gets a few hits. | B1 and 2 head for the deck and between the valleys | | MIG is in tight left turn at first, then levels out and goes into a slow reversal turn to the right, MIG 2 follows at first. | Metal flew off of MIG 1 later in the reversal turn. |

## RED BARON EVENT II-56 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_4$ | Alt. 2000 ft<br>A/S 550-575<br>1-1/2 g turn | B4 fires at MIG 2 as he passes in front. B4 then stays with B3. B3 turns to the inside of MIG 1 again and draws Lead on him. Distance now between 1500 to 1200 ft. | | | MIG 2 breaks hard left and passes in front of B3 and 4. MIG 1 continues in right turn. | |
| $T_5$ | Alt. 2000 ft<br>A/S 550-575 | B3 fires at MIG 1 and takes off a chunk of metal off of right wing. B3 sees canopy fly off. B4 sees pilot in chute pass him. | | B4 to B3, "Good shooting." B1, "Did you get him?" B3, "I've got him." | MIG is hit. Pilot ejects a little after. | B4 does not see pilot eject. He is looking at other MIG and clearing B3's 6o'clock. |
| $T_6$ | Alt. 1000 ft | B3 and 4 follow MIG down to crash point in a right descending turn. B4 8000 ft back. Comes up on the right and assumes Lead. | | "OK, you have me, Roger," says B3. "B4 "Roger." B3, "All right, my gun is empty at this time, my gun is empty. You take the Lead." B4, "Rog, I'll come by on your right." | MIG 1 crashes. | |
| $T_7$ | Alt.<br>A/S in afterburner | B3 and 4 see a MIG at 5000 ft and closing from their 5 o'clock position. B3 and 4 light afterburner and egress area. | | B4 to B3: "All right, let's light burners. Let's just unload it and go." | | Low on fuel. Rejoin with B1 and 2 before reaching coast. |
| | | | | | | |

[redacted]

7. SITUATION DEVELOPMENT Event II-58

BLUE 3 opened fire on MIG 1 but missed. MIG 1 slid out, then back in behind BLUE 3. BLUE 3 headed for the deck with MIG 1 in trail and firing. Meanwhile MIG 2 was 2-3000 ft behind MIG 1 and 7-8000 ft in front of BLUE 4. BLUE 4 pulled his nose through MIG 2 and fired 125 rounds before his gun jammed. After his gun quit firing, he broke down and right and when he pulled out, he did not see any MIGs on BLUE 3's tail. Before breaking, BLUE 4 saw a possible hit on the belly of the MIG and a definite hit approximately 6-7 ft behind the canopy on the fuselage. As elements, BLUE Flight remained in the area looking for MIGs but without further MIG encounters. BLUE Flight then rejoined and exited the area.

8. ORDNANCE

(No. fired/No. hits)

| | Cannon | Remarks |
|---|---|---|
| BLUE 1, 2 | 0/0 | |
| BLUE 3 | 200/0 | |
| BLUE 4 | 125/1 | BLUE 4 got a positive hit on the fuselage of MIG 2. |
| MIG 1 | ?/0 | |
| MIG 2 | 0/0 | |
| MIG-17 Flight | 0/0 | |

9. EQUIPMENT PROBLEMS

BLUE 1 None

BLUE 2 None

BLUE 3 None

BLUE 4 Gun quit firing after 125 rounds (possible burst limiter installed).

10. AIRCREW COMMENTS

Experience

No aircrew experience data available.

Comments on this Encounter

The flight felt that excessive UHF radio chatter greatly hampered the flight's effectiveness when jumped by MIGs. So much chatter on the radio makes it difficult to maintain flight integrity.

Comments from Overall Experience

BLUE 1: The big problem encountered was the haze which restricted the visibility to a maximum of four miles slant range. This is a definite reason for having an aircraft with a permanent-mounted gun. You would have to identify the target visually prior to firing and would probably be too close to the test for air/air missiles.

11. DATA SOURCES

Project Interviews: BLUE 1, letter 3 Mar 1967.

Messages, Reports

Resumé of 388TFW FASTEL DOI-03103, September and OPREP 4/358

7AF 211432Z Sept 66 DOCO 25846

7AF 211053Z Sept 66 DOCO 25833

7AF 212352Z Sept 66 DIO 30492

12. NARRATIVE DESCRIPTION

BLUE Flight was inbound to the target on a flak suppression mission to support a force of about 48 F-105 and F-4 fighters attacking the Dap Cau RR/Highway Bridge, seventeen miles northeast of Hanoi. This was about the third day in a row that this bridge was put under attack.

The entire force was composed of twelve flights of four aircraft each with individual flight times-on-target spread over a period of about one hour. Thus, the flights were attacking in trail with spacing of 3-5 minutes between flights. Two of the flights were flak suppression, two flights were IRON HAND support and two flights of F-4C aircraft were assigned strike/CAP.

BLUE Flight was about mid-stream in the flow of attack flights at 21°14'N/106°52'E, cruising at 8000 ft, 450 KCAS and heading 270° when they observed a flight of four MIG-17s at 3 o'clock approximately four miles out at the same altitude and headed the same direction as BLUE Flight. Area MIG warnings had been received pre[redacted] the picket radars and

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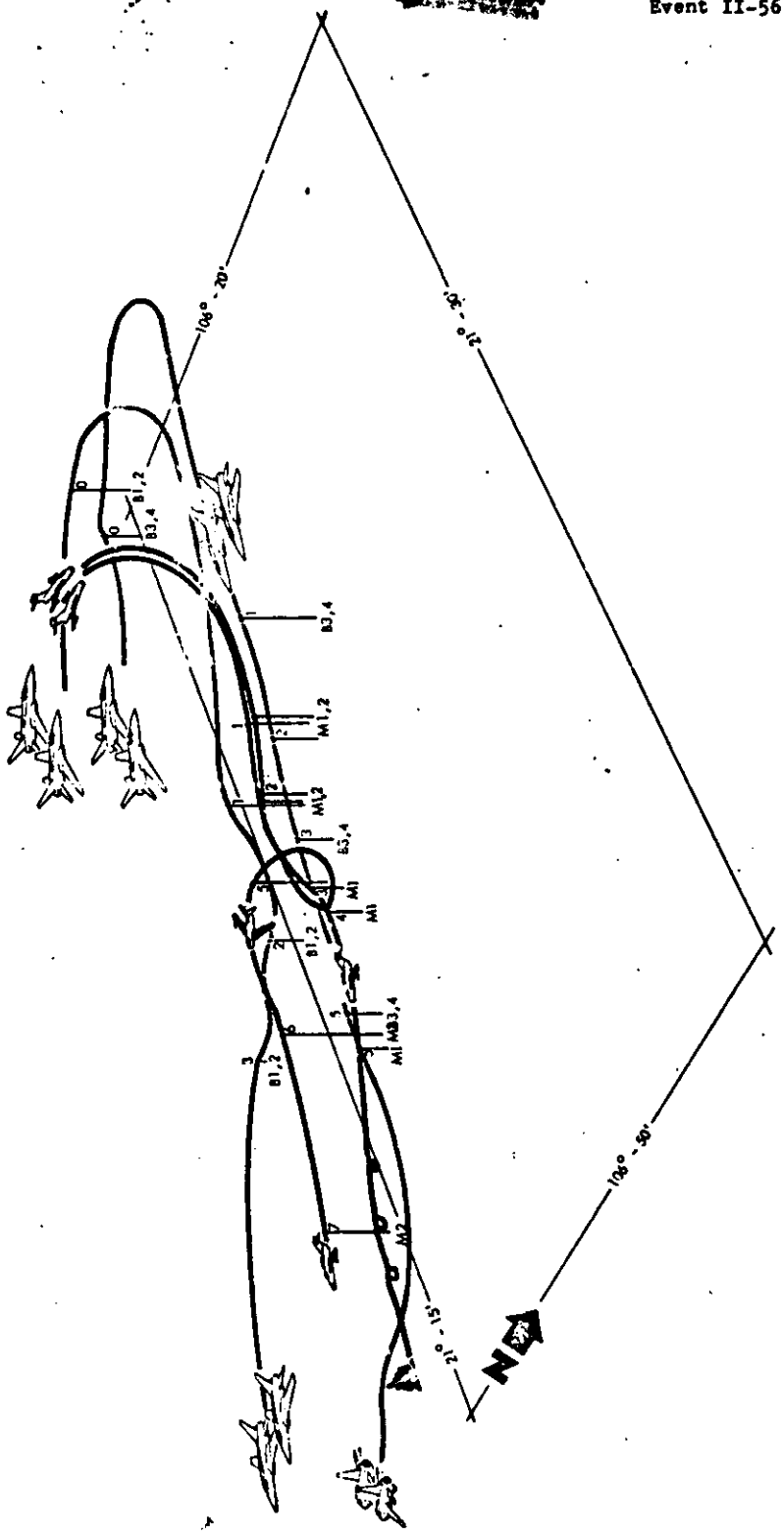
Event II-56

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Event II-57

Aircraft Involved: Four F-105Ds vs two MIG-17s
Result: One MIG destroyed.
Vicinity of Encounter: 21°15'N/106°22'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 September 1966/1015H

Four F-105Ds, strike aircraft inbound to JCS 16, railroad/highway bridge at 21°11'N/106°05'E. Several MIG warnings had been given. Could hear other flights engaging MIGs in the target area. Numerous other flights (F-4C and F-105) striking in the same area.

2. MISSION ROUTE

Departed Takhli refueling over the Gulf of Tonkin with coasting in due west of the target area to take advantage of the mountainous terrain.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4

6 - 750-lb bombs (or 5 - 1000-lb bombs)
2 - 450-gal wing tanks
Camouflage paint, IFF off

MIG-17 MIG 1, 2

Both clean
MIG 1 - silver color with red star.
MIG 2 - Camouflaged. Lighter tans and greens than U.S. aircraft. No insignia markings noted.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear with visibility 5 to 6 miles in haze.

| | BLUE 1, 2 | BLUE 3, 4 |
|---|---|---|
| Altitude: | 5000 ft | 6000 ft |
| Heading: | 270° | 270° |
| Speed: | 500 KTAS | 500 KTAS |
| Fuel State: | Full internal plus some in wing tanks. | |

5. INITIAL DETECTION

Numerous MIG warnings had been received and BLUE Flight heard other flights calling out MIG sightings and engagements. Approximately 1015H, BLUE 1 saw a MIG-17 low at his 12 o'clock heading south in a right turn.

6. ACTION INITIATED

BLUE 1 called out the MIG and descended to the 6 o'clock position in afterburner with BLUE 2 on his left wing leaving BLUE 3 and 4 as high cover. All aircraft retained their external stores.

7. SITUATION DEVELOPMENT

BLUE 1 came out of afterburner, closed in to 1500 to 2500 ft at 6 o'clock and fired one burst of 154 rounds. BLUE 1 and 2 observed hits in MIG's left wing. BLUE 1 passed MIG on left side and broke hard left, descending, in afterburner while jettisoning external stores. BLUE 2 saw MIG light afterburner, pull up and roll left behind BLUE 1 as BLUE 2 started shooting from MIG's 6 o'clock position (280 rounds) observing a fragment leave MIG's aft section. BLUE 2 broke hard left, saw BLUE 1, then observed an explosion in the area where MIG 1 could have hit if it continued the right descending break it entered as BLUE 2 shot.

BLUE 3, with 4 on his wing, at 5000 ft altitude trailing BLUE 1 and 2, spotted MIG 2 at 12 o'clock, 4000 ft range in a shallow left turn as BLUE 2 jettisoned external stores and accelerated to join BLUE 1. BLUE 3 (and 4) jettisoned external stores and started to close on MIG 2 as he decided to shoot from that range. BLUE 3 fired 135 rounds as the gun jammed and MIG 2 broke hard left downward at the start of BLUE 3's firing. No hits observed. BLUE 3 and 4 continued left descending turn and egressed.

[redacted]



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8. ORDNANCE

| | Burst | Rounds Fired | Result | Remarks |
|---|---|---|---|---|
| BLUE 1 | 1 | 154 | MIG 1 damaged | Gun jam |
| BLUE 2 | 1 | 280 | MIG 1 destroyed | |
| BLUE 3 | 1 | 135 | Probable miss | Gun jam |
| BLUE 4 | 0 | 0 | | No attempt |

MIG 1,2 - Clean

9. EQUIPMENT PROBLEMS

BLUE 1 - Gun jam, suspected cycle delay timer prevent rapid second burst.
BLUE 2 - Gun sight reset for air-to-air too time consuming and distracting. Shot "blindly" at MIG.
BLUE 3 - Gun jam. Suspected burst limiter installed. Should have been removed.
BLUE 4 - No malfunctions.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 1 | No data | | |
| BLUE 2 | | 300 | 86 |
| BLUE 3 | 5000 | 200 | 20 |
| BLUE 4 | No data | | |

Comments on This Encounter

BLUE 1 and 2 feel they would have each scored a kill if the guns had continued to function as they expected.

The switch repositioning for change over from air-to-ground and air-to-air weapons system employment is too involved, time consuming, and distracting of vision and thought at a most critical time.

11. DATA SOURCES

Project Interviews: BLUE 1, 15 Mar 67; BLUE 2, 14 Mar 67; BLUE 3, 17 Feb 67
Messages:

7AF OPREP-3 211041Z Sep 66 DOCO 25827 Sep 66

12. NARRATIVE DESCRIPTION

BLUE Flight was in Fluid-4 formation with BLUE 3 and 4 to the right side, 500 kts CAS, 500 ft, heading west inbound to target when BLUE 1 saw MIG 1 12 o'clock low, southerly heading and a gentle right turn. BLUE 1 called out the MIG as BLUE 1 and 2 selected afterburner in the descending turn to position for a gun attack. Everyone kept their external stores with intentions of striking target after the engagement. BLUE 1 repositioned all necessary switches while descending and came out of afterburner when his overtake was sufficient. BLUE 2 stayed with 1 in a fighting wing position but did not set up his switches for air attack (sight set for dive bombing).

MIG 1 appeared to be below ridge tops (maybe 500 ft AGL) with 300 to 350 KTAS and turning toward Kep airfield. Numerous MIG warnings had been broadcast and several flights had engaged MIGs as BLUE Flight entered North Vietnam.

BLUE 1 closed on MIG 1 with about 575 kts CAS in perfect position at 6 o'clock with the MIG in a 15 to 20° banked right turn. He fired one burst (154 rounds) at 2500 ft estimated range and BLUE 1 and 2 observed the hits on MIG 1's left wing. BLUE 1 repositioned his aim point to the MIG's fuselage and tried firing again but got no response. MIG 1 stayed in the gentle turn. BLUE 1 brought the power to idle to reduce overtake while cycling the trigger to try and fire the gun again. Unable to stop the overtake, BLUE 1 goes to the 9 o'clock position "50 feet" off the MIG and then breaks down left in afterburner and jettisons external stores. MIG 1 pulls up as BLUE 1 breaks and BLUE 2 positions to shoot from probably 1000 ft in trail.

As BLUE 1 was breaking and BLUE 2 was shooting (280 rounds), BLUE 3 and 4 were still at 4500 clearing the area when BLUE 3 saw MIG 2 at 12 o'clock, 4000 ft range. BLUE 3 jettisoned external stores, reset the switches for air-to-air and observed a radar lock-on of 7000 ft but assumed it to be a ground return lock-on as he estimated 4000 ft range. Thinking the MIG may start maneuvering at any movement, BLUE 3 decided to shoot immediately even with the aim point slightly off. As BLUE 3 opened fire, MIG 2 initiated a hard left descending break and BLUE 3's gun stopped after shooting 135 rounds. BLUE 3 observed his jettisoned bombs exploding as MIG 2 broke and thinks that caused the break or that

12. NARRATIVE DESCRIPTION (Continued)

MIG 2 was observing MIG 1 and saw him hit the ground. BLUE 3 tried firing his gun again without success while doing a left turn and watched MIG 2 level out at the tree tops heading northwest toward Kep airfield.

As BLUE 3 spotted MIG 2 and BLUE 1 was in the break from MIG 1, BLUE 2 (without a gunsight) saw MIG 1 roll to the left as if trying to position on BLUE 1 so BLUE 2 pointed his nose at MIG 1 and started shooting, observing a piece of the aft section departing MIG 1. MIG 1 rolled right and BLUE 2 continued the left turn into a hard break to rejoin BLUE 1 as both BLUE 1 and 2 saw an explosion in the vicinity of where MIG 1 was foundering.

## RED BARON EVENT II-57 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | Heading west, 5000 ft, in Fluid-4, using drop tank fuel, 6 - 750 lb bombs | B1 spots M1 12 o'clock low going south. Takes B2, leaves B3 and 4 high, starts in afterburner to position for a gun attack. | None | B1 calls "MIG at 12 low." B2, 3 acknowledge and spot M1. B3 and 4 to look for other MIGs. | In gentle right turn at approximately 500 ft. Estimated 300 to 500 KTAS. Clean - silver color. | B1 and 2 in descending left turn closing rapidly on M1. Come out of afterburner during descent. Everyone retains external stores. B1 sets up for air-to-air. |
| $T_1$ | Est. 1500 ft 550 to 575 CAS Military pwr. | B1 opens fire at estimated 2500 to 1500 ft range. B2 1000 ft behind B1. | | B1 calls MIG hit. B2 confirms hits in left wing. | Hit on mid-portion of left wing. No immediate reaction. | B1 can't get gun to shoot again, overtakes MIG to the left and breaks hard left as M1 pulls up and rolls left. |
| $T_2$ | B1 clean aircraft. B2, 3 with stores. | B2 shoots at M1 in left turn. B3 and B4 jettison stores and B3 repositions switches for gun attack. | | B1 calls "jettisoning stores." B3 calls M2 at his 12 o'clock. | M1 receives fire from B2 and rolls right. M2 at 4000 ft, est. 400 kts heading west in gentle left turn from B3. | B2 sees M1 lose piece of aft section. B3 tries radar lock-on but thinks 7000 ft is ground. Estimate M2 at 4000 ft range. |
| $T_3$ | All clean. | B1 and 2 see smoke on ground where M1 should have been. B3 opens fire at est. 4000 ft. Gun jam after 135 rnds. | B4 flies wing on B3. | B1 and 2 call M1 crashed. | M1 assumed destroyed. M2 starts hard left break at start of B3's firing. | B1 and 2 egressing. B3 starts to follow M2 but gun inoperative. Continues left turn to egress with B1 and 2. |
| $T_4$ | All BLUE aircraft egressing east. | | | | M2 at tree top level heading northwest for Kep. | B3 and 4 observed smoke in area of M1 engagement. |

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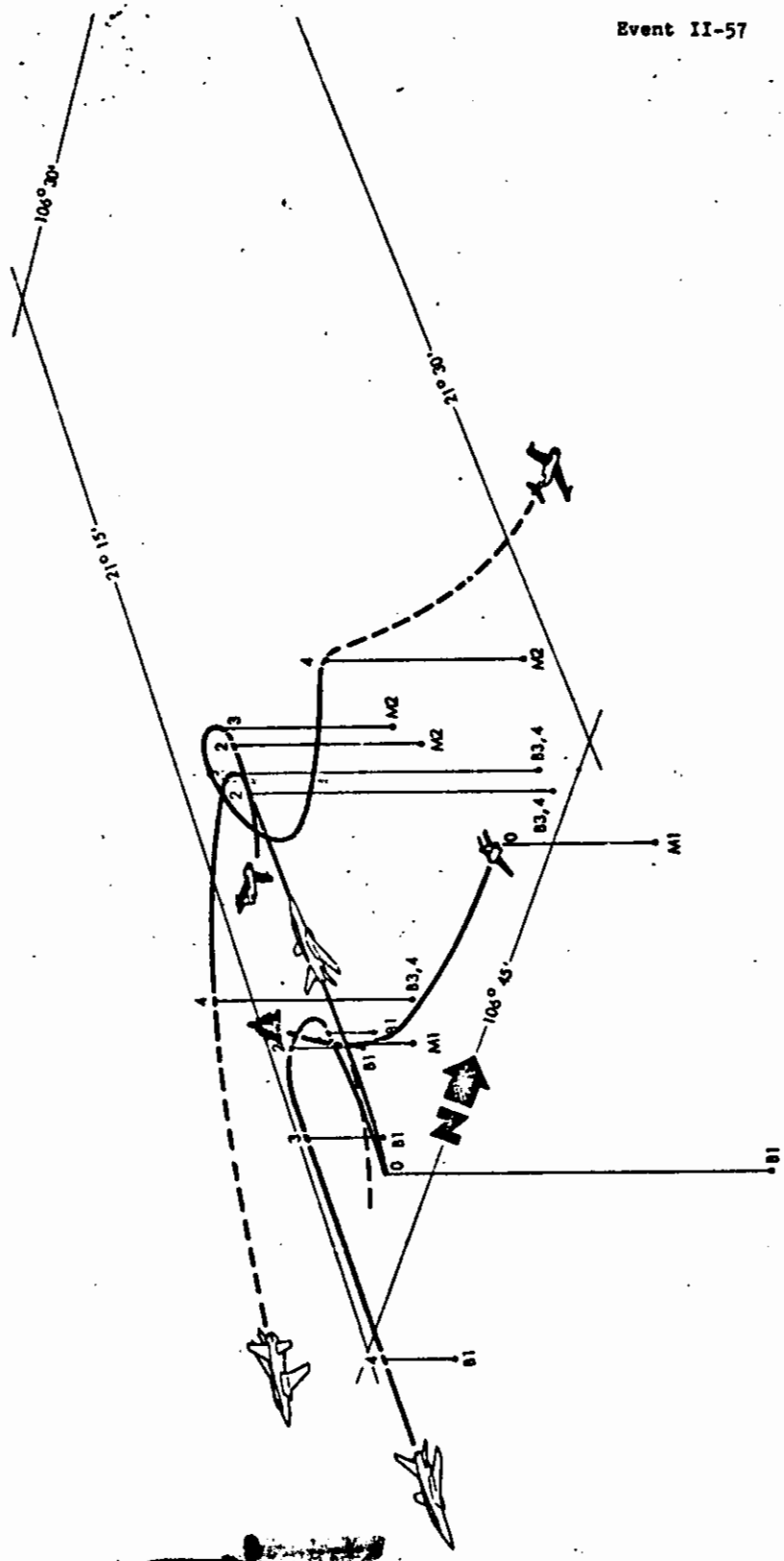
Event II-57

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Event II-58

Aircraft Involved: Four F-105D vs four MIG-17 and two MIG-21

Result: One MIG-21 damaged

Vicinity of Encounter: 21°14'N/106°52'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 September 1966/1025H

BLUE Flight of four F-105Ds were on a flak suppression mission with a force of forty F-105s and eight F-4Cs attacking the Dap Cau RR/Highway Bridge at 21°11'N/106°05'E. BLUE Flight was the first of five F-105 flights from Korat. The Takhli force preceded the Korat force on the target on this date. At least two F-105 flights and two F-4C flights had encountered MIGs on this mission prior to BLUE Flight (see Events II-55 and II-57 in this volume and Events I-46 and I-47 in Volume I).

## 2. MISSION ROUTE

BLUE Flight departed Korat RTAFB, Thailand, proceeded directly to the Gulf of Tonkin refueling track, then north to 21°13'N/107°22'E, west to 21°13'N/106°52'E, west to 21°12'N/106°41'E (MIG encounter at this time). Flight remained in area for a while and then egressed over reverse route.

## 3. AIRCRAFT CONFIGURATION

F-105D BLUE 1, 2, 3, 4

4 - CBU-24
2 - 450 gal fuel tanks
1029 rounds 20mm

MIG-17 MIG 1, 2, 3, 4

Unknown

MIG-21 MIG 1, 2

Unknown

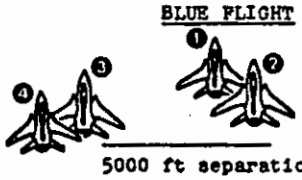
## 4. FLIGHT CONDITIONS PRIOR TO ENGAGEMENT

Weather: Haze layer from surface to 6000 ft, visibility four miles, clear above 6000 ft.

| | BLUE 1 2 3 4 | MIG-17 1 2 3 4 | MIG-21 1 2 |
|---|---|---|---|
| Altitude: | ------8000------ | ------8000------ | Steep climb |
| Heading: | ------270°------ | ------270°------ | --Unknown-- |
| Speed: | -----540 kt----- | ----Unknown----- | --Unknown-- |
| Fuel State: | ---Full Int.+--- | ----Unknown----- | --Unknown-- |

Flight Formation

BLUE FLIGHT




5000 ft separation between elements

RED FLIGHT

Unknown

## 5. INITIAL DETECTION

BLUE Flight, heading 270° at 8000, saw a flight of MIG-17s, 4 nmi at 3 o'clock on same heading and altitude. BLUE Flight then descended to 4500, 270°, 540 kt, and did not see the MIG-17s again. Shortly after level off, BLUE 2 called, "Two MIG-21s at 12 o'clock." BLUE 2 had just momentarially seen two MIG-21s as they passed in front of BLUE Flight in a steep climb. Very shortly after BLUE 2's call, BLUE 3 called two MIGs coming down from above and called for the flight to break as the MIGs were closing on the Lead element.

## 6. ACTION INITIATED

BLUE 1 called for the flight to jettison ordnance and break right. As BLUE Flight started a right diving turn, MIG-1 crossed in front of BLUE 3 in his attack on the Lead element.

a number of previous attack flights that had or were in a MIG engagement. In an attempt to avoid an engagement while attacking the target, BLUE Flight descended into the haze layer and leveled off at 5000 ft MSL and 540 KTAS, about 2000 ft above the highest terrain in the area. The MIG-17s were not seen again. Slant range visibility in the haze was a maximum of four miles.

A few minutes later at 21°12'N/106°41'E (according to the OPREP) or about fifteen miles from the target (according to BLUE Lead's letter)* at 21°12'N/106°21'E, with the second element trailing about 5000 feet, BLUE 2 called, "Two MIG-21s at 12 o'clock." The MIGs were observed climbing from below BLUE Flight and passing through 8000 feet in a steep climb. BLUE Lead did not see the MIGs and BLUE 2 called that he had lost them and that he had spotted them when the sun had reflected off of them.

Almost immediately after that, BLUE 3 observed the MIGs as they completed a modified loop and attacked the lead element from 3 o'clock. BLUE 3 then called for the lead element to break right as the MIGs were closing. BLUE Lead called for the flight to jettison the bomb load and tanks and started a right diving turn.

The MIG's attack maneuver brought him across BLUE 3's 12 o'clock position and about 1500 feet in front of BLUE 3. BLUE 3 fired about 300 rounds of 20mm at MIG 1 but missed. The MIG continued to turn right and pulled up into a half chandelle approximately 800 feet off BLUE 3's right wing. BLUE 3 pointed his nose down and headed for the deck. The MIG-21 followed BLUE 3 down firing since BLUE 3 saw tracers going by his aircraft.

MIG 2 was 2-3000 feet behind MIG 1 and 7-8000 feet at BLUE 4's 11 o'clock. BLUE 4 lined up and pulled the F-105 nose up through MIG 2 firing 125 rounds of 20mm before his cannon quit firing. When his cannon quit firing, BLUE 4 broke down and right and as he pulled out he observed that both MIGs had broke off from BLUE 3's 6 o'clock. BLUE 4 observed one possible hit on the belly of MIG 2 and a definite hit about two-thirds of the way up the fuselage, 6-7 feet behind the canopy.

BLUE Flight remained together in elements and started looking for other MIGs that were apparently in the area at the same time. The flight was unsuccessful in their hunt, then rejoined and returned home.

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*Fifteen miles from the target appears more reasonable. The MIG-21s are reported to have climbed up from below the flight and would not have had maneuvering room in the first position.

[redacted]

Event II-59

Aircraft Involved: Four F-105s vs three MIG-17s

Result: One MIG damaged

Vicinity of Encounter: 21°11'N/106°1[illegible]'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 September 1966/1032H.

Four F-105s (BLUE Flight) were one flight of a twelve flight force attacking JCS 16, a railroad/highway bridge at 21°11'N/106°05E. As BLUE Flight was enroute to the target, three MIG-17s jumped them in the vicinity of 21°11'N/106°16'E.

2. MISSION ROUTE

BLUE Flight departed Korat, refueled over the Gulf of Tonkin, proceeded North and then turned West to enter Route Package IV about 12 miles North of Cam Pha Harbor. The flight then flew West to 21°14'N/106°25'E and turned Southwest into the Delta where they were attacked by a flight of MIG-17s. Return route was the reverse of above.

3. AIRCRAFT CONFIGURATION

F-105D BLUE 1, 2, 3, 4

2 - 3000 lb bombs
1 - centerline 650 gallon fuel tank
1 - 20mm cannon (1029 Rounds)
All F-105s were camouflaged.

MIG-17 MIG 1, 2, 3

1 MIG-17 appeared camouflaged.
2 MIG-17s were grey silver in color.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Haze layer from surface to 6000 ft. Visibility in haze 4-5 miles. Visibility above haze - very good.

| | BLUE 1 2 3 4 | MIG 1 2 3 |
|---|---|---|
| Altitude: | 3,000 ft | 3,000 ft + |
| Heading: | 254° | 254° |
| Speed: | 550 | 550 + |
| Fuel State: | Approx 10,000 lbs | Unknown |
| Flight Formation: | | |

Unknown - probably fluid four with wingmen spread 6-800 ft, 20°-30° back, and elements spread 1500 ft about 10°-20° back. Apparently the element was deployed to the right.

5. INITIAL DETECTION

Area MIG warnings were being broadcast on a regular basis by the radar picket aircraft. The flight in front of BLUE Flight (Event II-60) was attacked by MIGs as well as about four other flights in front of BLUE Flight. The MIGs in this event were initially observed in the 6 o'clock high position.

6. ACTION INITIATED

BLUE Flight immediately jettisoned ordnance and tanks and broke hard right.

7. SITUATION DEVELOPMENT

BLUE lead passed within 200 ft of one MIG, head-on. Neither fired. BLUE 1, 2, and 3 headed for the coast at a high airspeed. BLUE 4 was forced to modify his break with a momentary turn to the left and then back to the right in order to avoid a collision with BLUE 3's centerline tank. As BLUE 4 came back to the right a MIG-17 was at his 6 o'clock firing. BLUE 4 broke left and down and shook the MIG. BLUE 4 again turned east to rejoin his flight, saw a MIG-17 in front of him and fired, observing hits on the MIG. The MIG broke left and down with BLUE 4 passing 2-300 ft over him. BLUE 4 continued to the coast to rejoin his flight.

[redacted]



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8. ORDNANCE

(No. fired/No. hits)

| | Cannon | Remarks |
|---|---|---|
| BLUE 1, 2, 3 | 0/0 | |
| BLUE 4 | 300/Yes | Sparkles on wing and fuselage |
| MIG 1 | Yes/No | Fired at BLUE 4, no hits. |
| MIG 2, 3 | ?/No | |

11. DATA SOURCES

Project Interviews: None

Letters: None

Messages, Reports:

Résumé 388TFW DOI 03098 Sept 66.

OPREP-3, 7AF DOCO 25836 Sept 66,

7AD DOI 30492 Sept 66.

12. NARRATIVE DESCRIPTION

BLUE Flight of four F-105Ds was about the eighth flight in a stream of ten strike flights attacking JCS 16, a railroad/highway bridge located 16 miles northeast of Hanoi at 21°11'N/106°05'E. The bridge was under attack for either the second or third consecutive day. Area MIG calls were being transmitted by the radar picket aircraft (BIG EYE) and most of the flights in front of BLUE Flight had been attacked by MIGs. The flights were separated by 3-5 minute TOTs. The flight immediately in front of BLUE Flight (Event II-60) had been forced to jettison their ordnance to escape from the MIGs.

Ten miles short of the target while BLUE Flight was at 3000 ft 550 kts, heading 254°, three MIG-17s were spotted closing from 6 o'clock high. BLUE Flight broke hard right and jettisoned armament. BLUE 4 was forced to turn back to the left momentarily to duck BLUE 3's centerline tank. As BLUE 4 pulled back to the right, he saw one MIG-17 on his tail and muzzle flashes were coming from the nose of the MIG. BLUE 4 broke left and down to shake the MIG.

BLUE 1 passed within 200 ft head-on, to one of the MIGs, as he came out of the break. Neither the MIG nor BLUE Lead fired at each other, and BLUE 1, 2, and 3 headed for the coast at high speed.

As BLUE 4 attempted to rejoin the flight, he observed another MIG-17 between himself and his flight in the vicinity of 21°11'N/106°20'E. He maneuvered until he was on the MIG's tail and then fired 300 Rounds of 20mm, and observed sparks on the wing and fuselage of the MIG. The MIG broke left and down and BLUE 4 passed 200-300 ft over him and continued to the coast to rejoin his flight. As BLUE 4 passed over the MIG, he observed North Vietnamese markings.

[redacted]

[redacted] Event II-60

Aircraft Involved: Two F-105s vs four MIG-17s

Result: No Damage

Vicinity of Encounter: 21°11'N/106°13'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 September 1966/1030H

Two F-105s (BLUE Flight) were on a strike mission against JCS Target 16 (21°12'N/106°05'E), a railroad/highway bridge northeast of Hanoi. BLUE was originally a four ship flight, but BLUE 3 had ground aborted for an oil pressure malfunction, and BLUE 4 aborted for radio failure. This was a multiple flight strike, and encounter took place as BLUE was approaching their target.

2. MISSION ROUTE

Flight departed Korat via direct Brown Anchor refueling track, direct 21°11'N/107°30'E, 21°13'N/107°22'E, 21°13'N/106°50'E, 21°13'N/106°25'E, 21°08'N/106°18'E, 21°11'N/106°12'E, 21°11'N/106°13'E (MIG engagement), 21°08'N/106°10'E, 21°11'N/106°30'E, 21°09'N/107°25'E, 21°08'N/107°30'E, Brown Anchor, direct Korat.

3. AIRCRAFT CONFIGURATIONS

| F-105 | BLUE 1 | BLUE 2 |
|---|---|---|
| | 2 - 3,000 lb bombs | 2 - CBU 27 |
| | 1 - 650 gal centerline tank | 2 - 450 gal drop tanks |
| | Camouflage paint | Camouflage paint |
| | Vector equipment | Vector equipment |

MIG-17 MIG 1, 2, 3, 4

Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Unknown

| | BLUE 1, 2 | MIG 1, 2 | MIG 3, 4 |
|---|---|---|---|
| Altitude: | 3,000 ft | 2,500 ft | 12,000 ft |
| Heading: | 254° | 270° | 270° |
| Speed: | 475 KTAS | 500+ | 500+ |
| Fuel State: | unknown | unknown | unknown |

Flight Formation:

Wide fighting wing with #2 on leader's right side.

5. INITIAL DETECTION

BLUE 2 sighted two MIG-17s rolling into his 6 o'clock position level at 4-6,000 ft range. He also spotted two more MIG-17s at 8 o'clock high (approximately 12,000 ft). Time was 1030H, approximately two minutes prior to TOT.

6. ACTION INITIATED

BLUE Flight jettisoned external tanks, lit afterburners, and broke hard left into the MIGs.

7. SITUATION DEVELOPMENT

BLUE Flight made a hard left break into the attacking MIGs. The MIGs overshot and zoomed up and over the top of BLUE 1. BLUE 1 reversed back into the MIG flight and picked them up out front at approximately 4,000 ft range. The MIGs were climbing out through 6-8,000 ft in a gentle left turn at high airspeed. The MIGs held their high mach (in afterburner), and BLUE 1 was unable to set up for a gun shot before the MIGs went out of range. BLUE Flight was now over the target area, and receiving 85 mm AA fire, so BLUE 1 continued his right turn back around to an easterly heading and egressed the area. The total engagement time was approximately one minute. The high element of MIGs (at 12,000 ft) never descended to join the encounter.

9. EQUIPMENT PROBLEMS

BLUE 2 had one 450 gal drop tank which did not feed. It was jettisoned full prior to the engagement.

10. AIRCREW COMMENTS

Comments on This Encounter

BLUE 1 felt the MIGs had no intention of continuing the engagement after he and number 2 jettisoned their ordnance. The MIGs came in at a relatively high airspeed using their altitude to gain overtake and angle off. When the MIGs overshot, they made no attempt to

[redacted]



[redacted]

yoyo or gain lateral separation. They merely climbed away at high airspeed probably figuring their mission was complete when they forced the F-105s to jettison their ordnance short of the target.

Switchology entered this engagement when BLUE 1 reversed and got behind the MIGs. He stated he did not have sufficient time to reset his sight for an air-to-air mode before the MIGs were out of range and pulling away. He felt that he might have been able to get a kill if he had beeen carrying a GAR-8 type missile.

BLUE 1 was also disappointed in the extremely rapid airspeed loss of the F-105 when it is racked into hard turns.

BLUE 2 had high praise for the F-105 electronic countermeasure equipment (warning systems, etc.) and felt that they should be in all aircraft.

Comments from Overall Experience

BLUE 2 sees no advantage in trying to make one single airplane a jack-of-all-trades. Felt each different aircraft should be designed for a specific job. He also sees only a limited value for an aircraft with a two-man crew.

## 11. DATA SOURCES

Project Interviews: BLUE 1, 4 Jan 67; BLUE 2, 15 Mar 67
Messages, Reports:

7thAF OPREP-4/474, 211934Z Sep 66 DOCO 25857
388th TFW, OPREP-4/355 21 Sep 66 DOI-0310

## 12. NARRATIVE DESCRIPTION

BLUE Flight was the first of five F-105D attack flights from Korat. Their target was JCS 16, the Dap Cau railroad/highway bridge located at 21°11'N/106°05'E about 16 miles northeast of Hanoi. The Korat force followed a force from Takhli on this date and this was the second or third consecutive day that this bridge was under attack. Each flight was fragged in with a TOT separation of 3-5 minutes, so that the target was subjected to waves of attack for a period of 45 minutes to an hour.

BLUE Flight departed Korat, refueled over the Gulf of Tonkin, proceeded north and then turned east to enter RP VI about twelve miles north of Cam Pha Harbor. BLUE 3 ground aborted for oil pressure malfunction and BLUE 4 aborted for radio malfunction. Thus, BLUE Flight was reduced to two aircraft, one carrying two 3,000 pound bombs and the other carrying four CBU-24s with BLUE 2 in spread position on the right. BLUE 2 had one 450 gal tank that would not feed and jettisoned it over the mountains.[1]

BLUE Flight received numerous SAM calls, with indications of SAM activity on their vector equipment as they flew west from the coast toward the target. About 15 miles from the target as BLUE Flight was descending out of the mountains into the flat delta, BLUE 2 called, "Tally-ho two MIGs level-low, coming up, 4-6,000 ft range at 7 o'clock." BLUE lead was at 3000 ft, 475 KTAS, heading 254° with the two MIGs at about 2500 ft.

BLUE 1 did not receive the call clearly because of excessive radio chatter, and thought BLUE 2 said "MIGs high at 8 o'clock." BLUE 1 immediately identified two MIG-17s at his 8 o'clock position about 12,000 ft altitude. He was able to identify the MIGs by their silhouette. The two high MIGs were in a pursuit attack, but too far out to fire. BLUE 1 jettisoned his empty 650 gal centerline fuel tank and increased his airspeed thinking that he could outrun the MIGs to the target as he had in fact done on the previous day, where the MIGs broke off when the flak became thick.

BLUE 1, now about 10 miles from the target, was still watching the two high MIGs attempting to cut him off when BLUE 2 called "They are getting close." The excited tone of BLUE 2's voice compelled BLUE 1 to take his eyes off of the two high MIGs and look around. BLUE 1 immediately saw two more MIGs at his 7 o'clock level about 3000 ft range and closing. BLUE 1 had over 500 kts airspeed, but he could see the underside of the MIGs and knew the MIGs had lead on him. BLUE 1 broke hard left into them, jettisoned his bombs and as the MIGs passed over him reversed.

When BLUE 1 jettisoned his ordnance, the MIGs ceased tracking, unloaded the wings, and with afterburner still going zoomed over BLUE 1. The MIGs were 3-4000 ft in front of BLUE 1 before he could pick them up again after reversing. BLUE 1 was attempting to set up his sight for air-to-air, but gave up when the MIGs were 6-8000 ft going away in an easy left turn toward Hanoi and the 85 mm anti-aircraft artillery in the target area began shooting at BLUE Flight. BLUE Flight had no ordnance at this time so they broke down and right for the hills. The position of the two high MIGs was unknown so BLUE Flight accelerated to 1.15 (760 KCAS) and held this speed until well clear of the area. The rest of the flight was relatively uneventful.

[1] It is possible that this is the tank described in Event II-[redacted]

[redacted]

Event II-61

Aircraft Involved: Four F-105s vs one MIG
Result: Sighting only
Vicinity of Encounter: 21°35'N/104°49'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 September 1966/0845H

Four F-105s (BLUE Flight) were escorting and providing SAM coverage for F-105 strike forces. All aircraft airborne, through tankers, and in target area on time. Weather was below minimum operating standards over the target area. Visibility 2-1/2 miles at 1500 ft.

2. MISSION ROUTE

BLUE Flight departed Korat and rendezvoused with tanker (Orange Anchor) and then proceeded north to Red River and into the target area crossing the north end of Thud Ridge. Weather forced BLUE Flight back out of target area. BLUE Flight set up orbit around Phu Tho and Yen Bai areas, trolling for SAM sites while the strike forces bombed targets of opportunity along the Red River. After strike forces completed bombing, BLUE Flight bombed a bridge on west side of Red River across from the town of Yen Bai, then returned to Korat AB.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1 (F-105F), 2 (F-105D)

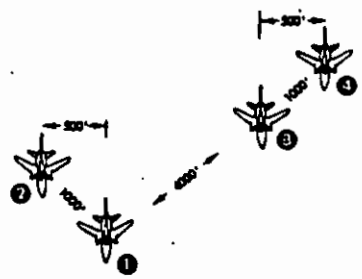
2 - SHRIKE (AGM-45)
2 - Rocket pods (LAU-3)
2 - 450 gal. wing tanks
20mm (M-61 gun)

F-105 BLUE 3 and 4 (F-105D)

6 - 750-lb bombs, 2 - 450 gal. wing tanks
20mm (M-61 cannon)

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear - 3-mile visibility in haze
Altitude: 9000 ft
Heading: 180°
Speed: 450 kt
Fuel: 5-6000 lb
Flight Formation:




5. INITIAL DETECTION

BLUE 3 called MIG-21 of 5 o'clock level with BLUE Flight. Flight was descending in left turn, toward south.

6. ACTION INITIATED

BLUE Flight continued making left turn to about 360° while descending to 3-4000 ft, and then broke right and down into haze layer.

7. SITUATION DEVELOPMENT

BLUE 1 was looking for the MIG but did not see it. BLUE 3 lost visual contact in the haze but BLUE 4 saw a belly view of it high and 7000 ft away (silver color). BLUE Flight continued right turn and BLUE 1 observed an airplane high (9-10,000 ft) and 3-4 miles away heading for Hanoi area. No chase was initiated because the MIG was not a threat any more.

11. DATA SOURCES

Project Interviews: Statement by BLUE Lead pilot, 14 Mar 1967.
Message Reports: Incident Summary from OPREP-3/PINNACLE/377 (388TFW) 22 Sept 1966

12. NARRATIVE

See Sections 5, 6 and 7.

[redacted]

[redacted]

Event II-62

Aircraft Involved: Four F-105s vs one MIG-21 (possible)

Result: Sighting only

Vicinity of Encounter: 21°40'N/104°25'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 28 September 1966/unknown

A flight of four F-105s (BLUE Flight) egressing from unknown type mission in NVN.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Unknown

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 9,000 ft |
| Heading: | 210° |
| Speed: | 450 KTAS |
| Fuel State: | Unknown |
| Flight Formation: | Unknown |

5. INITIAL DETECTION

BLUE 4 sighted a single delta-wing aircraft (probably MIG-21) directly above BLUE Flight and slightly off BLUE 4's left wing. Unidentified aircraft was in left turn, heading 140°, at an estimated altitude of 17,000 ft. Bogey was under observation for only 10 to 15 seconds when it disappeared into haze.

6. ACTION INITIATED

BLUE Flight kept constant check of 6 o'clock position, but bogey was not seen again.

11. DATA SOURCES

Project Interviews: None

Messages, Reports:

388TFW, OPREP 4/466

[redacted]

Aircraft Involved: Four F-105Ds and four MIG-21s
Result: Sighting only.
Vicinity of Encounter: 21°55'N/104°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 28 September 1966/1725H

A flight of four F-105Ds (BLUE Flight) had just crossed the Red River inbound. Type mission is unknown.

2. MISSION ROUTE

Unknown.

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 2, 3, 4

Unknown

MIG 1, 2, 3, 4

Silver color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Unknown (possibly undercast with haze)

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 13,000 ft |
| Heading: | 030° |
| Speed: | 400 kt |
| Fuel State: | unknown |
| Flight Formation: | unknown |

5. INITIAL DETECTION

BLUE Flight sighted four MIG-21s in modified trail formation at their 12 o'clock position. MIGs were 10 to 20 nmi away, heading approximately 220°, and altitude 10,000 ft. Time of sighting was 1725H.

6. ACTION INITIATED

No attempt to engage was executed by either flight. MIGs were headed into the sun, and apparently never had visual contact with BLUE Flight. They disappeared from sight when they went down into clouds and haze layer.

11. DATA SOURCES

Project Interviews: None
Messages, Reports:

388TFW, OPREP 4/478

[redacted]

Event II-64

[redacted] Aircraft Involved: Four F-105s vs two MIG-17s
Results: No damage
Vicinity of Encounter: 21°13'N/105°42'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 8 October 1966/1545H

Four F-105s (BLUE Flight) on strike mission against a target between Hanoi and Phuc Yen.*

2. MISSION ROUTE

BLUE Flight departed Takhli, route unknown.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4

Bombs, external tanks, QRC-160 pod on left outboard station.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: VFR, but clouds topping higher peaks along Thud Ridge.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 2-5,000 ft AGL |
| Heading: | 315° |
| Speed: | 525 KTAS |
| Fuel State: | Unknown |
| Flight Formation: | Unknown |

5. INITIAL DETECTION

One minute out from target, BLUE Flight saw two MIG-17s at 2 o'clock. 2000 ft AGL, turning into their flight.

6. ACTION INITIATED

BLUE Flight went afterburner and used speed to outrun the MIGs.

7. SITUATION DEVELOPMENT

BLUE Flight continued and hit the target. As they came off the target heading 315° at 2 to 5,000 ft they were engaged by two more MIG-17s (possibly same aircraft). One MIG made a head-on firing pass (cannon) at BLUE 3, and the other a 6 o'clock firing pass (cannon) at BLUE 4. Neither aircraft received any hits, but low fuel prevented BLUE Flight from engaging the MIGs. BLUE Flight's high airspeed enabled them to break the contact and egress the area.

8. ORDNANCE

BLUE Flight - no ordnance fired
MIG-1 - one gun pass/no hits
MIG-2 - one gun pass/no hits

9. EQUIPMENT PROBLEMS

None reported.

10. AIRCREW COMMENTS

None

11. DATA SOURCES

Project Interviews: BLUE 1 (Lead)
Messages, Reports:

7AF 081438Z Oct 66, DOCO 26722
7AF 082232Z Oct 66, DIO 30617

12. NARRATIVE DESCRIPTION

BLUE Flight's first MIG sighting was while inbound to the target on heading 135° at 2,000 ft AGL. BLUE Flight observed two MIG-21s heading NE at 21°26'N/105°45'E. These MIGs made no attempt to engage flight. BLUE Flight continued toward target at same altitude and heading. As the flight passed 2nmi SE of Phuc Yen airfield, they noticed several MIGs orbiting the runway. The MIGs appeared to be meeting the F-105 strike flights head-on about one and a half nmi out, then attempting to turn in and fall into a 6 o'clock position on the F-105s. BLUE Flight sighted two MIG-17s at their 2 o'clock position going to 3 o'clock

*OPREP 0814382 gives target as JCS 71 which is apparently garbled.

[redacted]



[redacted]

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level, turning into their flight at 6 nmi range. BLUE Flight selected afterburner and increased their airspeed to 550 KTAS, the MIGs fell into trail, but were well out of combat range and unable to close. BLUE Flight continued on the same heading and altitude for 60 sec., executed a pop-up maneuver, and delivered their bombs on the designated target. The flight pulled off target and picked up a reciprocal heading of 315° at 2,000 ft to 5,000 ft altitude. At 21°13'N/105°50'E two MIG-17s (possibly the same aircraft sighted prior to pop-up) engaged BLUE Flight. One MIG got well lined up, and executed a head-on firing pass (cannon) against BLUE 3, while the other made a firing pass (cannon) at BLUE 4 from his 6 o'clock position. BLUE 1 stated that the rounds came close to BLUE 3, but neither aircraft received a hit. BLUE Flight was low on fuel due to afterburner operation, and could not remain in an engagement with the MIGs. BLUE Flight was still carrying a high airspeed and used this advantage to break contact and continue straight out on their egression.

A BIG EYE EC-121 on station at 20°00'N/107°00'E had given eight MIG warnings between 1540H and 1617H during the time of this engagement. However, the MIGs encountered by BLUE Flight were not specifically corrolated with these warnings.

[redacted]

Event II-65

Aircraft Involved: Four F-105s vs four MIG-21s

Result: No damage confirmed (one MIG, possible damage)

Vicinity of Encounter: 21°10'N/105°50'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 8 October 1966/1545h

Four F-105s (BLUE Flight) on an armed reconnaissance and flak suppression mission in Package VI-A were egressing from target JCS 51. Multiple strike flights were deployed against this target. No mention is made of BLUE 3 and 4 after start of this engagement.

2. MISSION ROUTE

Unknown - Flight had approached target area heading SE along the SW edge at Thud Ridge (approximately 21°30'N/105°38'E).

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1,2,3,4

4 - CBU-24 each aircraft
2 - 450-gal fuel tanks (inboard stations)
1 - QRC-160 ECM pod (BLUE 1,3, and 4 only)
IFF and camouflage paint (all aircraft)

MIG-21 MIG 1 and 2

Silver color (shiny)
No noticeable external tanks or ordnance
No identifying insignia

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear, some low haze along Red River and around Hanoi area.

| | BLUE 1 | BLUE 2 |
|---|---|---|
| Altitude: | 7000 ft | 6000 ft |
| Heading: | Southerly, in a left turn coming off target | |
| Speed: | 450 KIAS | |
| Fuel State: | Unknown (BLUE 2 had 5000 lb at termination of attack.) | |

Flight Formation: BLUE 2 was in a left climbing turn approximately 2 n mi behind BLUE 1, and cutting him off in the turn for a rejoin. They had just pulled off a CBU drop on target.

5. INITIAL DETECTION

BLUE Flight had been receiving MIG and SAM alerts from IRON HAND flights, and MIG warnings from BIG EYE, EC-121 stationed at 20°00'N/107°00'E. BLUE 2 sighted four MIG-21s in elements of two at 9 o'clock high (2 to 3 n mi range). The MIGs were in a descending pursuit curve heading 270° at a speed of approximately 550 kts. The MIG elements were in a close fighting wing position with about 500 ft linear separation between leader and wingman, and the wingman 50-60 degrees behind the lead.

6. ACTION INITIATED

BLUE 1 and 2 jettisoned their external tanks and MER racks, lit afterburner, and continued in the left climbing turn. BLUE 3 and 4 slid out wide about 2 n mi behind BLUE 2.

7. SITUATION DEVELOPMENT

MIG 1 pressed attack on BLUE 1 and rolled out in front of BLUE 2. MIG 2 passed under BLUE 2's nose and was not seen again. MIG 3 and 4 overshot a pass at BLUE 2 and reinitiated, but fell way back in trail and high. BLUE 2 fired 20 mm burst at MIG 1 (no visible damage). MIG 1 broke off attack on BLUE 1, but BLUE 1 was hit by AA fire and flamed out. BLUE 2 broke off attack on MIG 1 to assist his leader. BLUE 1 made a successful airstart, and BLUE Flight rejoined and egressed the area.

8. ORDNANCE

| | (No. fired/No. hits) 20 mm (HEI) | Remarks |
|---|---|---|
| BLUE 2 | 1/0 | BLUE 2 thinks he may possibly have hit MIG, but he saw no visual evidence. 235 rounds fired. |

[redacted]

| | 23mm Cannon | Remarks |
|---|---|---|
| MIG 1 | 2/0 | BLUE 1 stated MIG may have fired several bursts at him. |

9. EQUIPMENT PROBLEMS

BLUE 2's gun camera did not work.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 2 | 5000 | 200 | 20 | BLUE 2 had previous air-to-air experience in Korea; 66 missions air-to-ground in F-86; 35 missions air-to-air in the F-86. BLUE 2 estimated he had 10-12 encounters and 5 or 6 engagements with MIGs during Korean conflict. |

Comments on this Encounter

a. BLUE 2 had no trouble turning with and tracking the MIG. He was able to hold lead, but initial range was too far out to fire. At 600 KIAS, holding 5 to 6 "g's", he was unable to get a rapid rate of closure even in afterburner. BLUE 2 felt MIG may have had control problems due to high airspeed. He was sure MIG could have turned tighter at a slower speed. MIG appeared to be executing a jinking maneuver during the left turn. All of a sudden his right wing would tip down and he would make a quick motion to the right. BLUE 2 originally thought this maneuver to be some sort of evasive action, but finally decided the MIG was having control difficulties. BLUE 2 tracked MIG for approximately 30 seconds, and felt he could have gotten a kill eventually if he had not been forced to break off and help his leader.

b. BLUE 2 stated he thought our pilot skill and capability were far superior to those of the MIG pilots. Felt MIG pilots to be somewhat timid in their attack - as though they wanted to make one quick high speed pass, and then get out.

c. Judging by the type intercept (pursuit curve) and relative position at initial sighting, BLUE 2 felt that the MIGs were under GCI control throughout the engagement.

d. BLUE 2 did not have time to reset his switches for "guns air" during his firing pass. Stated he was forced to put his head in the cockpit as he was trying to set up from bombing switch configuration to air-to-air configuration.

e. BLUE 2 stated all flights had a great deal of communications problems coming off target. This was due to saturation of the radio frequency rather than being an equipment reliability factor.

11. DATA SOURCES

Project Interview: BLUE 2, 2 Feb 1967.
Messages:

| | | | |
|---|---|---|---|
| 7AF | DOCO 26723 | 081438Z | Oct 1966 |
| 7AF | DIO 30617 | 082232Z | Oct 1966 |

12. NARRATIVE DESCRIPTION

BLUE Flight had just expended ordnance on the target and was pulling out at about 8,000 ft. altitude and turning left. BLUE 2 saw two MIG-21s and called out "21 attacking at 9 o'clock high." He first saw two and when he looked back there were two more behind. The MIGs were in elements of two, strung out with 500 ft. linear separation, but in a fighting wing, 50-60 degrees back from the leader.

As the first two MIG-21s came in, they singled out BLUE 1. The lead MIG, in a 90° bank, attempted to pull lead on BLUE 1 and passed in front of BLUE 2. The MIG closed to within 3000-6000 ft of BLUE 1, with about 100 kts overtake. BLUE 2 did not have sufficient time to set up his gunsight, and with a fixed pipper, depressed for bombing, fired a 2 1/2 sec burst. BLUE 2 pointed the nose and visually estimated the lead but no hits were observed.

The MIG then broke off his attack on BLUE 1 and continued 1/2 turn with afterburner going. The trailing two MIGs passed behind BLUE 2 in an overshoot, went high, and were not seen again. The second MIG of the first section also passed out of sight below and in front of BLUE 2. Although BLUE 1 was not able to turn with the MIG, BLUE 2 could do so.

As the first MIG broke off from BLUE 1, BLUE 2 cleaned off his aircraft and lit the afterburner, and followed the MIG. He then configured the weapon system for guns air and set the radar up. Although BLUE 2 is not positive that he obtained a radar lock, the analogue was in the 4-5 position which indicated radar lock-on but that the target was out

[redacted]



of range. BLUE 2 continued to track the MIG and closed on him. BLUE 2 was at 8,000-10,000 ft altitude, 600 KIAS and was pulling about 4 g's. The MIG appeared to be jinking in front of BLUE 2 but he felt that the MIG was really having control difficulties.

After the MIG had broken off from BLUE 1, BLUE 1 and BLUE 2 were fired on by 85 mm flak.

As BLUE 2 closed on the MIG, he heard BLUE 1 call that BLUE 1 had been hit by flak so BLUE 2 broke off to join on BLUE 1.

BLUE 1 was hit by flak and at 1550H, 16,000 ft, heading 270° and the damage caused the engine to flame out. While attempting an air start at 10,000 ft at 21°09'N/105°35'E he observed a SAM from a site at 21°12'N/105°34'E on a heading of 180 degrees climbing past and about 1,000 ft from the aircraft. BLUE 1 did not see the missile detonate, and no evasive action was taken due to the flameout. Subsequent air start was successful.

BLUE 2 felt that either GCI or the second MIG element had warned MIG-1 that BLUE 2 was closing on him.

BLUE 2 made a DF rejoin on BLUE 1 and the flight egressed.

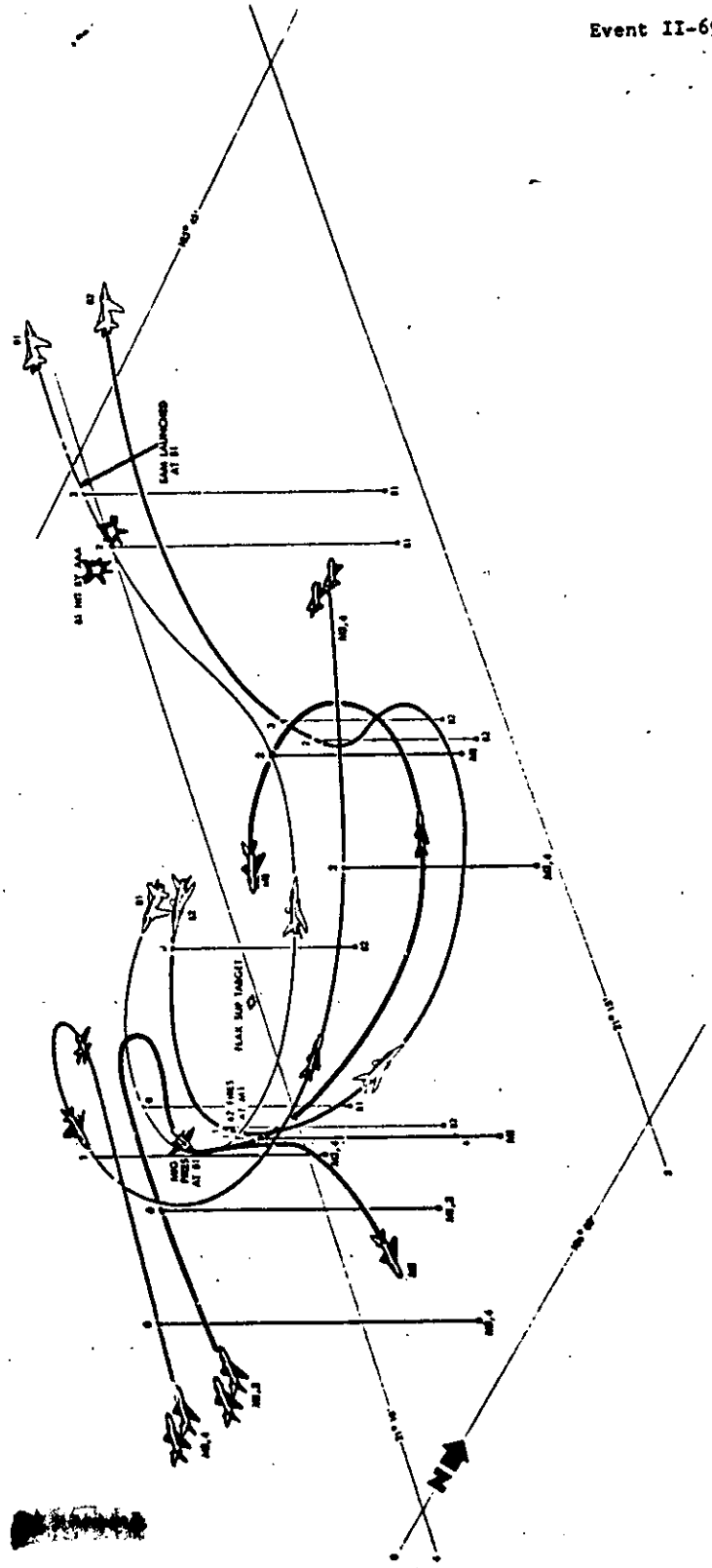
[redacted]

## RED BARON EVENT II-65 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | 4 to 5 g pull-up 450 KIAS 6-7000 ft afterburner | BLUE 2 was cutting off BLUE 1 in a left turn for join up after bombing run. BLUE 2 sighted 4 MIG-21s initiating attack from his 9 o'clock high position (2 to 3 n mi range). BLUE 1 and 2 jettisoned tanks and MER, lighted afterburner and continued turn. | BLUE 1 (L) in a left turn climbing out from target. BLUE 3 and 4 went wide 2 n mi behind BLUE 2. | BLUE 2 called leader to increase his turn. BLUE 2 called "21s attacking at 9 o'clock high." | MIGs were in a descending pursuit curve passing through heading of south. Estimated 550 to 600 kt airspeed and descending through 8-9000 ft altitude | Attacking bogies were immediately recognized as MIG-21 type aircraft. |
| $T_1$ | 450 KIAS 6-7000 ft altitude. Accelerating in afterburner. | BLUE 2 rolled wings level and fired one 2-1/2 sec burst at MIG 1 as he passed in front. After firing BLUE 2 made slight right turn and then back hard left (5 or 6 g's) to keep in trail with the MIG. | BLUE 2 lost sight of lead when he rolled level to fire. | | MIG 1 rolled in trail with BLUE 1. MIG 2 passed under BLUE 2's nose and was not seen again. MIG 3,4 fell behind as BLUE 2 accelerated. | BLUE 2 fired without sight - he did not have time to set up the sight for air-to-air operation. |
| $T_2$ | Descending turn 5000 ft altitude 600 KIAS 5 to 6 g's | BLUE 2 trailed MIG 1 in a hard left descending turn. | BLUE 1 (L) was hit by 85mm AA fire. Hit caused BLUE 1 (L) to flame-out. | BLUE 1 asked for BLUE 2's position - BLUE 2 replied "behind a MIG" BLUE 2 asked leader to transmit for DF steer. | MIG 1 was in a 5 to 6 g hard left descending turn at 600 KIAS. Afterburner on. MIG 3, 4 seen again briefly by BLUE 2. | BLUE 2 was in trail with MIG. He could hold lead for firing but his range was too far out (about 1 n mi). BLUE 2 slowly began to accelerate and close on the MIG. |
| $T_3$ | 5000 ft 600 KIAS | BLUE 2 broke off to the right and disengaged from the MIG. BLUE 2 got a DF steer to rejoin BLUE 1. | BLUE 1 flamed out, but finally made a successful air-start. | BLUE 1 called out "SAM missiles launch" | MIG 1 disappeared when BLUE 2 broke off. SAM was launched at BLUE 1 while he was flamed out. | SAM did not guide and missed BLUE 1 by 1000 ft. BLUE 2 rejoined BLUE 1 just short of Red River, heading 270°. |

[redacted]

Event II-65




[redacted]

[redacted]



[redacted] Aircraft Involved: Four F-105s vs three MIG-17s and two MIG-21s

Result: No Damage

Vicinity of Encounter: 21°13'N/105°47'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 8 October 1966/1545H

Flight of F-105s (BLUE Flight) on a strike mission (target unknown). Target was probably in vicinity of 21°10'N/105°50'E.

2. MISSION ROUTE

Unknown

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4

External tanks (type and size unknown)

MIG-17 MIG 1, 2, 3

External tanks

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: High cirrus, 5 mile visibility in haze.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 1,000 ft AGL |
| Heading: | 135° |
| Speed: | 540 kts |
| Fuel State: | Unknown |
| Flight Formation: | Unknown |

5. INITIAL DETECTION

BLUE Flight observed three MIG-17s drop their external tanks and turn in on them from BLUE's 4 o'clock high position at a range of 6-8,000 ft.

6. ACTION INITIATED

BLUE Flight went afterburner and accelerated to 600 kts.

7. SITUATION DEVELOPMENT

MIGs were seen to drop way back in their 6 o'clock position. BLUE Flight popped up and began their dive bomb run. During the dive run, BLUE Flight sighted two MIG-21s at 3 o'clock, apparently initiating an attack on BLUE Leader. After bomb release, BLUE Flight jettisoned their external tanks and turned in behind the MIGs. The MIGs were in a loose trail formation, and slightly offset to the side. As BLUE Flight closed in at 6 o'clock, 4,000 ft range, the MIGs broke up and left towards the south. No engagement followed. BLUE Flight pushed over and right, descended to 500 ft AGL, accelerated to 755 kts, and egressed the area.

8. ORDNANCE

None

9. EQUIPMENT PROBLEMS

None reported

10. AIRCREW COMMENTS

Experience: Unknown

Comments on this Encounter

BLUE 2 stated the MIGs broke up and away right after he turned his radar to the search/attack mode. He felt the MIGs may have had a radar warning system.

11. DATA SOURCES

Project Interviews: None

Messages, Reports:

Letter from BLUE 2

7AF Message 082232Z Oct 66 DIO 30617

[redacted]



[redacted]

[redacted]

Event II-67

Aircraft Involved: Four F-105s vs four MIG-17s

Result: No Damage

Vicinity of Encounter: 21°11'N/105°50'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 8 October 1966/1541H

A flight of four F-105s (BLUE Flight) were on a multiple flight strike mission against JCS Target #51, at 21°10'N/105°50'E. Flight was making a final test on the QRC-160 ECM pods.

2. MISSION ROUTE

The overall route is unknown; however, the flight made its ingress and egress to target along the N. side of Thud Ridge.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4

6 - 500-lb bombs
2 - 450-gal drop tanks
1 - QRC-160 ECM pod

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Unknown

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 12,000 ft |
| Heading: | Approx. SE |
| Speed: | 500 kt |
| Fuel State: | Unknown |

Flight Formation:

Unknown on inbound leg. Loose extended trail (coming off target) with a slight lateral separation between the wingman and leader of each element.

5. INITIAL DETECTION

BLUE 3 made the first sighting, inbound, when he spotted two MIG-17s at their 3 o'clock position at approximately 6000 ft altitude. These MIGs approached BLUE Flight, but either did not see them or elected not to give chase because of the F-105 speed advantage.

As the flight came off target (right turn out), BLUE 2 sighted two bogeys at their 7 o'clock position, 3 to 4 miles. Seconds later BLUE 4 called two more MIGs at his 6 o'clock closing.

6. ACTION INITIATED

BLUE Flight proceeded on in to the target after the first sighting as the MIGs made no attempt to engage. BLUE Flight went afterburner when BLUE 2 called out second sighting.

7. SITUATION DEVELOPMENT

Nothing occurred during the first sighting as the MIGs made no attempt to engage. BLUE Flight went into afterburner when BLUE 2 called second sighting. Shortly after BLUE 2 called bogey's range decreasing to 2 to 3 miles, BLUE 4 called out two more MIGs in his 6 o'clock position. BLUE Flight continued straight outbound for approximately two minutes when BLUE 2 initiated a cross-over on lead to check position of the MIGs. BLUE 2 observed a MIG-17 at BLUE 4's 6 o'clock, range 6000 ft. During the cross-over, the MIG broke off the engagement, pulling up and heading back towards Phuc Yen. BLUE Flight was low on fuel, and the leader decided to proceed home rather than turn back and engage the MIGs.

8. ORDNANCE

None expended

9. EQUIPMENT PROBLEMS

None

10. AIRCREW COMMENTS

Experience: Unknown

Comments on this Encounter:

BLUE 2 feels that the fighting wing position (500 to 1000 ft behind lead within a 60° cone) in the F-105 is not conducive to mutual support. Due to the reduced visibility in the F-105, he felt that a wider spread formation, stacked either level or slightly low was far preferable to the fighting wing position in a defensive environment. BLUE 2

[redacted]

was unable to see the MIGs in trail with BLUE 4 until he actually turned and crossed from one side of BLUE leader to the other.

BLUE 2 stated that if the MIGs had been equipped with missiles, they probably would have downed BLUE 4. He assumed they had only cannons, because BLUE Flight had done no hard jinking as they came off the target and the MIGs had closed well within missile firing range.

11. DATA SOURCES

Project Interviews: BLUE 2, 3 February 1967.
Messages: 7AF 2232 Z October 1966, DIO 30617.

12. NARRATIVE DESCRIPTION

See Items #7 and #10.

[redacted]

Event II-68

Aircraft Involved: Four F-105s vs one MIG-19 and one MIG-15 or -17

Result: Sighting only

Vicinity of Encounter: 21°15'N/104°00'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: __ October 1966/Believed to be daylight, p.m.

Four F-105s (BLUE Flight) on strike mission against highway bridge (Route Package V). Mission was one of several in general area and along Red River.

2. MISSION ROUTE

Departed Korat; then to unknown refueling track, thence via TACAN Channel 79, via TACAN Channel 97 to target (approx. 21°15'N/104°08'E).

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4

6 - 750-lb bombs (Mk117) (2 outboard and 4 centerline)
2 - 450-gal fuel tanks - inboard
1029 rounds 20mm (HEI)
TACAN operating - IFF standby - radar standby
Camouflage paint
BLUE 1 and 3 only - ECM vector equipment

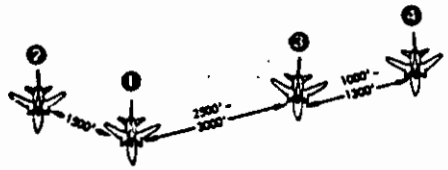
MIG 1, 2

Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered cirrus at various levels over Laos - broken layer at 10,000 ft W of target - patchy scattered clouds in target area with visibility 50 miles plus.

| | BLUE | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Altitude: | 13K | 13K | 15K | 15K |
| Heading: | NNE---------- | | | |
| Speed: | 480 kt---------- | | | |
| Fuel State: | 11,000 lb---------- | | | |
| Flight Formation: | Fluid-Four. | | | |




5. INITIAL DETECTION

BLUE Flight received MIG warnings from IRON HAND flight in area. BLUE 3 saw two bogies in close formation at 2 o'clock position high.

6. ACTION INITIATED

BLUE Flight was nearing target and elected to continue straight on in while keeping the unidentified aircraft under observation.

7. SITUATION DEVELOPMENT

The bogies paralleled BLUE Flight's course for a few minutes, then turned into them with a gentle turn. BLUE 3 identified them as MIG-type aircraft and called for flight to turn right. BLUE Flight made a 360 degree turn, passing approximately 5000 ft below the MIGs. MIGs did not engage, rolled out heading W and egressed the area.

8. ORDNANCE

No ordnance expended.

9. EQUIPMENT PROBLEMS

None reported.

[redacted]

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 3 | 4900 | 350 | 80 | Had received F-105 ACM training at Yokota, Japan. |

Comments on this Encounter

a. BLUE 3 felt F-105 needed better turning capability.

b. BLUE 3 mentioned need for simpler gunsight control (too many switch operations to get from air-to-ground to the air-to-air mode). Also said it would be nice to utilize F-105 SIDEWINDER missile capability.

c. BLUE 3 stated that he felt more MIG sightings occurred when our aircraft approached targets from the east rather than the west.

11. DATA SOURCE

Project Interview: BLUE 2, BLUE 3, 15 February 1967.
Messages: None

12. NARRATIVE DESCRIPTION

When BLUE 3 first called bogies, he could see only two dark specks in the sky. There were no visible contrails and bogies appeared to be at 20,000 ft. As the bogies turned to parallel BLUE Flight, BLUE 2 saw them. BLUE Flight elected to continue on course and keep a watch on bogies. Finally bogies began a gentle turn into flight (estimated speed 500-540 kt), and BLUE 3 identified them as MIG-type aircraft. Both had swept wings and one appeared to be a MIG-15 or -17, and the other a MIG-19. BLUE 3 called for a right turn, and BLUE Flight made a right descending 360°, 4 "g" turn in afterburner, passing 5000 ft below and underneath the MIGs. The MIGs made no attempt to engage, turned W, and egressed. BLUE Flight resumed course and proceeded to target. BLUE 3 stated he felt the incident might have been a MIG instructor pilot showing a student what the F-105 looked like.

[redacted]

Event II-69

Aircraft Involved: Four F-105s vs two MIG-21s

Result: Sighting only

Vicinity of Encounter: 21°13'N/106°42'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 3 November 1966/1556H

A flight of four F-105s (BLUE Flight) was proceeding outbound from a target in North Vietnam.

2. MISSION ROUTE

Unknown.

3. AIRCRAFT CONFIGURATIONS

Unknown.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Unknown.

5. INITIAL DETECTION

BLUE Flight sighted two MIG-21s, heading north, approximately 3 n mi away, at 3000 ft AGL.

6. ACTION INITIATED

BLUE Flight gave chase on the MIGs, and accelerated to 650 kt.

7. SITUATION DEVELOPMENT

Blue Flight chased the MIGs north, but could not close the distance between flights. Blue broke off the chase at 21°29'N/106°40'E. The MIGs had been in a gradual climb, and continued out of sight toward China.

8. ORDNANCE

Unknown.

9. EQUIPMENT PROBLEMS

Unknown.

10. AIRCREW COMMENTS

Unknown.

11. DATA SOURCES

Project Interviews: None
Messages, Reports: 7AF, 032324Z Nov 66, DIO 0761

12. NARRATIVE DESCRIPTION

See Items 5-7.

[redacted]

[redacted]

[redacted]



[redacted] Aircraft Involved: Four F-105s vs one MIG-21

Result: Sighting only

Vicinity of Encounter: Approximately 21°20'N/105°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: November 1966/unknown

A flight of four F-105s (BLUE Flight) were on a multiple flight strike mission against the Phuc Yen POL (JCS Target 51.10). BLUE Flight had just entered the target area and reached a point 10 mi NW of Phuc Yen airport.

2. MISSION ROUTE

BLUE Flight took the normal overland route via Yen Bai, and then SE down Thud Ridge to the target. Point of origin is unknown.

3. AIRCRAFT CONFIGURATIONS

BLUE 1, 2, 3, 4

1 - QRC - 160 ECM pod

MIG

Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Unknown

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 2500 ft |
| Heading: | SE |
| Speed: | Unknown inbound, 650 kt during egression |
| Fuel State: | Unknown |
| Flight Formation: | Unknown |

5. INITIAL DETECTION

BLUE 2 sighted a MIG-21 rolling in and paralleling BLUE Flight's direction. The MIG held at their 9 o'clock position, level, at 4000 ft range.

6. ACTION INITIATED

As the MIG posed no immediate threat, BLUE Flight took no evasive action, and continued on their bomb run.

7. SITUATION DEVELOPMENT

The MIG-21 followed BLUE Flight into the target. When BLUE popped up to 10,000 feet for their bomb delivery, the MIG remained at 2500 feet and made a level 180° turn. The MIG made no attempt to engage. BLUE Flight came off the target, and made their egression on a reciprocal heading to the inboard leg, increasing their airspeed to 650 kt. The MIG was last observed breaking off, and turning back towards Phuc Yen.

8. ORDNANCE

None

10. AIRCREW COMMENTS

Experience: Unknown

Comments on this Encounter:

BLUE 1 felt the MIG pilots were not at all aggressive. He spotted several more MIGS in the area during their egress, but none of them bothered his flight. BLUE 1 commented that the MIGs over Phuc Yen didn't venture over 8 n mi from their own home base on that particular day.

Comments from Overall Experience:

Starting in the middle of November as the chances of being shot at by a SAM on a given day decreased, the probability of being attacked by MIGs increased.

[redacted]



[redacted]

11. DATA SOURCES

Project Interview: BLUE 1
Messages, Reports: None

12. NARRATIVE DESCRIPTION

See Items 5-7 & 10

Event II-72

Aircraft Involved: Four F-105Ds vs three MIG-21s
Result: Sighting only
Vicinity of Encounter: Unknown

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: November 1966/unknown

A flight of four F-105Ds (BLUE Flight) on a strike mission in North Vietnam.

11. DATA SOURCES

Project Interviews: None
Messages, Reports: Letter from member of BLUE Flight

12. NARRATIVE DESCRIPTION

BLUE Flight saw three MIG-21s high at 9 o'clock while inbound to the target. BLUE continued to the target. As they were pulling off the bomb run, the MIGs turned into the flight. BLUE flight accelerated and the MIGs turned away.

Event II-73

Aircraft Involved: Four F-105Ds vs one MIG 21
Result: Sighting only
Vicinity of Encounter: Unknown

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: November 1966/unknown

A flight of four F-105Ds (BLUE Flight) on a strike mission in North Vietnam.

11. DATA SOURCES

Messages, Reports: Letter from BLUE 1.

12. NARRATIVE DESCRIPTION

BLUE 1 sighted a MIG-21 at 9 o'clock high, 3 to 4 mi away. The MIG turned away.

[redacted]

Event II-74

Aircraft Involved: Four F-105s vs two MIG-17s
Result: Sighting only
Vicinity of Encounter: SW side of Thud Ridge

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: November 1966/unknown

Four F-105s (BLUE Flight) were proceeding southeast down the southwest side of Thud Ridge, inbound toward a target at the south end of the ridge. Due to the proximity of Phuc Yen, the flight started a hard 180° turn.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear along southwest side of Thud Ridge; the ridge itself was capped by low clouds.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | Unknown |
| Heading: | Approximately 090° in a hard left turn |
| Speed: | Unknown |
| Fuel State: | Unknown |
| Flight Formation: | Unknown |

5. INITIAL DETECTION

After about 45 degrees of turn, BLUE 4 sighted two MIG-17s sliding by his tail in an apparent overshoot.

6. ACTION INITIATED

BLUE Flight continued turn, as BLUE 4 was only man to see the MIGs, and did not call them out until flight had rolled steady, heading northwest.

7. SITUATION DEVELOPMENT

After the overshoot, the MIGs did not attempt to reattack. They proceeded southeast and entered the Phuc Yen defense area. BLUE Flight proceeded northwest, then crossed Thud Ridge at the north end, headed back down the northeast side of the ridge, and on to hit their target. No more MIG sightings were made. BLUE 1 had executed this round-about routing to avoid overflying the Phuc Yen area defenses.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | Unknown | 800 | Unknown | None |

Comments on This Encounter: None

Comments from Overall Experience

BLUE 1 made the following comment concerning MIG tactics in the vicinity of Thud Ridge. He felt the MIGs and their GCI network had a very well coordinated effort, and good communications. He described the following tactic which was used continually whenever there was a thin cloud deck in the area (2-3000 feet). The MIGs would position themselves on the opposite side of the cloud deck from the attacking strike flights; then allow GCI to vector them into the strike aircraft's 6 o'clock position. When approximately 1 to 2 nmi in trail, they would pop either up or down through the cloud layer and right into shooting position. Such a maneuver gave the strike flights little or no time to acquire the attacking MIGs before they were in a firing position. The MIGs would also use a staggered trail formation (possibly 1 nmi apart) during this tactic; then if you made a hard break to avoid one, you might be setting yourself up right in front of another as he popped through the clouds. BLUE 1 stated this tactic was normally employed using three MIGs rather than four.

11. DATA SOURCES

Project Interview: BLUE 1

12. NARRATIVE DESCRIPTION

See Items 5-7.

[redacted]

Event II-75

Aircraft Involved: Four F-105s vs four MIG-21s
Result: No Damage
Vicinity of Encounter: 21°18'N/105°49'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 2 December 1966/1425H

Bombing strike on the POL storage area at the end of Thud Ridge (JCS 51.10). BLUE Flight was one of several F-105 flights in on the target. As the flight came off their bomb run, they were attacked by two MIG-21s.

2. MISSION ROUTE

The aircraft departed Takhli direct to Green anchor, direct to Channel 97, direct to Red River, direct to Thud Ridge, down Thud Ridge to the target. Egress the reverse route.

3. AIRCRAFT CONFIGURATION

F-105D BLUE 1, 3

6 - 750-lb bombs
1 - AIM-9B missile
1 - QRC-160 ECM pod
2 - 450-gal wing tanks
1029 rnds 20mm ammo.
BLUE 1 had IFF on, rest of flight had TACAN receive only, doppler on, radar in standby and IFF standby.

F-105D BLUE 2, 4

6 - 750-lb bombs
2 - 450-gal. wing tanks
1 - QRC-160 ECM pod
1029 rnds 20mm ammo.

All F-105s camouflaged.

MIG-21

2 - AA missiles
MIGs were not camouflaged
23 or 37mm cannons unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 8000 ft overcast 2-3 miles in haze below clouds. Cloud tops 9-10,000 ft clear above. Cloud cover extended from the Red River Valley down Thud Ridge to just short of the target. The target itself was open.
Altitude: 8000 ft
Heading: 310° 40° dive
Speed: 550 KCAS
Fuel State: 9000 lb
Flight Formation: BLUE Flight was in its bomb run at the time the MIGs were sighted. BLUE 1 & 2 had dropped their bombs and were heading up the north side of Thud Ridge. BLUE 3 was in the bomb run just prior to drop, and BLUE 4 had rolled in and was in his dive.

5. INITIAL DETECTION

BLUE 3 in the bomb run sighted two MIG 21s at his 2 o'clock position, two to three miles away. BLUE Flight had heard MIG calls from Big Eye all the way down Thud Ridge.

6. ACTION INITIATED

BLUE 3 dropped bombs on target, engaged afterburner, and jettisoned the MER rack, turning slightly left into the MIGs 8 o'clock position.

7. SITUATION DEVELOPMENT

As BLUE 3 pulled off the dive bomb run, he saw two MIG 21s attacking BLUE 2. BLUE 3 called a break as the MIG fired a AAM at BLUE 2 from range of about 1 mile. BLUE 3 again called break as the MIG fired a second AAM; by this time BLUE 3 was abreast of the MIG and as he turned into the MIG, the MIGs broke off to the right.

Five to six miles further up the Ridge BLUE Flight was again jumped by two MIG-21s attacking from 9 o'clock. The MIGs overshot BLUE 4. BLUE Flight was at a high speed by this time and were able to outrun the MIGs in afterburner.

8. ORDNANCE

(No. fired/No. hits)

| | Soviet AAM | Remarks |
|---|---|---|
| MIG 1 | 2/0 | The 2 AAMs fired could only be seen by BLUE 3 as long as the rocket motor burned. He was unable to tell if they guided or not. It is assumed that the violent maneuvering by BLUE 2 when the missiles were fired caused the missile to miss. Fired at BLUE 2. |

9. EQUIPMENT PROBLEMS

BLUE 3 was not able to complete the switch changes necessary to change from a ground attack mode to either missile or gun's air. Recommends a more simple arrangement. BLUE 4 also commented on the switch problem. There are too many steps involved and it requires that you take your eyes off the target and look in the cockpit. The rearward visability in the F-105 is very poor. It requires excessive maneuvering of the aircraft to clear your 6 o'clock.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1, 2 | | Unknown | | |
| BLUE 3 | 1700 | 250 | 48 | BLUE 3 gun and missile firing experience limited. He had fired one missile in ADC, some air gunnery during transition training. |
| BLUE 4 | 2600 | 600 | 35 | Pilot had fired the AIM-9 and the M-61 cannon during gunnery training at Nellis AFB, Nevada. He had flown several air tactics flights in his permanent organization, Yokota AB, Japan. |

Comments on this Encounter

BLUE 3 overshot a good firing position and was up line abreast of the MIG. A reason for this was his preoccupation with trying to set switches for missiles air. He never did get his switches set properly to fire a missile or the gun.

BLUE 3 could not yo-yo to get on the lead MIG due to the cloud deck.

BLUE 4 did not have an AIM-9; he did have an opportunity to fire one on one of the MIGs as it pulled up high on an overshoot. BLUE 4 recommends a low drag AAM for external carry on the 105. Possibly an AIM-9B. The high speed capability of the F-105 to outrun the MIGs at low altitude was the big factor in this engagement.

BLUE 4 - The MIG warnings past the first one were not useful since specific information about the MIGs altitude and flight direction were not given.

11. DATA SOURCES

Project Interviews: BLUE 3 (4 Feb 1967), BLUE 4 (2 Dec 1966)
Message Reports:

| | | | |
|---|---|---|---|
| 7AF | OPREP-4 | DOCO 29646 | 021630Z Dec 66 |
| 7AF | OPREP-4 | DOCO 29688 | 030835Z Dec 66 |
| 7AF | OPREP-3 | DOCO 29674 | 030204Z Dec 66 |
| 7AF | DIA | DIA 002 | 022247Z Dec 66 |

12. NARRATIVE DESCRIPTION

BLUE Flight was in the process of bombing JCS Target 51.10, an oil storage area at the south end of Thud Ridge. BLUE 1 and 2 had bombed and were pulling off the target; BLUE 3 sighted two MIG-21s at his 2 o'clock position in a diving turn in pursuit of BLUE 2. BLUE 3 was in his bomb run and dropped his bombs, engaged afterburner, jettisoned the MER rack and turned slightly left to engage the MIGs. BLUE 3 called BLUE 2, advising him that he had two MIG-21s at 6 o'clock. The MIGs were now in position on BLUE 2 and MIG 1 fired an AAM. BLUE 3 called "break left, break, break." BLUE 2 broke left, then right, and the missile missed. BLUE 3 was able to see the missile as long as the rocket motor was burning, but lost sight of it at motor burnout. BLUE 3 was overtaking the MIGs at a high rate of closure; he came out of afterburner. As he came line abreast of MIG 2, the MIG broke hard right away from BLUE 3 and out of the fight. MIG 1 fired a second AAM at BLUE 2. BLUE 3 called break, missile away. BLUE 2 made a hard turn and the missile went past behind his aircraft and hit in the hills. BLUE 3 was now closing rapidly on MIG 1, trying to change switch settings in the cockpit to missiles-air. BLUE 3 pulled up on the left side of the MIG approximately 200 ft off his left wing. BLUE 3 turned into the MIG and the MIG broke hard right and out of the engagement. BLUE Flight continued NW up Thud Ridge; approximately

30 seconds later BLUE 3 spotted 2 MIG-21s at his 11 o'clock in a left diving turn on the flight. BLUE 3 called the flight to go afterburner. BLUE Flight was strung out in a trail formation at this time and doing approximately 600 KCAS at an altitude of 6000 ft MSL along the top of Thud Ridge 500-1000 ft above the ground. BLUE 1, 2 and 3 had no trouble out-running the MIGs, but BLUE 4, the last man in the string, did make a left level break into the MIGs as they approached his 8 o'clock position. The MIGs overshot and went high on BLUE 4. He reversed and then used his speed advantage to outrun them and egressed the area with the rest of the flight.

An EB-66 in the area had experienced two MIG-21 lock-ons at RB 210 and 160 (time 0415-1418H) at 21°50'N/104°50'E while on SW heading at 30,000 ft. This B-66 also heard the radio communication among the members of BLUE Flight.

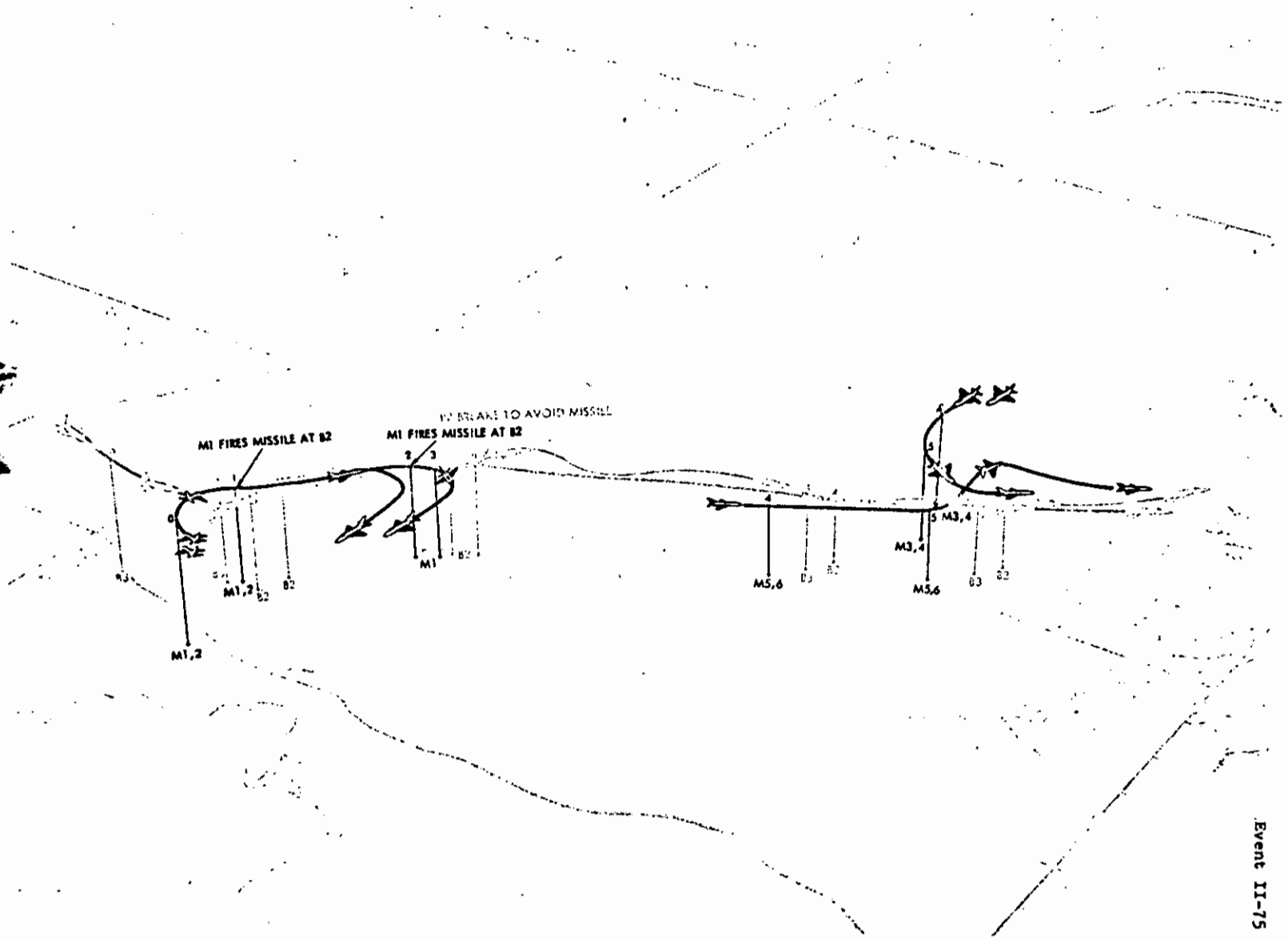
On egress BLUE 4 observed a SAM fired on Blue 1.

## RED BARON EVENT II-75 SUMMARY

| Time Mark | Action Aircraft (BLUE 3) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | In bomb run about half way down<br>8000 ft<br>40° dive L<br>500 kt<br>Drops bombs | B3 spotted 7 MIGs initially as he was about half-way through bomb run.<br>B3 pickled bombs off on target. | Lead out ahead of flight. B2 was pulling off target at 5-6000 ft.<br>B4 had trouble dropping bombs--lost mutual support position on B3. | B3 said "BLUE 2 there are two MIG-21s rolling in on you." MIG calls by Big Eye prior to entering target area | 2 MIG-21s.<br>B3 first saw MIGs high 1 o'clock about two miles. | Whole area overcast (8000 ft) except for hole in target area. In target area clear with two mile visibility in haze. Haze up to 8000, overcast 1000 ft. BLUE Flight had jettisoned wing tanks on Thud Ridge prior to the target after receiving MIG warnings. |
| $T_1$ | B3 pickles MER<br>5 to 6000 ft<br>in afterburner<br>500-550 kt | B3 cuts off MIGs in turn, is at 8 o'clock one quarter mile from MIG. | B2 does violent evasive maneuvers. Missile misses. | B3 yelled to B2 "Break left, break right, break, break." | Lead MIG fires missile at B2. Range is about one half mile. Seemed too close to B3. | B3 attempted to switch to missile's air but cannot manage it and keep his eyes on the MIG at the same time. |
| $T_2$ | 5 to 6000 ft<br>500-550 KCAS<br>out of afterburner | B3 is 200 ft or so off wing of lead MIG. Has cut off MIG to inside of turn. | B3 broke left hard initially and then came back right. | B3 called to B2 that another missile had been fired. | Lead MIG fired 2nd missile. M2 does hard right break. Lead MIG is 6 o'clock. | All aircraft are now below overcast. Factors in enemy missiles not hitting B2. Aircraft maneuvering, cloud, and hills in the background. |
| $T_3$ | 5 to 6000 ft<br>500-550 KCAS | B3 broke into lead MIG. | B2 continued jinking. | | Lead MIG made hard right break in about 90° bank angle. Not seen again. | B3 could not do yo-yo to get into position on lead MIG since yo-yo would have taken him by into clouds. He did not want to get into a speed disadvantage situation by using speed brakes. |

RED BARON EVENT II-75 SUMMARY

| Time Mark | Action Aircraft (BLUE 3) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_4$ | 310-320° Lead 5000 to 4500 ft Both aircraft went afterburner. | B3 spotted two more MIGs 11 o'clock, 2 - 3 miles. Aircraft accelerated to 600 - 650 kt. | B2 leading egress. B2 one quarter to one half mile ahead of B3. | B3 called "B2 we have two more coming in on us - push it up." | Two MIGs co-alt to maybe 500 ft higher. MIGs in pursuit turn on F-105s only about 30° of bank. | The MIGs are flying about 2000 ft apart. |
| $T_5$ | B3 fuel state about 6000 lb. | B3 lost sight of MIGs at about 8 o'clock - 500 ft above and still turning. B4 behind B3 about 3000 ft makes a level break into the MIGs. The MIGs overshoot and go high. B4 goes back right and egressses with the flight. | | | This is the last B3 saw of MIGs. These MIGs made about a 90° pass on B4. (They may have actually been in this path at this time - that is not in an attack on B2 and B3. | B4 felt he could have pulled up and fired a missile when the MIG went high during the overshoot but he was not configured with an AIM-9. |


M1 FIRES MISSILE AT B2
M1 FIRES MISSILE AT B2
B2 BREAKS TO AVOID MISSILE
M1,2
M1,2
B2
B2
M1
B2
M5,6
B3
B2
M3,4
M3,4
M5,6
B3
B2

Event II-75

Event II-76

Aircraft Involved: Four F-105s vs one MIG-21

Result: No damage

Vicinity of Encounter: 21°47'N/105°12'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 2 December 1966/1430H

BLUE Flight of four F-105Ds on a bombing strike against JCS 51.10, a POL storage area at the south end of Thud Ridge. There were several other flights in the area at the time, with a total strike force of approximately 48 aircraft.

2. MISSION ROUTE

Takhli, direct to Green Anchor extend, direct to north station, direct to Red River, direct to 21°46'N/105°18'E direct Thud Ridge, direct target. Reverse route on the egress.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1 & 3

6 - 750-lb bombs
1 - AIM-9 missile
1 - QRC-160 pod
2 - 450-gal wing tanks
1029 rnds 20mm ammo

F-105 BLUE 2 & 4

6 - 750-lb bombs
1 - QRC-160 pod
2 - 450-gal wing tanks
1029 rnds 20mm ammo

All aircraft camouflaged.

MIG-21

Configuration unknown
Not camouflaged

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Solid undercast clear above with good visibility.
Altitude: 14,000 ft
Heading: 090°
Speed: 500 KCAS
Fuel State: 10,500 lb
Flight Formation: Modified Fluid-Four. The wingmen 1500 ft out and 500 ft high or low to provide a good ECM area of coverage.

5. INITIAL DETECTION

MIG sighted at 2 o'clock high 2-3000 ft approximately 5 miles out. Heading in the opposite direction.

6. ACTION INITIATED

BLUE Flight engaged afterburner and continued straight ahead descending and accelerating.

7. SITUATION DEVELOPMENT

The MIG-21 made a slight descending pursuit curve as he approached 5 o'clock and 2000 ft out. BLUE Flight made a hard right break into the MIG. The MIG broke off left and disengaged. No missiles or gun firings observed.

8. ORDNANCE

No ordnance expended by either the F-105s or the MIG-21.

10. AIRCREW COMMENTS

BLUE 1 was a former B-52 pilot, 250 hr in the F-105. No other information on pilot experience available on this event.

BLUE 1 felt that since all he saw was one MIG and that the MIG broke off the engagement as soon as he overshot when the flight broke into him that it was probably a single and that he did not want to tangle with a flight of four.

11. DATA SOURCE

Project Interview: BLUE 1 (Mar 1967)

12. NARRATIVE DESCRIPTION

BLUE Flight was on top on an undercast flying 14,000 ft altitude, 500 KCAS heading 090° approximately 15 miles NW of Thud Ridge. BLUE 1 sights a single MIG at 2 o'clock, 2-3000 ft high, 5 miles out heading approximately 270°. The MIG started a right turn in on BLUE Flight and made a pass from out of the sun. BLUE 1 called for afterburners and accelerated straight ahead in a slight descent. As the MIG approached 5 o'clock, 2000 ft out, BLUE 1 called a right break into the MIG while retaining ordnance. The MIG was identified as a MIG-21, silver in color. The MIG overshot in the turn, he evidently continued up north because he was not sighted again. BLUE Flight rolled out after approximately 90° of turn, checked the area visually for MIGs, then did a 180° left turn back up to Thud Ridge and continued on into the target. There were no other MIG engagements during this flight. BLUE 1 felt that he did see another flight of MIGs on Thud Ridge, but he was not sure their relative position could be ascertained; consequently, they are not entered in this report.

In reflecting back on the attack by the MIG-21, BLUE 1 felt that it was probably a single MIG, he made one high side pursuit pass on the flight. When the flight broke into the MIG, the MIG did not continue the attack. It is felt that this confirms the fact it was a single and did not want to tangle with a flight of four. The MIG was not observed to fire either missile or guns.

BLUE Flight had seen two F-4Cs hit by SAMs just before they reached the turning point at the NW end of Thus Ridge. Only three flights were able to hit the target on this strike as the remaining flights had to jettison ordnance due to MIGs.

[redacted]

Event II-77

Aircraft Involved: Four F-105s vs two MIG-21s

Results: No damage.

Vicinity of Encounter: 21°50'N 104°25'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 3 December 1966/1220H

BLUE Flight was on an armed reconnaissance mission in Route Package V. (West northwest of Hanoi 30 to 100 n mi) The flight was inbound to the target area south of the Red River, at 15,000 ft, when two MIG-21s attacked the flight.

2. MISSION ROUTE

Korat direct to Green Anchor, direct to north station, direct to Red River, direct to target area (Route Package V). Return, reverse course.

3. AIRCRAFT CONFIGURATIONS

F-105D

6 - 750 lb bombs
2 - 450 gal tanks
1029 Rounds 20mm
All aircraft camouflaged.

MIG-21

Ordnance unknown.
Silver (not camouflaged).

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Solid undercast tops 6-8,000 ft, good visibility above the clouds.
Altitude: 15,000 ft
Heading: 032°
Speed: 480 KTAS
Fuel State: 12,000 lb
Flight Formation: Tactical spread with element on the left.

5. INITIAL DETECTION

Blue Flight received Big Eye warnings of MIGs in the Hanoi area, but were not expecting enemy aircraft in immediate area. At 1220H Blue Flight received MIG warning from another U. S. flight in the area concurrent with a MIG sighting by Blue 1. Blue 1 reported two MIGs at 10 o'clock, 5000 ft high and 3 miles out.

6. ACTION INITIATED

Blue Flight continued on heading of 032°. The MIGs passed on the left descending from 20,000 ft maintaining 210° heading.

7. SITUATION DEVELOPMENT

Blue Flight turned to 360° heading to keep MIGs in sight. MIGs observed to break hard left and position themselves at 7 o'clock and 5 miles aft of Blue Flight.

10. AIRCREW COMMENTS

Blue 3 stated that sighting MIGs "that far south and west of Hanoi came as a surprise." In general the MIGs never operated that far from the Hanoi area. The MIGs appeared to be under GCI control and were vectored to Blue Flight. Blue 3 believed the MIGs accomplished their mission when Blue Flight jettisoned ordnance.

11. DATA SOURCES

Project Interviews: BLUE 3, 16 February 1967

Message Reports:

| | | | |
|---|---|---|---|
| 7AF OPREP-3 | DOCO 290708 | 031341Z | Dec 66 |
| 7AF OPREP-4 | DOCO 29712 | 031550Z | Dec 66 |
| 7AF OPREP-3 | DOCO 29727 | 032210Z | Dec 66 |
| 7AF DIA | DIA 003 | 040010Z | Dec 66 |

[redacted]

[redacted]

[redacted]



12. NARRATIVE DESCRIPTION

BLUE Flight of four F-105Ds inbound on armed reconnaissance to Route Package V, western section of N. Vietnam, altitude 15,000 ft, airspeed 480 KTAS, just south of the Red River, heading 032°. BLUE 1 called MIGs at 10 o'clock high. They were two MIG-21s, approximately 5000 feet high heading in the opposite direction. As the MIGs passed to the left, BLUE Flight turned left to a heading of 360° to keep the MIGs in sight. As BLUE Flight turned the MIGs started a left diving turn to BLUE Flight's 7 o'clock position. The MIGs were about 3 miles in trail. BLUE 1 called to jettison ordnance and to go afterburner. BLUE Flight made a left break into the MIGs. The MIGs made a right turn breaking off the attack, rolling out on a heading of approximately 130°. BLUE Flight rolled out of its left break on a heading of 210° and egressed the target area.

[redacted]

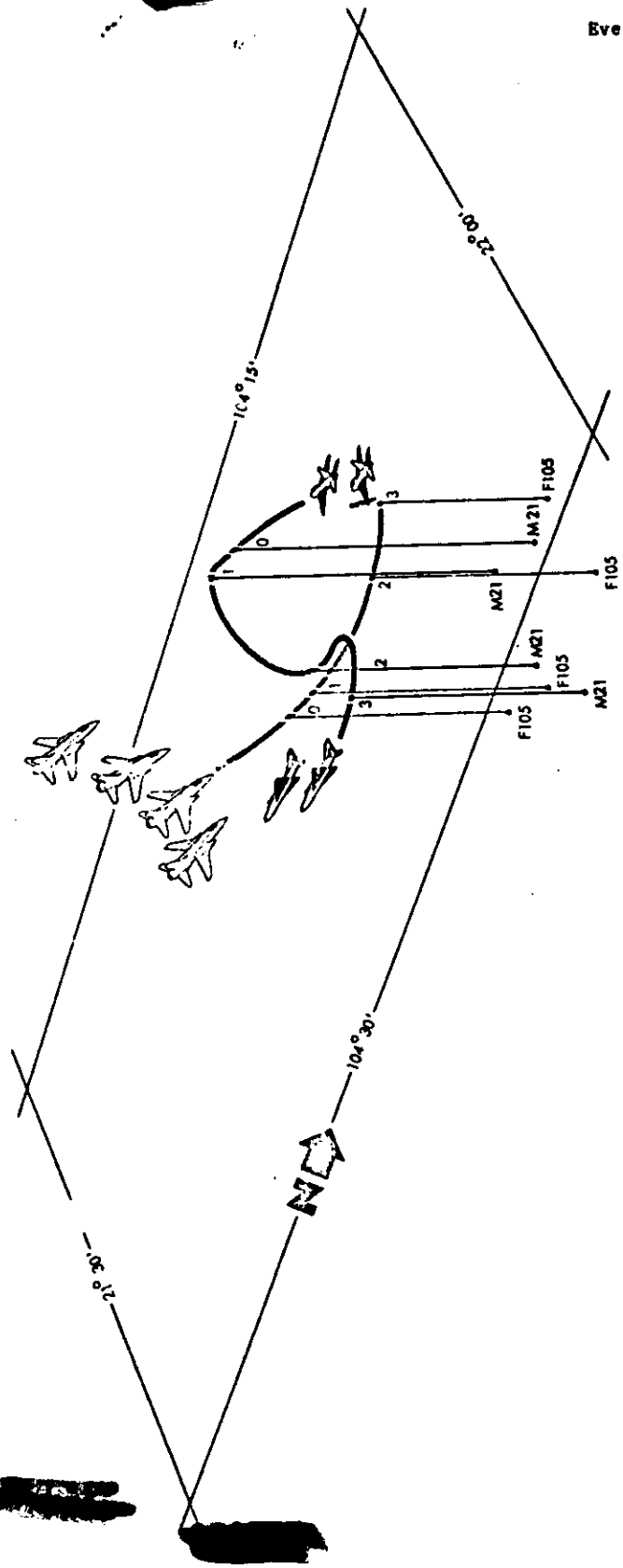
[redacted]

RED BARON EVENT 11-77 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | Four F-105s in fluid-four formation, 15,000 ft, 480 KTAS, heading 032°, time 1220H | Blue 1 sighted two MIGs at 10 o'clock. Flight continued on course. | Other flights in the area. | Previous MIG alert received from Big Eye but not for this area. BLUE Flight heard another flight in the area call MIGs. BLUE 1 called MIGs 10 o'clock. | Two MIG-21s altitude 20,000 ft, heading 210°. | MIG alert was for the Hanoi area. This encounter was west of the normal MIG threat area. |
| $T_1$ | Heading 032°, 480 KTAS, Alt. 15,000 ft, keeping MIGs in sight off to the left. | BLUE Flight made a left turn to keep the MIGs in sight. MIGs were at about 8 o'clock position. | | BLUE 1 called MIGs turning into the flight. | MIGs started a left descending turn into BLUE Flight. | |
| $T_2$ | Heading 360°, 480 KTAS, Alt. 15,000 ft, MIGs at 7 o'clock n mi aft. | BLUE Flight jettisoned ordnance. Engaged afterburners. Started a left break into the MIGs. | | BLUE 1 called jettison ordnance. Afterburner left break. | MIGs at BLUE Flight's 7 o'clock 3 n mi aft. After BLUE Flight broke MIGs turn rt. roll out on a heading of 130°. | MIGs saw BLUE Flight jettison ordnance. This may have been their primary mission since they did not press the attack. |
| $T_3$ | Heading 210°, 12,000 ft, 500 KCAS. | BLUE Flight egressed the area. No other encounters. | | | Heading 130°, did not fire. | BLUE 3 suspected that the MIGs were GCI controlled. |
| | | | | | | |

[redacted]

Event II-77




[redacted]

[redacted]

Event II-78

Aircraft Involved: Four F-105s vs two MIG-17s or 19s

Result: Sighting only

Vicinity of Encounter: 21°40'N/104°18'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 3 December 1966/1240H

BLUE Flight attacking JCS 19.000 at 21°05'N/105°55'E.

2. MISSION ROUTE

Korat, Thailand, directly to air refueling area, White, Orange or Red Anchor. Directly north station directly to target. Armed reconnaissance in Route Package V after hitting target, return route directly Udorn, directly Korat.

3. AIRCRAFT CONFIGURATION

F-105 BLUE 1, 2, 3, 4

6 - 750-lb bombs, 1020 rnds 20mm ammo,
2 - 450 gal fuel tanks

4. FLIGHT CONDITIONS

Weather: Unknown

| | BLUE 1, 2, 3, 4 | MIG 1 |
|---|---|---|
| Altitude: | 15,000 ft | 25,000 ft |
| Heading: | 230° | 315° |
| Speed: | 440 KTAS | --- |
| Fuel State: | 10,000 lb | --- |

5. INITIAL DETECTION

No MIG warning for this area from Big Eye. BLUE 3 called bogies at 4 o'clock high. BLUE 1 sighted the bogies, two[1] silver aircraft, heading northwest. Aircraft appeared to be MIG-17 or -19 type.

6. ACTION INITIATED

BLUE Flight began right turn, keeping MIGs in sight.

7. SITUATION DEVELOPMENT

BLUE Flight continued in turn, completely 360°. MIGs continued on northwest heading disappearing from sight.

8. ORDNANCE

BLUE Flight - 6 750-lb bombs/1029 rnds ammo

MIG - Unknown - silver color

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 4200 | 500 | 40 | Pilot background primary fighter test-pilot level. Korean War experience in F-80. Had completed a short refresher course at Nellis in the F-105 prior to arriving in SEA. |
| BLUE 4 | 2400 | 150 | Unknown | Pilot background mostly ADC F-94C and F-102. |

Comments on This Encounter

BLUE 1 - A low-drag missile to be carried by the F-105 would have been useful in this case. BLUE 1 did not want to jettison ordnance and chase after the MIGs for two reasons: (1) the primary mission was to deliver bombs and (2) the MIG-17 can out-turn and out-maneuver the F-105. BLUE 1 did not feel he had a good chance of a kill with the M-61 gun only.

[1]Interviewees reported flight of two MIGs - OPREP reported one MIG.

[redacted]

10. AIRCREW COMMENTS (Continued)

The gun air-to-air mode requires too many switching operations changes when changing from ground-to-air mode. The present radar for air-to-air is inadequate for a fast-developing hassel close to the ground. It is unreliable for lock-on and requires too much in the way of switches and controls.

The ECM capability of the QRC-160 is good but the drag and reliability at high speed, and low altitude is questionable. Recommend an internally mounted ECM capability.

The rearward visibility in the F-105 is very poor.

11. DATA SOURCES

Project Interviews: BLUE 1 and 4 - 15 February 1967
Messages, Reports:

7AF OPREP-4 DOCO 29697 031044Z Dec 66
7AF OPREP-3 DOCO 29720 031955Z Dec 66

12. NARRATIVE DESCRIPTION

See Items 5 and 7. No additional details.

[redacted]

Event II-79

Aircraft Involved: Four F-105s vs one MIG-21

Result: Sighting only.

Vicinity of Encounter: 21°42'N/104°53'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 3 December 1966/1213H

BLUE Flight on ROLLING THUNDER interdiction mission. JCS 19.00 target.

2. MISSION ROUTE

Korat, Thailand, directly to air refueling area, White, Orange or Red Anchor. Directly north station directly to target. Armed reconnaissance in Route Package V after hitting target, return route directly Udorn, directly Korat.

3. AIRCRAFT CONFIGURATION

F-105 BLUE 1, 2, 3, 4

6 - 750 lb bombs, 2 - 450 gal fuel tanks

1029 rds 20mm ammo

4. FLIGHT CONDITIONS

Weather: Unknown

| | BLUE 1, 2, 3, 4 | MIG 1 |
|---|---|---|
| Altitude: | 17,000 ft | 20,000 ft |
| Heading: | 230° | 120° |
| Speed: | 440 KTAS | |
| Fuel State: | 10,000 lb | |

5. INITIAL DETECTION

BLUE Flight sighted one MIG-21 at 12 o'clock position, 3 to 5 miles distant on 120° heading. MIGs above F-105s at 20,000 feet. No hostile action.

11. DATA SOURCE

| | | | | | |
|---|---|---|---|---|---|
| 7AF | OPREP-3 | DOCO | 29720 | 031955Z | Dec 66 |
| 7AF | OPREP-4 | DOCO | 29697 | 031044Z | Dec 66 |

12. NARRATIVE DESCRIPTION

See Item 5

Event II-80

Aircraft Involved: Four F-105s vs one MIG-17

Results: Sighting Only

Vicinity of Encounter: 21°23'N/104°19E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 December 1966/1040H

2. MISSION ROUTE

Flight departed Korat to strike JCS Target 19.00.

11. DATA SOURCES

7th AF 042250Z Dec 66

12. NARRATIVE DESCRIPTION

BLUE flight, on a strike at JCS 19.00, heading 360° at 16,000 ft, observed a MIG-17, estimated altitude 30,000 ft, heading 180° pass overhead. The MIG turned SW and was lost from sight.

[redacted]

Event II-81

Aircraft Involved: Four F-105Ds vs one MIG ?
Result: Sighting only
Vicinity of Encounter: 21°00'N/104°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 3 December 1966/unknown

Four F-105s (BLUE Flight) were egressing from a strike on North Vietnam.

11. DATA SOURCES

Project interview with a member of BLUE Flight (15 Feb 67).

12. NARRATIVE DESCRIPTION

BLUE Flight was egressing Route Package V heading toward TACAN Channel 97. The flight was at about 22,000 feet when a MIG was seen following the flight at an altitude of about 35,000 feet, and co-speed. The MIG followed the flight to about 20 miles south of Channel 97 at which point it made a large diameter left turn and headed back toward North Vietnam.

Event II-82

Aircraft Involved: Four F-105s vs two possible MIGs
Result: Sighting only
Vicinity: 21°50'N/104°15'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 December 1966/1040H

Flight of four F-105s on an IRON HAND mission (SAM suppression). Heading 330°, altitude 12,000 feet.

11. DATA SOURCES

RED BARON MIG incident summary.

12. NARRATIVE DESCRIPTION

BLUE 3 observed two possible MIGs at 2 o'clock, 10 nmi out, heading southwest. BLUE 3 called out the bogeys and BLUE flight turned into them. The bogeys turned north and disappeared. BLUE 3 was the only one to see the aircraft, both bright silver. He was too far away to determine type.

[redacted]

Event II-83

Aircraft Involved: Four F-105s vs Eight to Ten MIG-17s

Result: None, except BLUE 4 damaged by ground fire during target strike

Vicinity of Encounter: 21°16'N/105°48'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 December 1966/1637H[1]

BLUE Flight (four F-105s) was the fourth flight of a five-flight strike force fragged to attack JCS 51.10, a petroleum storage area northeast of Phuc Yen airfield. Events II-84 and II-85 describe the MIG encounters for other flights in this same strike force.

## 2. MISSION ROUTE

BLUE Flight departed from Takhli, refueled enroute, then flew from Laos across the Red River to the northern edge of Thud Ridge and down the western side of the ridge on a southeast heading to the target area. Egress was made on a northwest heading up Thud Ridge and then to the west across the Red River.

## 3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4

6 - 750-lb GP bombs
1 - 20mm Cannon
1 - QRC-160 (ECM pod)
2 - 450 Gallon tank
(BLUE 4 carried a strike camera pod)

MIG-17 ALL

MIGs carried an unknown mix of air-to-air missiles (probably Atolls) and cannons. All MIGs were silver in color and no external tanks were observed. At least one MIG was configured with afterburner.

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Haze from ground level to 7000 ft with visibility 3-5 miles into the sun and 7 miles away from the sun. Scattered cumulus clouds, bottoms at 3000 ft, 2/8 coverage, and clear visibility above the haze.

| | BLUE 1, 2, 3, 4 | MIG-17 (4) |
|---|---|---|
| Altitude: | 8-10,000 ft AGL | 10-15,000 ft AGL |
| Heading: | 145° | 350°-360° |
| Speed: | 400-450 KCAS | Unknown |
| Fuel State: | 10,000+ lb | Unknown |
| Flight Formation: | | |

Pop-up: BLUE 1 rolling in over the top
BLUE 2 and 3 spacing for roll in
BLUE 4 sliding inside BLUE 3

## 5. INITIAL DETECTION

BLUE Flight was alerted to the presence of MIGs while on their inbound leg approximately 2 minutes prior to TOT when the preceding flight in the strike force was engaged by MIGs at the target (see Event II-84). Shortly thereafter, BLUE 2 saw a single MIG-17 that was turning back toward the target area from a northwesterly heading along the south side of Thud Ridge; however, this MIG did not attack or follow BLUE Flight.

[1]This Event occurred subsequent to Event II-84, however, this time (as reported in the OPREP) is the best available from official sources. The Event actually occurred at about 1644 - 1647H.

[redacted]

As the flight approached the pop-up point, BLUE 2 and 3 reported that they saw an estimated 8-10 MIGs orbiting near the pop-up point, high, in the vicinity of Phuc Yen airfield. As BLUE Flight was climbing through 8-10,000 in the pop-up, BLUE 3 called out a flight of four MIGs diving down in a quartering head-on pass from 1 o'clock high approximately one mile out. These four aircraft were positively identified by BLUE 3 as MIG-17s shortly after initial detection.

6. ACTION INITIATED

BLUE Flight continued the planned target strike with each aircraft individually rolling in left on a dive bomb run that would put all four F-105s in a trail attack from different headings approximately 10°-15° apart. As BLUE Lead rolled in on the target, the MIGs rolled into attack the flight. BLUE 2 fired a short 50-round 20 mm cannon burst at a MIG-17 that suddenly appeared in front of him crossing from right to left as BLUE 2 started into his delayed offset roll-in behind BLUE lead. This MIG yo-yo'ed to maneuver in behind BLUE 2 on his bomb run.

As BLUE 3 started his nose high, left roll in, he again spotted MIG-17s in a 20° to 30° dive passing from a 1 o'clock to a 12 o'clock position. BLUE 3 continued around in a left turn long enough to fire 75 to 100 rounds of 20mm cannon in a 90 degree deflection shot at one of the MIGs.

7. SITUATION DEVELOPMENT

While BLUE 3 was firing, another one of the MIGs fired a "SIDEWINDER-type" (probable Atoll) missile at either BLUE 1 or BLUE 2. (BLUE 2 saw a missile pass his aircraft and continue toward the ground with the motor still burning.) BLUE 3 could not turn with the MIGs and lost sight of them as they "all passed on by him" in their dive. BLUE 3 then rolled out and delivered his bombs on the target, jettisoning his 450-gallon drop tanks right after bomb release as did the other members of the flight. BLUE 4 did not encounter MIGs in his dive bomb run; however, he was hit by automatic weapons fire in the pull out and lost his P1 hydraulic system.

BLUE Flight pulled off the target and started a low-altitude egress northwest along Thud Ridge. BLUE 1 was in the lead with a MIG-17 on his tail, which was being pursued by BLUE 2. BLUE 2 also had a MIG-17 on his tail that was being fired on by BLUE 3. BLUE 4 was just off the target and heading northwest. (Although unobserved at this time, there was at least one additional MIG-17 at BLUE 3's 2 o'clock position, 2 to 3 miles range, maneuvering to attack BLUE Lead or BLUE 2.)

BLUE 3 fired a single burst of approximately 450 rounds of 20mm cannon at the MIG behind BLUE 2. Before BLUE 3 could fire another burst this MIG broke hard left for 45°, then reversed his turn as BLUE 3 passed him. Since BLUE 3 was going better than 1.1 Mach he continued straight ahead realizing that this MIG was no longer a threat.

Although not sequentially correlated, at about this time BLUE 4 sighted a MIG-17 coming head on from 12:30 o'clock at an estimated range of 4000 ft. BLUE 4 began firing at an estimated 2000 ft and expended 95 rounds of 20mm cannon before the MIG passed behind him.

During the above sequence of events, BLUE 2, unaware that the MIG under attack by BLUE 3 was behind him, was closing on the MIG-17 that was now at 5-6 o'clock position approximately 2-3000 ft behind BLUE Lead. Just after BLUE 2 started firing at this MIG, BLUE 3 saw still another MIG 2-3 miles out at his 2 o'clock to 2:30 o'clock position, launching a "SIDEWINDER-type" missile at either BLUE Lead or BLUE 2. BLUE 3 called for a "BLUE break" since he didn't know which aircraft was under attack. BLUE Lead broke right immediately and BLUE 2 hesitated since he had a good firing pass going and the break did not specifically identify him. After BLUE 2 had fired approximately 100 rounds the MIG-17 lit his afterburner and made a hard right break just as BLUE 2 ripple fired, smoking missiles with motors burning passed within 10-20 ft of BLUE 2's canopy. BLUE 2 did a hard left 120° roll, breaking down into the ground. The missiles detonated at an estimated 2000 ft and 150 feet, respectively, ahead of BLUE 2.

The MIGs disengaged at this point and the flight continued up Thud Ridge to join at the north end and egress for an uneventful post-strike refueling and recovery at Takhli. BLUE Flight did sight two additional MIGs, southbound, low at approximately 2-3000 ft AGL in a valley as they crossed the north end of Thud Ridge; however, no hostile action was initiated by either adversary.

8. ORDNANCE

| | 20mm | No. fired Soviet AAM (Possibly AA-2) | Remarks |
|---|---|---|---|
| BLUE 1 | 0 | | |
| BLUE 2 | 150-200 rd | | in two bursts |
| BLUE 3 | 543 rd | | in two bursts |
| BLUE 4 | 95 rd | | |
| MIG-17 | | 1 | Probable ATOLL |
| MIG-17 | | 2 | Probable ATOLL |

9. EQUIPMENT PROBLEMS

P1 hydraulic system inoperative due to automatic weapons ground fire hits.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| BLUE 2 | 650 | 370 | 76 | First flying assignment out of basic pilot and combat crew training. |
| BLUE 3 | | 250-275 | 60 | |
| BLUE 4 | | 450 | 60 | Flew P-47s in WWII. |

Comments on this Encounter

BLUE 2: Needed more rearward visibility and a snap-shot capability. Had a fair knowledge of MIG-17 capabilities and knew the F-105 could not "hassle" with MIG-17s. When you're close to the ground above the Mach you get a vapor around the canopy and you can hardly see out.

BLUE 3: The F-86 and F-100 systems for changing from dive bomb to air-to-air mode were far superior to the F-105, whose system leaves much to be desired. The two-second delay between bursts on the Gatling gun is another drawback to the system. More than one gun would be desirable because of gun jam problems.

BLUE 4: An action reject button to change the manual sight to an air-to-air sight would have been the answer, but to reach down and turn on radar at a time like this was just too confusing.

11. DATA SOURCES

Project Interviews: BLUE 2 (5 Feb 67), 3 (6 Feb 67), and 4 (Feb 67)
Messages:

041440Z Dec 66, SECRET, DOCO 29769 Dec 66.

041100Z Dec 66, SECRET, DOCO 29759 Dec 66.

042250Z, Dec 66, SECRET, DIO 30926 Dec 66.

12. NARRATIVE DESCRIPTION

BLUE Flight descended from a cruise altitude of 15-16,000 ft as they crossed the Red River inbound toward the northern edge of Thud Ridge for a strike on JCS 51.10, a POL storage area near Phuc Yen airfield. The flight proceeded down the western side of Thud Ridge toward the target on a heading of approximately 145° at 4-6000 ft AGL, approximately 480 kt ground speed. At this time, approximately 2 minutes prior to TOT, BLUE Flight was alerted for MIGs when the preceding strike flight was engaged in the target area. Shortly thereafter, BLUE 2 sighted a MIG-17 that "bellied up" in front of the flight to reverse his northwesterly heading and return towards the target area without any further significant action.

As the flight went afterburner accelerating to 550 KCAS for pop-up, BLUE 2 saw 8-10 MIG-17s (silver in color, no marks, large easily distinguished wings) in orbit at an estimated 8-10,000 ft in the target area. (BLUE 2 had crossed over to form a four-ship right echelon, nearly line abreast, so the flight could make a left roll in for a trail formation attack individually varying bomb headings by 15 to 20 degrees.) As BLUE Flight was climbing through 8-10,000 ft AGL in the shallow pop-up on approximately 145° (450 KCAS, 20° pitch angle), BLUE 3 identified a flight of 4 silver MIG-17s diving in a quartering head-on pass from 1 o'clock high approximately one mile out. The MIGs were in two-ship elements approximately 1000 ft apart with the second element about 1500 feet back, -- "aiming more toward BLUE Lead."

As BLUE Lead rolled in on the target, the MIGs rolled in to attack the flight. As BLUE 2 was just ready to roll in, a MIG-17 appeared suddenly in front of him crossing from left to right. BLUE 2, pulling 2 to 3 g's for the roll in on the target, fired a short 50-round burst using only the combining glass, -- no sight --, for aiming. This MIG yo-yo'ed to maneuver in behind BLUE 2 as he entered his bomb run.

At this point, BLUE 3 had started a nose-high, left roll in and spotted "MIG-17s" in a 20° to 30° dive passing from his 1 o'clock to his 12 o'clock position. BLUE 3 continued turning to hold the MIGs at 12 o'clock and was able to fire 75 to 100 rounds of 20mm cannon for a 90 degree deflection shot, 1500-2000 ft range, at the "number 3" MIG. (BLUE 3 fired in a 30°-40° nose-up pitch attitude, angle of bank increasing from 30° to 60°, airspeed bleeding down from 400-300 KCAS. Since he had a 116 mil reticle depression, he sighted through the wind screen only). While he was firing, BLUE 3 saw the lead MIG-17 fire a missile "apparently at BLUE Lead" who was at 12 o'clock

to the MIG at 2000 ft or less range, "headed down." (BLUE 2 saw a missile pass his aircraft and continue toward the ground with the motor still burning.) BLUE 3 could not continue turning with the MIGs and lost sight of them as they "all passed on by him" in their dive.

BLUE 4 did not encounter any MIGs during the bomb run; however, he was hit by automatic weapons fire in the pullout and lost his P1 hydraulic system. All flight members jettisoned external tanks immediately after bomb release and remained in afterburner from pop-up to final disengagement with the MIGs. The external tanks were going dry at this point and all flight members had 9000-10,000 lb of fuel aboard.

BLUE Flight pulled off the target and started a low altitude egress northwest along Thud Ridge. The flight "pulled off pretty well close together. There was not much, or any resemblence of a formation; we had everybody in sight." BLUE 1 was in the lead with a MIG-17 on his tail which was being pursued by BLUE 2. BLUE 2 also had a MIG-17 on his tail that was being fired on by BLUE 3. BLUE 4 was just off the target and heading northwest. (Although not observed at this time, there was at least one additional MIG-17 at BLUE 3's 2 o'clock position, 2 to 3 mile range, maneuvering to attack BLUE Lead or BLUE 2.)

BLUE 3 pulled off the target and looked up to see a silver MIG-17 at 11:30 o'clock low, same heading, straight and level at approximately 4000 ft range. (After bomb release he had reset switches to radar standby, radar search and attack, weapons selector knob conventional, and missiles air.) He began firing a continuous burst of approximately 450 rounds at an estimated range of 3000-3500 yards, airspeed Mach 1-1.5 accelerating. When nothing happened he then realized that his present sight setting with the pipper on the target gave him 800-1000 ft range so he pulled the pipper high and kicked the rudders with no apparent results. While he was firing he noticed that this MIG was "sitting behind another F-105" (BLUE 2). BLUE 3 stopped firing to close on the MIG; however, before he could fire another burst this MIG broke hard left for 45°, then reversed his turn as BLUE 3 passed him at 9 o'clock, 3-4000 ft range. BLUE 3, now going 1.15 Mach, did not attempt to turn with this MIG and continued straight ahead; however, he had lost sight of BLUE 2 watching this MIG break.

Although not sequentially correlated, at sometime during the egress engagements ("about 2 minutes from the target"), BLUE 4 sighted a MIG coming straight into him from 12:30 o'clock at an estimated range of 4000 ft, 2-5 degrees deflection. (BLUE 4 was at 560 KCAS, 5000 ft altitude, heading northwest up Thud Ridge) BLUE 4 cranked his fixed reticle to 20 mils, pulled up for an estimated sight picture, and fired 95 rounds from 2000 ft range until the MIG passed over his left wing. Because of the high closure rate, BLUE 4 estimated the rounds went low and behind the MIG. The MIG did not fire but banked away from BLUE 4. BLUE 4 banked to hold a head on firing pass until the MIG went by and then BLUE 4 continued a northwest egress up Thud Ridge.

During the above sequence of events, BLUE 2 unaware that the MIG under attack by BLUE 3 was behind him, was closing on a MIG-17 that he had "called out" at 5-6 o'clock, approximately 2-3000 feet behind BLUE Lead. (BLUE 2 was accelerating from 550-600 KCAS at about 2000 ft AGL. Although he tried to crank his depression to the caged position, he had no reticle for aiming.) BLUE 2 began firing at an estimated 1500 ft range as he closed on this MIG. However, just after BLUE 2 began firing, BLUE 3 saw a flash of a missile being fired off to his right by still another MIG-17 at his 2 to 2:30 o'clock position, 2-3 miles out. BLUE 3 called for a "BLUE break" since he didn't know if the missile had been launched at BLUE Lead or BLUE 2. BLUE Lead broke right immediately and BLUE 2 hesitated since he had a good firing pass going and the break call did not specifically identify him. After BLUE 2 had fired approximately 100 rounds of 20mm cannon the MIG-17 lit his afterburner and made a hard right break just as 2 Atolls, ripple-fired, passed within 10 to 20 feet of BLUE 2's canopy, -- smoking with motors still burning. BLUE 2 did a hard left 120° roll, breaking down into the ground. The missiles detonated at an estimated 2000 feet and 150 ft, respectively, ahead of BLUE 2.

BLUE Flight continued northwest up Thud River at about 1.1 Mach at low altitude and the MIGs disengaged. The flight joined at the north end of the Ridge with approximately 7000 lb fuel remaining and egressed for an uneventful post-strike refueling and recovery at Takhli. The flight did sight two additional MIGs, southbound, low at approximately 2-3000 ft AGL in a valley as they crossed the north end of Thud Ridge; however, no hostile action was initiated by either adversary.

Event II-84

Aircraft Involved: Four F-105s vs sixteen MIG-17s
Result: One MIG-17 probably destroyed
Vicinity of Encounter: 21°14'N/105°51'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 December 1966/1642H

BLUE Flight (four F-105s) was the first flight of a five-flight strike force fragged to attack JCS 51.10, a petroleum storage area northeast of Phuc Yen airfield. Events II-83 and II-85 describe the MIG encounters for other flights in this same strike force.

## 2. MISSION ROUTE

BLUE Flight departed from Takhli, refueled en route, then flew from Laos across the Red River to the northern edge of Thud Ridge and down the western side of the ridge on a southeast heading to the target area. BLUE Lead egressed to the southwest directly towards Laos while the other flight members departed northwest up Thud Ridge and then to the west across the Red River.

## 3. AIRCRAFT CONFIGURATIONS

P-105 BLUE 1, 2, 3, 4

6 - 750-lb GP bombs
2 - 450-gal tanks
1 - QRC-160 (ECM pod)
1 - 20mm cannon
(BLUE 3 and 4 were camouflaged)

MIG-17

All 16 MIGs silver in color. North Vietnamese markings observed on bottom side of wings of several MIGs (broken yellow bar with yellow star in center, all outlined in red, covered approximately 1/3 of bottom wing). No missiles observed. Several MIGs used afterburners. Several fired 23mm cannons. No external configurations reported.

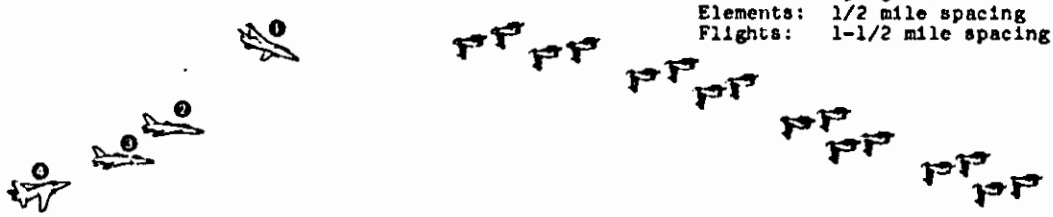
## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Haze from ground level to 7000 ft with visibility 3 to 5 miles into the sun and 7 miles away from the sun. Scattered cumulous clouds, bottoms 3000 ft, 2/8 coverage, and clear visibility above the haze.

| | BLUE 1, 2, 3, 4 | MIG-17s (1-16) |
|---|---|---|
| Altitude: | 12,000 ft | Est. 7,000 ft |
| Heading: | 145° to NE | Northwest |
| Speed: | 400 KCAS | Est. 450 kt GS |
| Fuel State: | 10,000+ lb | Unknown |

Flight Formation

Wingmen: 1500 ft out, 25°-30° back
Elements: 1/2 mile spacing
Flights: 1-1/2 mile spacing




Pop-up in afterburner, 20° to 40° climb angle, 400-450 KCAS, climbing through 8-10,000 ft AGL.

## 5. INITIAL DETECTION

BLUE Flight popped up from 7000 ft AGL to 12,000 ft AGL for a left roll in to dive bomb the target on a northeast heading. As BLUE Lead was rolling over the top with his nose just coming down he saw four flights of four MIG-17s each coming in from his right heading northwest at about 7000 ft AGL.

6. ACTION INITIATED

BLUE Lead called out the MIGs; however, the flight continued the bombing attack. As BLUE Lead pulled off the target he made a left climbing turn to 12,000 ft to seek out and engage the MIGs. Since BLUE Flight had not seen the MIGs and did not realize BLUE Lead intended to attack the MIGs, they made a pre-briefed right jinx off the target with a left turn to depart northwest up Thud Ridge.

7. SITUATION DEVELOPMENT

The MIGs had continued on course as BLUE Lead turned from a westerly heading to a northern or northeasterly heading to start a diving attack on the number two MIG in the second flight of MIGs. This MIG started a right turn while the rest of the MIGs continued on course. BLUE Lead closed with an estimated 150 to 200 kt overtake, opening fire at 1500 feet and stopped firing at approximately 200 feet as the MIG made a hard break to the right. BLUE Lead lost sight of this MIG as he went over the top of him in a slight right bank climbing in afterburner keeping his airspeed up. As he looked back and down for the first MIG, he saw two other MIGs in fighting wing formation at 4 o'clock, 1800 ft range, beginning to pull lead on him. There were two other MIGs further back, straggling behind with about 1/2 mile separation between them. BLUE Lead tightened his right turn slightly, dropped his nose and used hard right rudder to cause the two threatening MIGs to overshoot to the outside of the turn crossing about 3-500 feet above him. BLUE Lead relaxed rudder, shoved the nose down and reversed into a gentle turn to the left back over the target noting that these MIGs were no longer a threat as they were going away from him at his 2 o'clock position in a right bank. BLUE Lead saw numerous MIG-17s as he continued this turn, but all were too well protected to attack. Although the details from this point to the next encounter are somewhat hazy, BLUE Lead was threatened by two additional MIGs somewhere in this turn. As he maneuvered for separation in a dive at about 7000 feet over the target, he spotted a single MIG-17 about 2000 feet below him coming head on about one mile away, flying straight and level. As BLUE Lead turned in and continued his dive toward the MIG's 10 o'clock position, the MIG started a climbing turn into BLUE Lead. BLUE Lead opened fire at about 1500 feet with 20mm shells impacting from low on the left side of the MIG's nose up across the cockpit and to the tail when BLUE Lead stopped firing and pulled up over him. Although the MIG was firing at BLUE Lead, he was ineffective since BLUE Lead was approaching the MIG from his 11 o'clock to 11:30 o'clock position for this pass. Looking back from a right climbing turn, BLUE Lead saw the MIG in a gentle descending turn with pieces coming off the aircraft. He also saw "little flashes" going past his canopy and diverted his attention to three MIG-17s at 4:30 to 5 o'clock, two of them within 200 feet in a "nice wing" formation. As BLUE Lead tightened his turn, the MIGs, both firing, slid toward 6 o'clock with the wingman crossing to his leader's left side. BLUE Lead continued in a slight diving turn using alternate left and right rudder to spoil the MIGs' aim. After three or four jinks, he realized he was pulling away from the MIGs and rolled level and dived to tree-top altitude as the last cannon balls passed high above his canopy. As he crossed the Red River outrunning the MIGs at 1.15 Mach on the deck, he turned southwesterly to egress the area

When BLUE 3 had realized that BLUE Lead was engaged with MIGs, he reversed turn toward the target area. (BLUE 2 and 4 made a confused high speed departure northwest up Thud Ridge with BLUE 4 attempting to join on BLUE 2 who was trying to outrun BLUE 4 as a suspected MIG.) As BLUE 3 turned through a southern heading at an estimated 9000 ft AGL, he saw a flight of four MIG-17s about 2000 to 3000 feet below him in a tight orbit over the target. He also saw another flight of two unidentified MIGs going away from him at 3 o'clock co-altitude, in a slight descent. The four-ship flight split into two elements and BLUE 3 lost sight of one element as he tried to drop down in trail on the other element. However, BLUE 3 did not maneuver into firing range since he could not match their turn. He broke off this attempt to engage these MIGs when BLUE Lead advised that he was disengaging and departing the target area. The MIGs did not attempt to engage BLUE 3 as he departed northwest up Thud Ridge without further incident.

8. ORDNANCE

(No. fired/No. hits)

| | Cannon | Remarks |
|---|---|---|
| BLUE 1 | 2/1 | No hits observed during the first firing attack on the #2 MIG in the second flight of the four-flight formation. |
| | | Estimated 15 to 25 hits (probably kill) on the second MIG attacked head-on over target. |
| 1st MIG Attack (Single MIG) | 1/0 | MIG hit by BLUE 1 on head-on pass. |
| 2nd MIG Attack (2 or 3 MIGs) | 1/0 Each | |

9. EQUIPMENT PROBLEMS

BLUE 1 -- gunsight would not operate properly. The reticle sight picture would disappear when the "action reject" button was actuated for radar lock-on.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 4000 | 800 | 55 | Extensive air-to-air gunnery training and ACM. |
| BLUE 3 | 3000 | 250 | 28 | Mostly ADC, F-102 time. |

Comments on This Encounter

BLUE 1: "I was quite confident of my airplane, my equipment, and myself, frankly, . . . . The frame of mind that I was in was that if I ever got the chance, I was definitely going to have a MIG . . . . I just flat wanted to mix it up with a MIG."

Commenting on the F-105, BLUE 1 would like better maneuverability, more acceleration, more time in afterburner, better visibility, digital rather than analog gunsight readouts, a simpler switching system going from ground attack to air-to-air mode, and a better radar lock-on and performance capability.

BLUE 3: Cockpit set up is completely inadequate. Too many manual operations required to change attack modes. The dual role concept compromises the capabilities for both missions. You can't aggressively pursue a target while looking into the cockpit or worrying about getting the right switch settings.

Need a missile with a bigger firing envelope.

11. DATA SOURCES

Project Interviews: BLUE 1 (5 Feb 67) and 3 (3 Feb 67)
Messages:

041505Z Dec 66, SECRET, 7AF 29772 Dec 66.
040942B Dec 66, SECRET, 7AF, DOCO 29754 Dec 66.
040920Z Dec 66, SECRET, 7AF, DOCO 29752 Dec 66.

12. NARRATIVE DESCRIPTION

BLUE Flight descended from cruise altitude as they crossed the Red River inbound toward the northern edge of Thud Ridge for a strike on JCS 51.10, a POL storage area near Phuc Yen airfield. The flight proceeded down the western side of Thud Ridge toward the target on a southeastern heading at 7000 ft AGL.

The flight popped up from 7000 ft AGL to 12,000 ft AGL "fanning out" to gain spacing for a left roll in to dive bomb the target on a northeastern heading. (In the pop-up, BLUE 4 slid inside of BLUE 3, which delayed BLUE 3's roll in and eventually resulted in BLUE 4 coming off of the target ahead of BLUE 3. As BLUE Lead was rolling over the top of the pop-up with his nose coming down (40°) starting the dive bomb run, he sighted four flights of four silver MIG-17s coming from his right heading northwest at about 7000 ft AGL. (The MIGs were in trail with approximately 1/2-mile spacing between elements and 1-1/2-mile spacing between flights. The nearest flight was at BLUE Lead's 9 o'clock low position, approximately 1/4 to 1/2 mile out.) BLUE Lead continued his bomb run advising the flight that there were "MIGs under us and AA fire around us." (It was later determined at debriefing that the other flight members, who had not seen the airborne MIGs, thought BLUE Lead was referring to the MIGs that could be seen taxiing for takeoff at Phuc Yen airfield during the pop-up.) As BLUE Lead pulled off of the target in a left 1-1/2 to 2 g's climbing turn at 600 KCAS, he selected afterburner and jettisoned all of his external stores except his QRC-160 pod and selected "guns air" and "radar search and attack". (BLUE Lead had a full internal fuel load at this time.) BLUE Lead continued the left climb to about 12,000 ft AGL on a westerly heading when he again spotted the MIGs at his 9:30 to 1:00 o'clock low position, 3-mile range, 7000 ft AGL and still continuing northwest in level formation at an estimated 450 kt. (BLUE Lead believed the MIGs had not seen BLUE Flight and were apparently under GCI control being vectored to intercept the rest of the inbound strike force.)

Meanwhile, BLUE 2, 3, and 4, unaware that BLUE Lead had broken left in pursuit of the MIGs, continued with the prebriefed right break off of the target and a left turn to depart northwest up Thud Ridge. BLUE 2 was in the lead with BLUE 4 attempting to join with him, having assumed that BLUE 2 was BLUE 3. BLUE 3 was actually back off of BLUE 4's right wing and had both BLUE 2 and BLUE 4 in sight.

BLUE Lead continued to close on the MIGs at 600 KCAS and apparently crossed high above the MIGs since he made a diving turn from "a westerly heading" to attack the number two MIG in the second flight "from the southwest." BLUE Lead estimated that he started the attack from the MIGs' 7:30 to 8:00 o'clock position, high, 5000 feet behind with 150 to 200 kt overtake. The MIG apparently saw BLUE Lead and started a right turn while the

remainder of the MIGs continued straight ahead. BLUE Lead was trying to get a radar lock-on; however, every time he would hit "action reject" the reticle would disappear. As BLUE Lead closed in a right turn he used an imaginary sight picture on the combining glass to track the MIG and began firing at an estimated 1500 ft range. The MIG made a hard right break after BLUE Lead began firing. BLUE Lead stopped firing at 200 ft, relaxed the 3-1/2 to 4 g's held during the attack, and passed over the top of the MIG in a slight right-banked climbing turn at 600 KCAS in afterburner. No hits were observed. As BLUE Lead looked back and down for the first MIG, he saw two other MIG-17s inside of his turn at 4 to 4:30 o'clock, "inside of 2000 ft, still outside of 1500 ft" range, beginning to pull lead on him. The wingman was flying a nice fighting wing position. A third MIG-17 was "on back out quite a ways" with a fourth MIG an additional 1/2 mile back. BLUE Lead tightened his turn slightly with aileron, dropped his nose down, and used hard right rudder which caused the two threatening MIGs to overshoot to the outside of the turn crossing 3-500 feet above BLUE Lead's canopy. BLUE Lead, now doing 500 KCAS, relaxed rudder, shoved his nose further down to gain airspeed, and reversed into a gentle left turn back towards the target area. BLUE Lead discounted any further immediate threat from these two MIGs as they continued in a right turn going away from his 2 o'clock position. BLUE Lead saw numerous MIG-17s as he continued his left turn; however, all were too well covered by other MIGs to attempt another attack. BLUE Lead was still observing heavy AA flak around him at this time.

Although the details from this point to the next encounter are somewhat hazy, BLUE Lead was threatened by two additional MIGs in this turn. (NOTE: possibly the third and fourth MIG from the previous encounter.) However, he was able to maneuver to keep them from reaching a firing position. As he maneuvered for separation from these MIGs in a 600 KCAS dive at about 7000 feet over the target, he spotted a single MIG-17 about 2000 feet below him, coming head on from 10:30 o'clock about one mile away, flying straight and level. As BLUE Lead turned in and continued his dive towards the MIG's 10 o'clock position, the MIG started a left climbing turn into BLUE Lead. (On the pass, BLUE Lead held down the "electrical cage" on the sight to obtain an approximate 1000 ft fixed ranging reticle which he placed ahead of the MIG and then pulled through the MIG as he was firing.) BLUE Lead opened fire at 1500 to 2000 ft range and continued firing until the "bullets were obviously going behind him." BLUE Lead observed 15 to 25 20mm shells impacting about a foot and a half apart starting low on the left side of the MIG's nose and continuing up across the cockpit and through the tail. The MIG was firing at BLUE Lead from 3 guns on the bottom of the aircraft; however, the MIG's fire was ineffective since the BLUE Lead was approaching from the MIG's 11:00 to 11:30 o'clock position on the pass. BLUE Lead pulled up over the MIG to look back from his right climbing turn and observe the MIG in a gentle descending turn with pieces coming off of the aircraft. He also saw "little flashes" going past his canopy and diverted his attention to three MIG-17s at 4:30 to 5:00 o'clock, two of them within 2000 ft and another further back. Again, the wingman was flying a "nice formation". BLUE Lead could see islands in the MIG intakes and fences on the wings. He could see the guns flashing and could hear and see the "little white" cannon balls going past the cockpit. As BLUE Lead tightened his right turn, the MIGs, both firing, slid toward 6 o'clock with the wingman crossing to his leader's left side. BLUE Lead continued in a slight diving turn using alternate left and right rudder to spoil the MIG's aim. After 3 or 4 jinks, he no longer could see the MIG intakes and realized that he was pulling away from the MIGs in his afterburner dive. (BLUE Lead was indicating 630 to 640 KCAS at about 3000 ft AGL.) BLUE Lead rolled level and dived to treetop altitude as the last observed cannon balls passed high above his canopy. As he crossed the Red River outrunning the MIGs at 1.15 Mach on the deck, he turned southwesterly to egress the area. (BLUE Lead had 6000 lb fuel remaining as he crossed the Red River.)

When BLUE 3 had realized that BLUE Lead was engaged with MIGs in the target area, he called the flight for a right turn and immediately reversed direction toward the target area. It is not clear whether or not BLUE 2 and 4 heard this call; however, BLUE 2 and 4 did continue on a high speed egress to the north out of the area with BLUE 4 attempting to join on BLUE 2 who was trying to outrun BLUE 4 as a suspected attacking MIG. (BLUE 2 and 4 discovered each other's identity after 4 or 5 minutes; however, they had expended so much fuel that they reached the refueling tanker with only 600 lb and 800 lb of fuel, respectively.) As BLUE 3 turned right through a southerly heading at an estimated 9000 ft AGL, he saw a flight of four MIG-17s at his 10:00 - 11:00 o'clock position, 2-3000 feet below him in a tight left orbit over the target at 2000 ft horizontal range. He also saw another flight of two unidentified MIGs going away from him at 3:00 o'clock, co-altitude, in a slight descent. (BLUE 3 was at 400 KCAS accelerating in full military power with his nose down. BLUE 3 carried a centerline MER, two 450-gallon external fuel tanks, a QRC-160 pod on his right wing. He had about 7000 lb of fuel remaining.) BLUE 3 asked BLUE lead's position and found out he was now approaching the Black River on the deck for a southwest egress from the area. The four-ship MIG flight split with "number 3 and 4 breaking right and away from 1 and 2 at high speed." BLUE 3 lost sight of the second element as he entered a 4 to 5 g descending turn from 9000 ft AGL to 6000 ft AGL trying to drop into a trail position on the lead element. At this point BLUE Lead called, "Hey BLUE Flight, let's get out of here!" Since BLUE 3 saw that he could not match the MIGs turn or have enough overtake to maneuver into firing range, he broke it off and egressed northwest up Thud Ridge and out of the area. The MIGs did not attempt to engage BLUE 3 during this time; however, there was a considerable amount of AA flak seen, some bursting behind the MIGs.

Event II-85

Aircraft Involved: Four F-105s vs two MIG-17s and two MIG-21s

Result: No damage

Vicinity of Encounter: 21 14'N/105 51'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 December 1966/1645H

BLUE Flight (four F-105s) was one of five flights fragged to attack JCS 51.10, a petroleum storage area northeast of Phuc Yen Airfield. Events II-83 and II-84 describe the MIG encounters for other flights in this same strike force.

2. MISSION ROUTE

Not given. See Events II-83 and II-84 for route flown by other flights in this same strike force.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4

6 - 750-lb GP bombs
1 - QRC-160 (ECM pod)
1 - 20mm cannon

MIG-17 (1, 2)

Gray color, used afterburner, fired 23mm cannon.

MIG-21 (1, 2)

AAMs (Type unknown)

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Not given. See Events II-83 and II-84. (F-105s were in pop-up for dive bomb attack on JCS 51.10.)

5. INITIAL DETECTION

As BLUE 2 was following lead in the pop-up, he sighted two MIG-17s at 12 o'clock, 7 n mi range, approximately 4000 ft, turning through north from east, closing on BLUE Lead.

6. ACTION INITIATED

One MIG-17 maneuvered into a position 500 to 1000 feet behind BLUE Lead, which also placed this MIG at 9 o'clock to BLUE 2. BLUE 4 jettisoned his bombs and external stores and turned in to attack this MIG causing him to break off from BLUE Lead's tail position.

7. SITUATION DEVELOPMENT

BLUE 4 closed on this MIG-17 and fired 440 rounds of 20mm cannon at a range of 800 to 1000 ft with no apparent hits. This MIG broke and was not seen again. The second MIG-17 maneuvered from BLUE 4's 9 o'clock position into a position "very close to his tail" and made an unsuccessful 23mm cannon firing pass on BLUE 4. BLUE 4 dove and jinked away from the MIG who disengaged and was not seen again. The MIG-17s were observed using afterburner during this encounter.

Meanwhile, two MIG-21s slid in behind BLUE Lead and BLUE 2. As the MIG-21 behind BLUE Lead passed BLUE 2's 9 o'clock position, BLUE 2 saw the apparent flash of an AAM launch at BLUE Lead; however, BLUE 2 did not see a missile in flight. BLUE 2 jettisoned his ordnance armed and turned into the MIG-21 on BLUE Lead's tail. The MIGs disengaged and were not seen again.

BLUE 3 had seen a gray colored MIG-17 sliding from his 2 o'clock to his 5:30 or 6 o'clock position as he was going through the top of his pop-up; however, since he was rolling away from the MIG and would pick up adequate separation speed in the dive, he ignored this MIG and continued his bombing attack. [NOTE: No further account was given of this MIG-17 which could have disengaged or perhaps been one of the MIG-17s that were engaged by BLUE 4.] BLUE Lead and BLUE 3 successfully delivered ordnance on the target although BLUE 3 was hit by ground fire during this attack.

8. ORDNANCE

(No. fired/No. hits)

| | Cannon | Soviet AAM | Remarks |
|---|---|---|---|
| BLUE 4 | 1/0 | | 440 rounds 20mm |
| MIG-17 | 1/0 | | |
| MIG-21 | | 1/0 | Probable firing |

## 9. EQUIPMENT PROBLEMS

BLUE 3 was hit in the wheel well and doppler navigation by ground fire. He lost his P-1 and utility hydraulic systems, radio communications, DC electrical power and fuel transfer system. (Although he had a fire and a cut control cable in the wheel well, he made a successful emergency landing at Udorn Airbase, Thailand.)

## 10. AIRCREW COMMENTS

Experience

Unknown

Comments

BLUE 3: Aside from the inherent performance limitations of the F-105, inadequate aircrew training and the complicated switch-setting problems are the major reasons why "people weren't going to do well in air-to-air" combat in the F-105. The five flights in ACM at RTU (Replacement Training Unit) at McConnell are not adequate and because of fuel and mission limitations additional ACM training cannot be accomplished in SEA. Many of our losses can be traced to losses in flight integrity which can be directly related to lack of training. The design of a multi-mission aircraft should also include a consideration of the limitations in capability to train a human to do all of the different demanding types of mission and do them well.

## 11. DATA SOURCES

Project Interviews: BLUE 3 (17 Mar 1967)

Messages: 042239Z Dec 66 DOCO 29795 Dec 66
050253Z Dec 66 DOCO 29804 Dec 66
042242Z Dec 66 DOCO 29792 Dec 66

## 12. NARRATIVE DESCRIPTION

All available data have been included in Items 1-10; therefore, no narrative description will be provied for this event.

Event II-86

Aircraft Involved: Four F-105Ds vs four MIG-17s

Results: Sighting only

Vicinity of Encounter: 21°11'N/105°53'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 December 1966/1706H

BLUE Flight (four F-105Ds) was on a strike mission against JCS 19.00, a railroad yard 2-1/2 n mi north of Hanoi. The strike force consisted of 40 F-105s. The first wave of fighters assigned to strike this target (16 aircraft), aborted the mission due to weather in the target area.[1] BLUE Flight was one of the flights in the second wave of fighters assigned to hit the target. BLUE Flight sighted two MIG-17s as it approached the target, two unidentified MIGs orbiting over Phuc Yen airfield, and two MIG-17s orbiting over the target. BLUE Flight did not engage the MIGs, however.

2. MISSION ROUTE

Korat, Thailand, directly to the Red Anchor extended, directly to the Red River, directly to Thud Ridge, directly to the target. Return route reversed.

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE Flight

4 - CBU-24"
2 - 450 gal wingtanks
2 - QRC-160 ECM pods
1029 rounds 20mm ammo
All aircraft camouflaged

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: From over the Red River, to the north and down Thud Ridge, scattered to clear. Just off the end of Thud Ridge, 10,000 feet overcast with five n mi visibility in haze.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 10,000 ft |
| Heading: | 130° |
| Speed: | 540 KTAS |

Flight Formation:

Modified Fluid-Four. The wingmen in to 1,000 to 1,500 ft to provide a better ECM coverage. The element on the left at this time.

5. INITIAL DETECTION

While inbound to the target just off the end of Thud Ridge, BLUE 1 sighted two MIG-17s at 1 o'clock low in a left turn, 5 to 8,000 ft altitude and 2 n mi range.

6. ACTION INITIATED

The MIGs did not pose a threat at this time. BLUE Flight continued on to the target.

7. SITUATION DEVELOPMENT

BLUE Flight continued on and bombed their designated target. The flight egressed the target area at high speed (supersonic) at an altitude of 6 to 8,000 ft on a southwest heading. The flight did not engage the MIGs.

8. ORDNANCE

BLUE Flight 12 - CBU-24s on target, 20mm expended

MIG-17 - Not observed to expend - silver in color

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105D Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 2 | 3300 | 450 | 11 | Pilot background primarily TAC, F-86, F-100 and F-105. |
| BLUE 4 | 2900 | 150 | | Pilot background primarily ADC, F-86 and 102. |

[1]The first wave hit the alternate target, JCS 51.10 (see II-83 to II-85).

Too many switch changes are required to change from the ground attack to the air attack mode. The pilot must take his eyes off the target and look in the cockpit to make the proper switch settings.

The QRC-160 pod adds considerable drag at high speeds. Recommend internally mounted ECM equipment.

An improved bombing system designed to reduce exposure time to flak and SAMs would be desirable.

## 11. DATA SOURCES

Project Interviews: BLUE 2, 4 Dec 66, and BLUE 4, 17 Feb 67
Messages, Reports: 7AF 0422502 Dec 66

## 12. NARRATIVE DESCRIPTION

As BLUE Flight departed Thud Ridge on a heading of 130° at 10 to 11,000 ft altitude and 540 knots, BLUE 1 sighted a flight of two MIG-17s at 1 o'clock low (5 to 8,000 ft) in a left turn 2 n mi out. The MIGs continued in a left turn and BLUE Flight continued on to the target. The MIGs passed BLUE Flight's 9 o'clock position heading northwest and were not seen again. As BLUE Flight rolled in on the target, heading southwest, two unidentified MIGs were seen orbiting Phuc Yen airfield and two more MIG-17s were seen orbiting the target area at approximately 6,000 ft. BLUE Flight, after completing its bomb run, egressed the area on a southwest heading at high speed (supersonic in afterburner). There was no attempt to engage the MIGs and they were not seen again as the flight egressed the area.

[redacted]

Event II-87

Aircraft Involved: Four F-105s vs four MIG-17s
Result: One MIG-17 destroyed
Vicinity of Encounter: 21°11'N/105°54'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 December 1966/1705H

BLUE flight (four F-105Ds) was on a strike mission against JCS 19.00, a railroad yard 2-1/2 n mi north of Hanoi. The strike force consisted of 40 F-105s. The first wave of fighters in on the target (16 aircraft) aborted the mission due to weather in the target[1] area. BLUE flight was one of the flights in the second wave of fighters assigned to strike this target. The flak in the target area was extremely heavy. As the flight came off its bomb run, it was jumped by four MIG-17s.

## 2. MISSION ROUTE

Korat, Thailand, direct to Red Anchor extended, direct to the Red River, direct to Thud Ridge, and direct to the target. Return route reverse.

## 3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4

6 - 750 lb bombs
2 - QRC-160 pods
2 - 450-gal. wing tanks
1 - 20mm cannon
All F-105s camouflaged.

MIG-17

23mm cannon
Silver color.

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: From over the Red River to the north and down Thud Ridge, scattered to clear. Just off the end of Thud Ridge and over the target, 10,000 ft scattered to broken with 5 n mi visibility in haze.

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 4500 ft | | | |
| Heading: | 360° | | | |
| Speed: | 550 KCAS | | | |
| Fuel State: | 8000 lbs | | | |

Flight Formation:

The flight was just coming off its bomb run and was strung out in trail. BLUE 2 was approximately 2000 ft behind BLUE 1. BLUE 3 was approximately 5000 ft behind BLUE 1 and 2. BLUE 4 was 4000 ft behind BLUE 3.

## 5. INITIAL DETECTION

While the flight was inbound to the target, MIG warnings had been received on Guard Channel from BIG EYE. As the flight rolled in on the target, 4 MIG-17s were sighted directly over the target several thousand ft below the flight.

## 6. ACTION INITIATED

BLUE flight continued with its successful bomb run. As BLUE 3 came off the target, he saw MIGs 1 and 2 at his 1 o'clock position attacking BLUE 1 and 2, who were heading northwest toward Thud Ridge. As BLUE 4 came off of his bomb run, he saw a MIG-17 (MIG 3) at his 2 o'clock position attacking BLUE 3. BLUE 1 and 2 were outside of effective gun range and were pulling away from MIGs 1 and 2. BLUE 3 started to maneuver his aircraft to the 6 o'clock position on MIGs 1 and 2. BLUE 4 attacked MIG 3 who was attacking BLUE 3. MIG 4 was maneuvering into position to attack BLUE 4.

## 7. SITUATION DEVELOPMENT

BLUE 1 and 2 continued on a northwest heading toward Thud Ridge with MIGs 1 and 2 slowly dropping farther back out of range. BLUE 3 had closed to 1500 ft behind MIG 2 and was just about ready to fire when BLUE 1 called that he was hit by ground fire. BLUE 3 then broke off his attack to assist BLUE 1. BLUE 4 fired at MIG 3 who was attacking BLUE 3. MIG 3 reversed his turn to the left, but BLUE 4 followed him and continued to track and fire until MIG 3 burst into flames. BLUE 4 then broke off and discovered that MIG 4 was behind him firing. BLUE 4 dived to the deck and evaded MIG 4 in a supersonic egress up Thud Ridge.

[1] The first wave hit the alternate target, JCS 51-10.

[redacted]

8. ORDNANCE

(No. fired/No. Hits)

| | Cannon | Remarks |
|---|---|---|
| BLUE 4 | 1/1 | 700 rounds 20mm |
| MIG 3 | 1/0 | 23mm cannon |
| MIG 4 | 1/0 | 23mm cannon |

9. EQUIPMENT PROBLEMS

BLUE 4 had a pitch mechanical advantage malfunction warning light on during his supersonic low-altitude egress.

10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 4 | 4300 | 100 | 4 | Type of fighters flown: F-86, F-86D, F-101B, F-102. Mostly ADC background. Completed the F-105 fighter course at McConnell prior to SEA. Pilot suggests a better air tactics training course. |

Comments on this Encounter:

BLUE 3 and 4 both commented on the MIG orbit over the target area. It was felt that the MIGs were orbiting in a corridor that had been coordinated with the antiaircraft flak sites. The flak was extremely intense and yet the MIGs were able to operate right underneath without apparent danger.

BLUE 3 came off the target and changed his switch settings from ground to missiles air when he saw the MIGs. He indicated that he was able to accomplish this change before he broke off the engagement; however, it did present a problem. This switch setting only provides for an electrically caged sight for gun firing. He did not attempt to set up the guns air and radar sight mode which is the designed means of firing the gun air to air, because it is too complicated a procedure and the radar is not reliable that close to the ground.

BLUE 4, being the last in the flight off the target, did not have time to make switch changes in the cockpit. He did not change his sight setting from the manual bombing mode, consequently he had 122 mils depression in his sight as he attacked the MIG. BLUE 4 simply pointed his aircraft at the MIG and started shooting. BLUE 4 recommends a simple switch arrangement for changing from ground to air attack, that would not require the pilot to look in the cockpit to make switch changes. He also recommends a low drag AA missile, a better turning capability, and an improvement in the rear visibility. The F-105 requires excessive aircraft maneuvering to clear back at 6 o'clock. The QRC-160 is an effective ECM item but the warning or monitor lights are on the right console and cannot be seen unless the pilot looks down over his right shoulder. The monitor and reset button should be up front so it can be seen with a glance and you don't have to look in the cockpit. The QRC-160 is a rather high drag piece of equipment when operating supersonic at low altitudes, not to mention the limitations of the equipment. He recommends that this type of equipment be mounted internally. BLUE 4 also stated that the F-105 radar is inadequate for rapid target acquisition or air-to-air use close to the ground.

11. DATA SOURCES

Project Interviews: BLUE 3, 15 February 1967
BLUE 4, 16 February 1967

Messages, Reports: OPREP-4 041445Z, December 1966, from 7AF DOCO 29770
DAI 042250Z, December 1966, DIO 30926

12. NARRATIVE DESCRIPTION

BLUE flight encountered heavy AA fire as they approached the target at 10,000 ft AGL just below a cloud layer. Rather than fly through the heavy 85-100mm flak that enshrouded BLUE 1 and 2 on roll-in, BLUE 3 and 4 pulled up and over the flak going into the clouds as they entered their left roll-in to bomb the target on a south to north heading. (As a result, when BLUE 3 came out of the clouds, he was 4-5000 ft behind BLUE 1 and 2 in the dive bomb run. BLUE 4 had lost sight of the flight, but was about another 4000 ft behind BLUE 3.)

As BLUE lead rolled in he called out, "MIGs over the target", having sighted a flight of four MIG-17s over the target in two-ship elements with 3-4000 ft spacing between elements. BLUE 3 looked down as he started his roll-in and saw two MIGs going from south to north one or two miles northeast of the target at an estimated 3-4000 ft AGL. As BLUE 4

popped out of the clouds in a dive, he spotted two MIG-17s crossing low over the rail yard flying in a route formation. BLUE 3 and 4 both lost sight of the MIGs while concentrating on the bomb runs.

BLUE 1 and 2 came off the target together heading north towards Thud Ridge. As BLUE 3 jinked left, then right, off the target at 4000 ft, 550-600 KCAS, looking for BLUE 1 and 2, he spotted them about 5000 ft directly ahead. He also saw two MIG-17s about 2000 ft slant range to his right at 1 o'clock, 500 ft low, pressing an attack on BLUE 1 and 2. He estimated the MIGs to be about 3000 ft range, 5 o'clock low behind BLUE 1 and 2 in a fighting wing formation, 200 ft apart. Since BLUE 1 and 2 were beyond the MIGs' effective gun range and were doing an estimated 600 kts and accelerating, BLUE 3 did not consider these slower MIG-17s to be a serious gun threat to the lead element. BLUE 3, with both an altitude and airspeed advantage, went AB to initiate a gun attack on the MIGs from 2000 ft back at their 7 o'clock position. BLUE 3 selected missiles air and radar search and attack, which provided him with a 1500 ft fixed range "g" only computing gun sight. BLUE 3 was maneuvering into firing range just as BLUE 1 called that he had been hit by ground fire. (BLUE 1 had taken two 37mm hits, one in his wing and one in his horizontal stabilizer.) BLUE 3 immediately broke off of the attack and zoomed up and to the left passing the MIGs to join and escort BLUE lead out of the area. (BLUE 3 passed the MIGs 3000 ft high about 4000 ft off their port side with an estimated 100 kts overtake. These MIGs did not attempt to engage BLUE 3.)

The sequence of events must regress slightly to time phase BLUE 4's encounter with a MIG-17 (MIG 3) that, unknown to BLUE 3, was firing at BLUE 3 while he was maneuvering against the two MIGs as described above.

While BLUE 4 was in his bomb run, heading north, he had glanced to the left and seen an aircraft obscured in the sun at 9 o'clock, which he assumed to be BLUE 3. BLUE 4 continued his bomb run and jinked left after bomb release firing a burst of approximately 100 rounds at a warehouse in his pullout. As he jinked back to the right, he again saw the aircraft he had previously seen in the bomb run. When BLUE 4 took a better look, he recognized the high tailed, silver aircraft to be a MIG-17 rather than BLUE 3. This MIG-17 (MIG 3) was at BLUE 4's 11 o'clock position at 3-4000 ft in a right turn. BLUE 4 then noticed that the MIG was tracking BLUE 3 and firing his cannons; however, BLUE 4 felt the MIG was too far behind BLUE 3 for his cannon fire to be effective. (At this time, BLUE 4 estimated that he was at 5-7000 ft AGL at 600 KCAS.) BLUE 4 established a cut off lead angle on the MIG and began firing a continuous burst of approximately 670 rounds of 20mm cannon. Since BLUE 4 was still in ground guns with a 122 mil conventional bomb setting, he simply established a join up type cut off holding an "eyeball estimate" for azimuth and moving the nose up and down (kicking rudders) to bracket the MIG in elevation. BLUE 4 continued firing as he followed the MIG through a 3-4 g turn to the left that was initiated by the MIG as soon as BLUE 4 started firing. BLUE 4 broke off the attack at 6-700 ft range at an estimated 4000 ft AGL, heading south (6-7000 lbs fuel remaining). BLUE 4 observed flames and smoke coming out of the MIG's (MIG 3) wing roots. (Camera film assessment indicates that BLUE 4 began hitting the MIG at 1500 ft range while pulling 110 mils lead. The MIG took hits "for about 12 frames which should be about 37 rounds" of 20mm cannon fire.) At this time BLUE 4 glanced back and saw another MIG-17 (MIG 4) at his 6 o'clock position, 1000-1500 ft range. Although this MIG was not pulling lead, he was firing at BLUE 4 "from the top and bottom of his snoot." BLUE 4 jettisoned his external fuel tanks and MER, rolled inverted and dived for the deck. BLUE 4 leveled out at 50 ft AGL in excess of 600 KCAS in a left turn going south. BLUE 4 reversed turn and made a jinking supersonic egress north on a heading of 345°. He did not see MIG 4 again after diving for the deck. BLUE 4 joined his flight at the north end of Thud Ridge and they egressed from the area without further incident. BLUE 4 thinks that MIG 4 may have collided with his (BLUE 4's) fuel tanks.

[redacted]

Event II-88

Aircraft Involved: Four F-105s vs nine MIG-17s
Results: No Damage
Vicinity of Encounter: 21°43'N/105°29'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 December 1966/1715H

BLUE Flight was part of a 48 aircraft strike force assigned to strike JCS target, 19.00, a railroad yard, 2-1/2 n mi north of Hanoi. The flight was inbound to target in a modified Fluid-Four formation at the time MIGs were sighted.

2. MISSION ROUTE

Korat, direct to Red Anchor extended, direct to North Station (TACAN Channel 97), direct to the Red River, direct to Thud Ridge, direct to the target. Return route reversed.

3. AIRCRAFT CONFIGURATION

F-105 BLUE 1, 2, 3, 4

6 - 750-lb bombs
2 - 450-gallon wing tanks
1 - QRC-160 ECM pod
1 - 20mm cannon
All aircraft camouflaged

MIG-17

Configuration unknown
Silver color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered to clear. Good visibility at flight level.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 15,000 ft |
| Heading: | 090° |
| Speed: | 540 KTAS |
| Fuel State: | 9,000 lb |

Flight Formation:

Modified Fluid-Four with the element on the left wingman 1500 ft out and slightly back.

5. INITIAL DETECTION

MIG warnings had been received by the flight from BIG EYE while inbound to the target.

BLUE Flight, on a heading of 090° at the north end of Thud Ridge, sighted a flight of four MIG-17s at 5 o'clock, approximately 8 n mi south. BLUE Flight turned on a heading of 140° down Thud Ridge and when the MIGs were line abreast on a reciprocal heading they made a right turn into the flight. The MIGs were low at approximately 13,000 ft altitude, 3 to 4 n mi out.

6. ACTION INITIATED

BLUE Flight continued on to the target.

7. SITUATION DEVELOPMENT

BLUE Flight continued on to the target and the MIGs broke off to the left without an engagement. As BLUE Flight was going down Thud Ridge, they sighted another flight of four MIGs at 9 o'clock, 9-10 n mi out. Again no attempt was made to engage by either side. BLUE Flight continued on to attack the target. As BLUE Flight was coming off of the target, a single MIG-17 was spotted at 7-8 o'clock low, 3 n mi out. No attempt was made to engage. BLUE Flight egressed the area.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 3100 | 1000 | 55 | Pilot background considerable TAC experience in F-84G and F, F-101A/C and F-105. He did not attend a CCTS and had limited air-to-air experience. |
| BLUE 2 & 3 | Not interviewed | | | |
| BLUE 4 | 2500 | 150 | 20 | |

[redacted]



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[redacted]



Comments on this Encounter

BLUE 1: The F-105 mission is to deliver bombs on the target and not to engage MIGs. For this mission, the F-105 is adequate in that it is a good weapons delivery aircraft and it can outrun any of the present aircraft in use in North Vietnam. The acceleration and turning capability of the F-105 limits its use as a fighter. Fuel is always a problem. You are either too heavy with fuel to be maneuverable or too short on fuel at fighting weight to make it back home safely. There are too many switches involved going from ground to air attack mode and the pilot has to look in the cockpit to make the changes.

BLUE 4: The switchology problem and the cockpit visibility problem in the F-105 are not good for day fighters using guns.

## 11. DATA SOURCES

Project Interviews: BLUE 1 and BLUE 4 - 15 Feb 1967.
Messages, Reports:

7AF OPREP-4 DOCO 29774 041526Z Dec 1966
7AF DAI DIO 30926 042250Z Dec 1966

## 12. NARRATIVE DESCRIPTION

BLUE Flight, on a heading of 090° (15,000 ft AGL, 540 KTAS) at the north end of Thud Ridge, sighted a flight of four MIG-17s at 5 o'clock, approximately 8 n mi south. BLUE Flight turned down Thud Ridge on a heading of approximately 140° and started a descent because of clouds ahead. The MIGs made a right turn into the flight when they passed abreast of BLUE Flight on a reciprocal heading; however, BLUE Flight continued on to the target and the MIGs broke off to the left on a heading of 320°. The MIGs were low at approximately 13,000 ft AGL, 3 to 4 n mi out.

As BLUE Flight continued inbound to the target on a heading of 130°-140° down Thud Ridge, they sighted another flight of MIG-17s at 9 o'clock, 10 to 13,000 ft, passing 6 to 10 n mi to their left on a 320° reciprocal heading. Neither flight deviated from their course to attempt an engagement.

As BLUE Flight came off of the target heading 320° at 8 to 11,000 ft AGL, 550 to 600 KCAS, they sighted a single MIG-17 at 7-8 o'clock, slightly low, range 3 n mi, on a heading of 350°. BLUE Flight speedily out-distanced the MIG and contact was lost. BLUE Flight also sighted a flight of two MIG-21s at this time that were heading 280° preparing to land at Phuc Yen airfield.

At 1734H, when BLUE Flight was on an egress heading of 210° at 30,000 ft AGL (coordinates 21°10'N/104°15'E), they sighted an unidentified flight of four aircraft, assumed to be MIGs, who took up a position some distance behind the flight at 8 o'clock, altitude 37,000 ft AGL. This flight made a 180° departure to the left at 20°00'N/103°30'E at 1754H without any further action.

[redacted]

[redacted]

Event II-89

Aircraft Involved: Four F-105s vs two MIG-21s

Result: Sighting only

Vicinity of Encounter: 21°57'N/105°18'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 December 1966/1713H

BLUE Flight (four F-105s) was on a strike mission against JCS 19, a railroad yard 2-1/2 n mi north of Hanoi. BLUE Flight sighted two MIG-21s 40 to 50 miles northwest of the target.

II. DATA SOURCES

Messages, Reports:

7AF, 041404Z, December 66, DOCO 29767

12. NARRATIVE DESCRIPTION

BLUE Flight sighted two MIG-21s at 21°87'N/105°16'E at a range of approximately 5000 ft heading northwest.[1] No additional information is available.

[1] EDITOR'S NOTE: The route of flight for other strike aircraft against JCS 19 indicates this should be 21°57'N or 21°47'N.

[redacted]

[redacted]

Event II-90

Aircraft Involved: Four F-105Ds vs two MIG-21s

Results: No damage

Vicinity of Encounter: 21°25'N/105°35'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 December 1966/1012H

Four F-105s (BLUE Flight) returning from weather reconnaissance on JCS 19.00. GREEN Flight (Ref Event II-91), IRON HAND support, was approximately 9 mi NE flying generally the same heading and observed MIGs near BLUE Flight. There was no MIGCAP on this mission.

2. MISSION ROUTE

Aircraft were from TAKHLI

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: The weather was pretty good in the area of the encounter but was poor in the target area as the strike had been called off.

Altitude: 2500 AGL
Heading: 328°
Speed: 450 mi
Fuel State: Unknown
Flight Formation: Unknown

5. INITIAL DETECTION

BLUE 4 Observed two MIG-21s at 7 o'clock, one - two miles behind flight.

6. ACTION INITIATED

Engaged afterburner BLUE 1 and 2 broke right. The element broke left.

7. SITUATION DEVELOPMENT

MIGs broke off to a northerly heading proceeding over the ridge toward GREEN flight.

11. DATA SOURCES

Project Interviews: None
Message Reports:

DAI-005 052317Z Dec 66, from 7AF
DIO 30934
7AF 051411Z Dec 66, OPREP3 DOCO 29838

12. NARRATIVE DESCRIPTION

BLUE Flight was egressing from a weather reconnaissance for JCS target 19.00, and were heading 328° at 2500 AGL in the vicinity of 21°25'N/105°35'E. BLUE 4 observed two MIG-21 aircraft at the 7 o'clock position approximately one to two miles behind the flight. The MIGs were in tactical formation. BLUE Flight selected afterburner, BLUE 1 and BLUE 2 broke right, number 3 and 4 broke left. BLUE Flight reached speed of 550 kts and observed the MIGs turn to a northerly heading proceeding over the ridge to GREEN Flight (Event II-91). No ordnance was fired by either BLUE Flight or the MIGs. Blue Flight rejoined and proceeded to Yen Bay.

[redacted]

[redacted]

Event II-91

Aircraft Involved: Four F-105s vs 4 MIG 21s
Results: No damage
Vicinity of Encounter: 21°34'N/105°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 December 1967/1015H

Four F-105s (GREEN Flight)(F-105F, 3DS) IRON HAND in route package 6A Strike Flights had aborted due to weather and all aircraft were egressing target area. They were supporting BLUE Flight (weather reconnaissance see event II-90) who was paralleling their flight path on the southwest side of Thud Ridge. All aircraft flying approximately 315°. There were no MIGCAP aircraft on this mission.

2. MISSION ROUTE

TAKHLI had departed JCS 51.10 and were egressing on a northwest heading from JCS 51.10

3. AIRCRAFT CONFIGURATION

F-105F BLUE 1

2 - 450 gal tanks
4 - CBU 24
2 - AGM 45A (SHRIKES)

F-105D, BLUE 2, 3, 4

2 - 450 gal tanks
6 - 500 lb bombs (MK-82)

All aircraft doppler and IFF on, all other avionics passive, camouflage paint.

F-105D GREEN 1, 2, 3, 4

not given

MIG-21 MIG 1, 2, 3, 4

not given - but at least one had AAM missiles.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Bad in target area, good in vicinity of encounter.

| | GREEN 1 2 3 4 |
|---|---|
| Altitude: | ---- 5000 ft------- |
| Heading: | ---- 317 ft------- |
| Speed: | ---- 500 n m ----- |
| Fuel State: | ---- not given ---- |
| Flight Formation: | ---- not given ---- |

5. INITIAL DETECTION

GREEN Flight was level at 4500 ft flying 317° when number 4 called a MIG had fired a missile at number 3. Prior to this, GREEN Flight had seen MIGs in the vicinity of BLUE Flight and were watching them for a possible chance to get a pass on them.

6. ACTION INITIATED

Jettisoned tanks, selected afterburner and accelerated rapidly to over 600 kt.

7. SITUATION DEVELOPMENT

MIGs were not observed after GREEN Flight accelerated.

8. ORDNANCE

(No. fired/No. hits)

| | Soviet AAM |
|---|---|
| GREEN Flight - none | |
| MIG 1 or 2 | 1/0 missed and ran into the ground |

10. AIRCREW COMMENTS

Experience

not given

[redacted]



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Comments on this Encounter

GREEN 1 does not think the MIGs were the same ones who were following BLUE Flight, but two different ones due to the timing. Thinks MIG must have fired from above and missile had picked up ground clutter. When they looked back MIGs were fairly close and above GREEN Flight. Not enough time had elapsed from the time the MIGs were last seen on the other side of the ridge for them to cross over and fire a missile.

Comments on Overall Experience

There were MIG days and SAM days.

## 11. DATA SOURCES

Project Interviews: GREEN 1 (Lead) 8 Feb 67

Messages, Reports:

| | |
|---|---|
| DAI-005 | 052317Z Dec 66, from 7AF, DIO 30934 |
| OPREP-3 | 050719Z Dec 66, from 7AF, DOCO 29821 |
| OPREP-3 | 050527Z Dec 66, from 7AF, DOC 29812 |

## 12. NARRATIVE DESCRIPTION

GREEN Flight, during their IRON HAND mission had observed MIG-21 aircraft near BLUE Flight (Event II-90) who was on the opposite side of Thud Ridge from GREEN. Two MIG-21s were seen on the opposite side and 2 MIG-21s were seen on the same side as GREEN. GREEN Flight was able to intermittently keep track of the MIGs. BLUE Flight's radio transmissions were also monitored by GREEN Flight. GREEN Flight saw MIGs cross Thud Ridge but the MIGs were far behind the flight. GREEN Flight then lost contact with the MIGs.

In a very short period of time GREEN 4 called that a MIG had fired a possible AA-2 missile at GREEN 3. GREEN 4 had seen the missile go by and hit the ground. He then detected 2 MIG-21s who were in firing position at 6 to 7,000 ft altitude, at GREEN 4's 6 o'clock high, and close range.

GREEN Flight jettisoned their 450 gallon tanks and accelerated to 650 kt at low altitude. The MIGs were lost from sight during the acceleration and not seen again.

[redacted]

Event II-92

Aircraft Involved: Three F-105Ds vs one MIG-17

Results: No damage

Vicinity of Encounter: 21°13'N/105°51'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 December 1966/1530H

Three F-105s (BLUE Flight) on a strike flight to JCS 19, turning over JCS 51.10, because of weather at JCS 19. One F-105 (BLUE 4) aborted on the tanker and returned to base, leaving three aircraft.

2. MISSION ROUTE

Not given, but BLUE Flight was from Takhli.

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 2, 3

Undetermined number of CBU 24s; QRC-160 pod

MIG-17

Silver color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Solid undercast, undetermined level.

| | BLUE 1, 2, 3 |
|---|---|
| Altitude: | 6-7,000 ft |
| Heading: | 340° |
| Speed: | 450 kt |
| Fuel State: | unknown |

Flight Formation:

POD formation, in relation to BLUE 1. BLUE 3, 1500-2000ft line abreast BLUE 2, 500-1000 ft out and almost line abreast. BLUE 3 was on the left of BLUE 1, BLUE 2 on the right.

5. INITIAL DETECTION

In a left turn, BLUE 3 observed one MIG at about 4 o'clock, very high, coming out of the north, and called this to the flight.

6. ACTION INITIATED

BLUE Flight increased the rate of turn to the left, rolled out on a heading of 270°-300°, jettisoned the external tanks, selected afterburner and accelerated.

7. SITUATION DEVELOPMENT

As BLUE Flight accelerated to approximately 600 kts the MIG started to fall behind and was not seen again.

8. ORDNANCE

None expended.

9. EQUIPMENT PROBLEMS

BLUE 2 lost UHF radio during the flight.

BLUE 4 aborted on the tanker for unknown reasons.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 2 | - - Not given - - - | | | |
| BLUE 3 | - Not given - | | 34 | Flew F-84 for 6 years; flew F-101 in TAC & ADC; came direct to SEA from F-105 school. |

Comments on this Encounter

None

Comments from Overall Experience

BLUE 2 - F-105s need better visibility to the rear, something more like the F-86. The F-105 needs a quick way to go from bombing mode to an air-to-air mode, like utilizing the

[redacted]

nose gear steering button to eliminate the bomb function of the gun sight to bring it back to an air-to-air sight.

11. DATA SOURCES

Project Interviews:

BLUE 2 - 16 Mar 67
BLUE 3 - 16 Mar 67

Messages, Reports:

OPREP-3, 051411Z Dec 66, from 7AF, DOCO 79838
DAI-005, 052317Z Dec 66, from 7AF, DIO 30934

12. NARRATIVE DESCRIPTION

BLUE Flight who had been fragged on Target JCS 19, were in a left turn at 6-7,000 ft, 450 kts after expending CBU-24s. They were turning back, because of bad weather on the target area. As they passed almost over JCS Target 51.10 turning through about 340°, BLUE 3 observed a single MIG-17 at 4 o'clock high about 2 to 3 miles away. BLUE Flight selected afterburner, broke to the left and jettisoned their 450 gal tanks but retained their remaining CBU-24. They rolled out on a heading of 270°-310° and accelerated to 600 kts. The MIG now at 6 o'clock and two miles in range was unable to close on BLUE Flight as they continued northwest to drop the ordnance on a target of opportunity. The MIG-17 although lined up on a firing pass fell behind and was not seen again.

BLUE 2 had radio failure and did not hear the MIG call; however, he saw the tanks leave BLUE 1 and he did likewise. BLUE 2 then looked over his shoulder to the right and observed a single MIG-17, starting down from two miles out and making a pass on the flight.

[redacted]

Event II-93

Aircraft Involved: Two F-105Fs, two F-105Ds vs. four MIG-21s

Result: No damage

Vicinity of Encounter: 21°25'N/105°35'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 December 1966/1630H

Four F-105s on IRON HAND mission in Route Package VI-A.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: unknown

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 7,000 ft |
| Heading: | 110° |
| Speed: | not given |
| Fuel State: | not given |

Flight Formation

not given

5. INITIAL DETECTION

Four MIG-21s observed in BLUE Flight's 2 o'clock position.

6. ACTION INITIATED

BLUE Flight selected afterburner.

7. SITUATION DEVELOPMENT

BLUE Flight out-accelerated the MIGs.

8. ORDNANCE

none expended

11. DATA SOURCES

Project Interviews: BLUE 3, 16 Mar 67

Messages, Reports:

7AF DIA-005 052317Z Dec 66 DIO 30934
7AF 0514452 Dec 66 DOCO 29843

12. NARRATIVE DESCRIPTION

At approximately 1630 Local BLUE Flight, two F-105F and two F-105D aircraft on an IRON HAND mission, observed a flight of four MIG-21 aircraft. BLUE Flight was flying at 7,000 ft, heading 110°. The MIGs were level at the same altitude, heading 290° and were seen at BLUE Flight's 2 o'clock position commencing a turn to attack from about 5,000 ft out. BLUE Flight selected afterburner and outran the MIGs.

[redacted]

[redacted]

[redacted]



Aircraft Involved: One F-105F, three F-105Ds vs two MIG-17s

Result: One F-105D lost.

Vicinity of Encounter: 21°55'N/105°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 December 1966/1652H

One F-105F and three F-105Ds on IRON HAND support in route package VI A. BLUE Flight was supporting four strike flights. Two EC-121s were orbiting in the vicinity of 20°/107° and 20°/103°. EB-66s were in the vicinity of 22°05'N/105°10'E and 22°15'N/104°40'E.

2. MISSION ROUTE

Departed Korat Air Base, Thailand, direct Green Anchor (18°11'N/101°18'E) refueling, direct 21°34'N/105°00'E, direct vicinity of 21°55'N/105°20'E, flight encountered MIG, returned to base generally the reverse route. Using Orange Anchor (18°10'N/102°10'E) Post Strike Refuel.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2

Not given

F-105D BLUE 4

2 - 450 gal, external tanks
2 - CBU-24s

F-105D BLUE 3

Ordnance not given.

Doppler and TACAN on, radar off, IFF standby, camouflage paint on all aircraft.

MIG-17 MIG 1, 2

Drop tanks on.

Paint not given.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear and 10 miles visibility.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 10,000 ft |
| Heading: | 090° |
| Speed: | 450 KTS |
| Fuel State: | Not given |

Flight Formation: BLUE 2 on left; BLUE 3 and 4 on right.

5. INITIAL DETECTION

Received MIG warnings earlier but not for this area. BLUE Flight was turning right when BLUE 3 called MIGs at BLUE 4's 6 o'clock. BLUE 3's transmission was blocked by BLUE 4 saying he was hit approximately 1651 local time.

6. ACTION INITIATED

BLUE 1 and 2 turned 180° jettisoning stores and egressed the area. BLUE 3 and 4 turned right.

7. SITUATION DEVELOPMENT

The MIGs overshot the formation and started a climbing left turn. BLUE 3 maneuvered to their 6 o'clock position but BLUE 3's gun would not fire. BLUE 4 was on fire and crashed a short time later. BLUE 3 departed the area after he saw BLUE 4 hit the ground. The MIGs pursued BLUE 3 but could not catch him.

[redacted]



[redacted]

8. ORDNANCE

| | (No. Fired/No. Hits) Cannon | Remarks |
|---|---|---|
| BLUE 1, 2, 3, 4 | 0/0 | B-3 cannon would not fire. |
| MIG 1 | 1/1 | Shot part of B-4's tail off causing aircraft to catch fire and crash. |
| MIG | 1/0 | Fired at B-3 but missed. |

9. EQUIPMENT PROBLEMS:

BLUE 3's M-61 cannon would not fire. Post flight check found gun control box to be inoperative providing no power to the gun.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1, 2, 4 | Not Interviewed | | | |
| BLUE 3 | 1300 | 900 | 50 | Gunnery school at Luke AFB in F-100S. F-105s in Europe - did some air-to-air gunnery in F-105. |

Comments on this Encounter

The first time BLUE 3 has had a gun that wouldn't fire. BLUE 3 would rather use the electrical caged sight than try to get a radar lock-on.

Comments from Overall Experience

It is not hard to fire the AIM-9 inadvertently during a bomb run because of the switchology in the F-105.

Poor turning rate and visibility of F-105.

MIG pilots not very well trained. They should shoot down more aircraft but they don't seem to take advantage of the situation. They don't seem very aggressive.

11. DATA SOURCES

Project Interviews: BLUE 3 (17 Feb 67)
Messages, Reports:

DAI-005 052317Z Dec 66, from 7AF
DIO 30934

OPREP-3 052310Z Dec 66, from 7AF
DOCO 29868

12. NARRATIVE DESCRIPTION

BLUE Flight was on an IRON HAND mission in Route Package VI A. They were making a right hand turn, heading about east. The Flight received a MIG warning at 1651H (about one minute prior to the encounter) but the MIGs were not identified with the area of BLUE Flight.

At 1652H two MIG-17s attacked from the direction of the sun, high and at BLUE Flight's 6 o'clock. The MIGs were not observed until they were close to BLUE Flight. BLUE 3 was looking back to check on BLUE 4, who was 500 to 600 feet behind and sliding around the turn, when he (BLUE 3) saw two MIG-17s, one of which was firing at BLUE 4. The closest MIG when seen, was 1000-2000 feet away with the second MIG about 1000 feet behind the first in trail. BLUE 3 called for BLUE 4 to break but his transmission was blocked by BLUE 4's communication that he was hit. BLUE 4 while hit, continued a right turn and headed SW toward the Red River.

BLUE 1 and 2 jettisoned their external stores and ordnance, and broke right and down in afterburner. After completing a 180° turn, egressed the area. BLUE 1 and 2 did not see the MIGs.

BLUE 3 saw BLUE 4 take some cannon hits. BLUE 4 started to shed a few pieces, the drag chute came out and part of his tail came off.

At this time both MIGs overshot BLUE 3 and 4 and one went into a climbing left turn in front of BLUE 3, 500 to 1000 feet away. BLUE 3 was set up for "missiles-air" sight-mode which gave fixed range computation. As the MIG passed in front BLUE 3 tracked the MIG and squeezed the trigger several times but the gun did not fire, due to an inoperative gun control box. [The practice of clearing gun after take off had been discontinued due to malfunctions after the short clearing burst]. At firing attempt the MIG was at 12 o'clock and BLUE 4 was at the MIG's 8 o'clock and both were nose up.

[redacted]



BLUE 3 continued his right turn and jettisoned stores. BLUE 3 sighted BLUE 4, who was burning from the side, and heard BLUE 4 make several calls that he had control of the airplane but was losing power. BLUE 4 crashed on a wooded hill in the vicinity of 21°35'N/105°08'E short of the Red River at 1657H. No chute was seen or beeper heard.

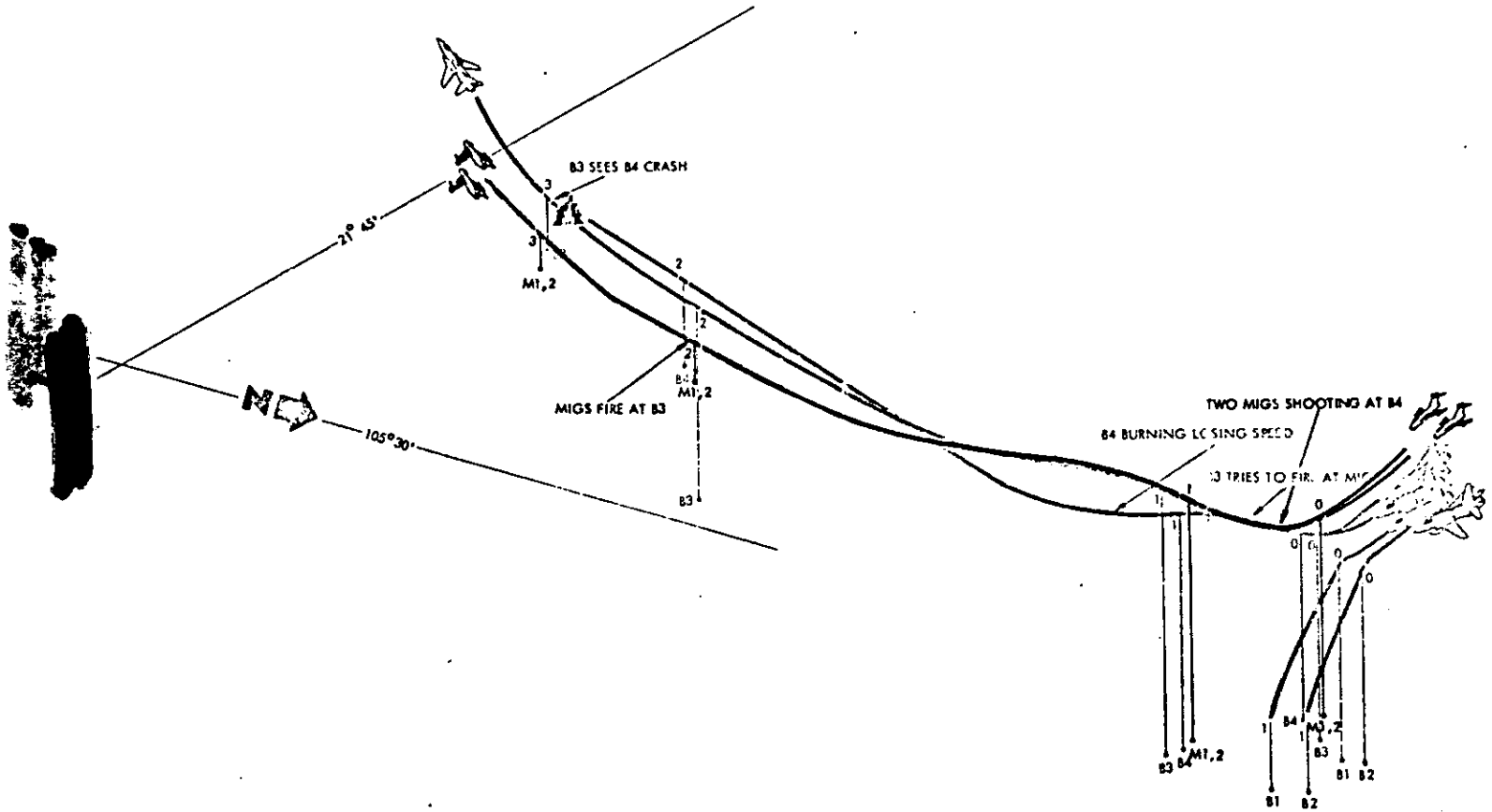
While following BLUE 4 out BLUE 3 observed in his mirror a MIG at his 7 to 7:30 position 3-4000 feet away, closing and firing at BLUE 3. BLUE 3 does not know whether this was one of the original two MIGs or not. BLUE 3 then went to afterburner and accelerated away from the MIG, losing him.

BLUE 3 passed BLUE 4 during the acceleration but observed BLUE 4 crash and later joined BLUE 1 and 2 about 30 miles south of the location of BLUE 4's crash.

[redacted]

## RED BARON EVENT II-94 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | BLUE Flight 10000 ft 450 kts B-4 2xCBU-24 B-1,2,3 no PATA | Turning right, B-2 left wing element on right wing. B-4 is hit by cannon fire from MIG-17. | | B-3 called MIG 6 o'clock; transmission was blocked by B-4 saying he was hit. | 2 MIG-17 2000 ft behind B-4 and shooting; MIG-1 2000 ft back; MIG-2 in trail 1000 ft. | MIGs apparently came in from above and behind. Were not seen until they started shooting. B-4's aircraft was coming apart. Part of the tail came off and the drag chute came out. |
| $T_1$ | BLUE Flight jettison stores; B-4 aircraft damage losing power; B-3 2g turn 400 kts. | B1 and 2 turned 180° and departed area; B-4 turned right toward Red River; B-3 maneuvered behind the MIGs, who overshot in a left climbing turn. B-3 attempted to fire on MIGs. | | B-4 made calls that he had control of the aircraft but was losing power. | MIGs overshot B-3, 4 and climbed to the left with B-3 behind them. | When the MIGs overshot the formation B-3 was 500 ft behind them. B-3 attempted to fire cannon, but it would not fire. B-1, 2 turned toward the Red River but direction of turn is unknown. They did not see the MIGs. |
| $T_2$ | Same B-3 cannon inoperative; B-4 aircraft on fire. | B-3 turned back to join B-4 who was flying toward the Red River. | B-1, 2 egressing the area. | B-4 still had control of aircraft but losing power - thinks he can make the Red River. | MIG 1, 2 turned back toward B-3, 4; they closed the distance and fired cannon at B-3. | B-3 after determining that the cannon would not fire turned back to join B-4. The MIGs turned back behind him on an attempt to fire on B-3 scoring zero hits. |
| $T_3$ | Same; B-4 crashed. | B-3 in afterburner accelerating away from MIGs. At 1.1 Mach B-3 returned B-1,2 30 mi. S. B-4 crashed into hit. | B-1,2 egressing. | | MIG 1,2 were unable to keep within cannon range area. B-3 went afterburner and broke off. | B-3 passed by B-4 and saw him crash into a wooded hill - did not see a chute or hear a beeper. |


B3 SEES B4 CRASH
21° 45'
105°30'
M1,2
MIGS FIRE AT B3
B3
TWO MIGS SHOOTING AT B4
B4 BURNING LOSING SPEED
B3 TRIES TO FIR. AT MIG
B3
B4
M1,2
B1
B2

Event II-94

[redacted]

Event II-95

Aircraft Involved: Four F-105s vs eight unidentified aircraft

Result: Sighting only

Vicinity of Encounter: 21°50'N/104°40'E/ 21°32'N/104°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 December 1966/1655, 1710H

Four F-105s (BLUE Flight) on a strike mission to JCS Target 51.10 in Route Package VI-A. They were 2nd or 3rd in a group of five flights.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 4 | 2800 | 175 | Not given | F-84G Gunner School in 1955 |

(No other figured time prior to F-105 RTU. October 1966)

Comments on this Encounter

None

Comments from over-all Experience

If MIGs are observed soon enough it is possible to continue on into the target area at a fast enough speed to keep out of firing range. If the tanks are jettisoned. The MIGs will generally break off the attack if the tanks are jettisoned as the MIG will have trouble closing above 550 kt.

11. DATA SOURCES

Project Interviews: BLUE 4 (16 February 1967)
Messages: 7AF OPREP-3 06C013F NDEC66 DCOCO 29870

12. NARRATIVE DESCRIPTION

BLUE Flight observed two unidentified aircraft while flying at 17000 ft on a heading of 025°, position 21°50'N/104°40'E. Unidentified aircraft were at 14,000 ft on a southeasterly heading and passed in front of BLUE Flight 5 n mi distant, turned south and departed. Time was 1655H. At 1710H BLUE Flight again observed two unidentified aircraft. BLUE Flight was at 21°32'/104°25', 18,000 feet altitude heading 200°. The unidentified aircraft were on a reciprocal heading at 25,000 ft and continued on course.

BLUE Flight, were about halfway down Thud Ridge, heading southeast toward JCS 51.10 at 14,000 feet. BLUE 4 saw and called MIGs to the south at 2 o'clock three to five miles away. The MIGs were heading northwest and two flights of four were seen.

[Note: In his interview, BLUE 4 only recalled the last sighting in the narrative].

[redacted]



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Event II-96

Aircraft Involved: Eight F-105s vs at least eight MIG-21s[1]

Results: No losses due to encounter (one F-105 lost, probably due to AAA)

Vicinity of Encounter: 21°33'N/105°33'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 8 December 1966/1615H

At least four flights of four F-105s each striking JCS Target 19. BLUE Flight (Strike Commander as Lead) and GREEN Flight were the only ones who reported MIG encounters.

## 2. MISSION ROUTE

Launched from Takhli, refueled inbound and outbound, approach to target was down Thud Ridge.

## 3. AIRCRAFT CONFIGURATION

F-105 BLUE 1, 2, 3, 4

5 - CBU-24s
2 - 450-gal external tanks
Camouflage paint
1 - QRC-160 pod

F-105 GREEN 1, 2, 3, 4

6 - 750-lb bombs
2 - 450-gal external tanks
1 - QRC-160 pod
Camouflage paint
Doppler on, radars standby, TACAN and IFF off.

MIG-21

Missiles (Atoll)
One MIG gray camouflage paint, all others silver

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 1500 ft overcast, visibility unknown.

| | BLUE 1 2 3 4 | GREEN 1 2 3 4 |
|---|---|---|
| Altitude: | 12,000 ft | 14,000 ft |
| Heading: | 133° | 133° |
| Speed: | 550 kt | 550 kt |
| Fuel State: | 10,000 lb | 10,000 lb |

Flight Formation:

Pod formation with element on the left in BLUE Flight, 2-3,000 ft between elements and about 1,000 ft wingman separation. GREEN Flight about two miles behind and offset to the right.

## 5. INITIAL DETECTION

Flight was inbound to the target and at least halfway down Thud Ridge. GREEN Flight called out two MIGs at 6 o'clock to BLUE Flight. MIGs were simultaneously in pairs attacking BLUE and GREEN Flights. MIGs were at 2-5 mile range when first sighted.

## 6. ACTION INITIATED

BLUE Flight initially jettisoned tanks; later broke to right and jettisoned CBUs in the turn, went afterburner. GREEN Flight continued toward target, spotted MIGs on their own tail, jettisoned tanks, then ordnance, went afterburner and broke to right. GREEN 2 delayed slightly in the break as GREEN 3 and 4 broke past him, then he dropped bombs and broke.

## 7. SITUATION DEVELOPMENT

One MIG fired a missile at GREEN 2 which missed. MIG 1 fired 2 Atoll missiles at BLUE 3 which detonated 1,000 ft behind BLUE 3. BLUE 1 and 2 continued their turn toward MIGs chasing GREEN Flight and the MIGs broke off and went into the overcast. GREEN Flight continued right turn to attack MIGs chasing BLUE 3 and 4, these MIGs broke off into the overcast also.

[1]Reports also indicated encounter of 2 MIG-17s by GREEN Flight but this did not specifically appear in the interview data. These could have been the MIGs attended to by G4.

[redacted]



8. ORDNANCE

(No. fired/No. hits)

| | Soviet AAM (Probably AA-2) | Remarks |
|---|---|---|
| MIG 3 | 2/0 | Detonated 1,000 ft behind BLUE 3 - no damage. |
| MIG 5 | 1/0 | Fired at GREEN 2, no damage. |

9. EQUIPMENT PROBLEMS

BLUE 3 - Radio inoperative, could not be contacted. Receiver may have been working.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 5500 | 200 | 30 | Flew all fighters from P-47 through F-106 except F-94 - led THUNDERBIRDS for three years. Instructor FWS Nellis AFB. Flew 114 missions and had MIG encounter in Korea (F-80, F-84). |
| BLUE 2 | 2750 | 750 | -- | Fighter Weapons School, F-100, F-105. |
| BLUE 4 | -- | -- | 35 | F-84s TAC 6 years. F-101 in TAC, ADC. F-105 since March 1966. |
| GREEN 2 | -- | -- | 80 | |

Comments on This Encounter

BLUE 1 - MIG pilots seemed very well organized, coordinating their maneuvers exceptionally well. Any time they lost the advantage, they broke off to reattack under more advantageous circumstances. MIG 6 had the nicest paint job he had ever seen on a MIG-21 - three shades of Navy grey, scalloped in lines from nose to tail, extremely difficult to pick out against a cloud background. This MIG was by himself and seemed to be directing the rest. Looked like the big super Russian MAG instructor.

BLUE 4 - Belived MIGs were out of range when they fired at BLUE 3. Did not think Atoll missiles detonated close enough to BLUE 3 to cause damage - BLUE 3 probably shot down by ground fire.

Comments from Overall Experience

BLUE 1 - There are too many switch settings to change to go from a bombing mode to an air-to-air mode. Likes the QRC-160, seems to be effective if used properly. Would like to have some capability to shoot an air-to-air missile backwards. The pilots coming in from ATC, SAC and other commands are adapting to the mission very well. The young men right out of flying school seem to pick it up very fast and are the best wingmen. F-105 needs a better snapshot capability, something you don't have to track a long time. The F-106 would be a good airplane for this mission. With modifications you could bomb with it and it will maneuver as well as the MIG-21.

BLUE 2 - Would like to carry the AIM-9. Believes fighters should have two engines. There is no need for a two-pilot fighter. Future fighters need better visibility to the rear than the F-105.

BLUE 4 - F-105 does a very good job as a strike fighter. It does an outstanding job in this type environment. However, it is really not an air-to-air fighter.

GREEN 2 - A big problem is in the switch changes to change sight settings. In other aircraft, when you punch the electrical cage button, you get a caged sight. In the F-105, you have to change two switches to get the sight change plus hit the electrical cage and this cannot be done without distracting your eyes from outside the aircraft. If you could hit a button, get the sight to jump into cage position, hit the button again and have the sight go back to the previous mil setting you wouldn't have to switch your eyes into the cockpit.

The air-to-air radar lock-on warning device in the F-105 is cut off because the other members of the flight have their own radar on, it interferes with your vector, and it's more of a distraction than an aid. I suggest we put in a change that will strobe in the direction of a GCI radar locked onto the flight. Something a little extra to go along with this would be separate little black box in the rear of the aircraft that will detect any radar signals from any gun radar likely to be carried in an aircraft, that will illuminate a separate light or other device on the panel near the canopy line to catch your eye while looking outside the aircraft.

GREEN 4 - The best flying job in the world today is flying MIG-21s out of Phuc Yen. Their advantages on us are that they have turning radius, visibility, and a high-performance airplane that can accelerate real well.

[redacted]

The things in the F-105 that limit us are the turning radius, a result of too much wing-loading, and visibility. One advantage of the F-105 is that it has guns that can be used at close range - something the pilot can control in ejecting ordnance from the airplane.

An air-to-air combat is still a turning game - the airplane that turns best has the advantage. In the future we need a big power plant, an airplane that can turn real well and accelerate well and that can carry ordnance all the way from short to several miles range. Also both high and low altitude capabilities at the same time.

## 11. DATA SOURCES

Project Interviews:

BLUE 1 (Lead - 6 Feb 67
BLUE 2 - 2 Feb 67
BLUE 4 - 16 Mar 67
GREEN 2 - 5 Feb 67
GREEN 4 - 15 Mar 67

Messages, Reports:

7AF 0810462 DOCO 30009 Dec 66
7AF 0813452 DOCO 30018 Dec 66
7AF 0822582 DIO 30961 Dec 66.

## 12. NARRATIVE DESCRIPTION

BLUE Flight was the lead flight and BLUE 1 the Mission Commander for a strike on JCS Target 19. They were flying down the ridge line at 21°33'N/105°33'E heading 133°, 12,000 ft and about 550 kt in pod formation. GREEN Flight was a few miles behind them going to the same target. GREEN Flight observed four MIG-21s attacking simultaneously in pairs, two MIG-21s on GREEN Flight and two MIG-21s on BLUE Flight. The MIGs were called out and BLUE and GREEN Flights jettisoned the 450-gal tanks in an effort to increase airspeed in order to get to the target. However, BLUE 4 observed the MIGs to be closing from 4 or 5 o'clock. BLUE 1 called for a right turn and then to jettison the ordnance through a hole in the undercast. Somewhere during this turn or about the time they rolled out, the MIGs fired two AAMs at BLUE 3. The firing was observed by GREEN Flight. The missiles detonated about 1,000 ft behind BLUE 3. GREEN Flight called out the firing about the same time BLUE 4 saw a MIG-21 pop out of the undercast behind GREEN Flight. BLUE 4 called out the MIG.

At about this same time GREEN Flight saw two MIGs approaching them and dropped tanks; the MIGs disengaged. GREEN Flight saw other MIGs and lead called for dropping ordnance, afterburners, and a RIGHT break. As GREEN 3 and 4 crossed behind GREEN 2, GREEN 4 told GREEN 2 to hold his bombs to avoid collision. GREEN 2 held momentarily, then pickled, then broke. Just as he broke, slightly behind the others, MIG 5 launched a missile at GREEN 2 which missed. BLUE 1 and 2 turned into the MIG who was attacking GREEN Flight. When the MIG saw BLUE 1 and 2 turning into him, he broke off. Meanwhile BLUE 3 and 4 turned to the west. At this time BLUE 3 had UHF transmitter trouble, because no transmissions were heard from him. BLUE 3 broke left and down through a hole in the undercast and jettisoned his MER. BLUE 4 also jettisoned his MER and followed BLUE 3, flying a normal fighting wing. BLUE 4 told BLUE 3 that he was at BLUE 3's 8 o'clock position, because BLUE 3 may have mistaken BLUE 4 to be a MIG. BLUE 3 did not acknowledge the call, but did discontinue the hard left turn and continued normal jinking while heading west, below the overcast. B3 was supersonic. BLUE 4 moved up and flew in his 9 o'clock position maintaining enough lateral separation to clear the 6 o'clock position. BLUE 4 was unable to keep in visual contact with BLUE 3. They were flying into the afternoon sun which was reflecting off the rice paddies. BLUE 4 lost sight of BLUE 3 when they flew into this area of glare. They passed through the glare at supersonic speeds, and BLUE 4 was unable to pick up BLUE 3 again. About this time BLUE 4 heard a beeper. BLUE 4 set up an orbit west of the Red River and alerted rescue. During the egress BLUE 4 observed some 37mm flak but had no indication BLUE 3 had been hit.

After the MIGs disengaged from GREEN Flight, BLUE 1 observed a lone camouflaged MIG-21 dive past BLUE 1 and 2, at a high rate of speed, through the same hole BLUE 3 and 4 had flown. BLUE 1, not being sure where BLUE 3 and 4 were called, "Two F-105s who just went into the hole in the clouds, you have a MIG on your tail - go AB and get out of here". BLUE 1 and 2 followed the MIG. The same MIG then popped back up on top making a 90° left climbing turn. GREEN Flight unloaded and egressed to the northwest. BLUE 1 and 2 turned toward the MIG, who turned 130° and went back into the clouds on a westerly heading. BLUE 1 and 2 egressed the area and joined BLUE 4, and then returned to base.

[redacted]

Event II-97

Aircraft Involved: Four F-105s vs one MIG-21

Result: Sighting only

Vicinity of Encounter: 21°35'N/105°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 13 December 1966/1610H

Brown Flight (4 F-105s) were on an Iron Hand mission scheduled to operate up and down the east side of Thud Ridge. Concurrently there was a strike on JCS-19.00 which encountered numerous MIGs. (See Event II-98).

2. MISSION ROUTE

Korat, Red Anchor, vicinity 21°53'N/104°35'E, vicinity 21°50'N/105°20'E to 21°25'N/105°40'E to 21°03'N/104°43'E, Red Anchor to Base.

3. AIRCRAFT CONFIGURATIONS

| F-105F Brown 1 | F-105D Brown 2 | 3,4 |
|---|---|---|
| 2 AGM 45 | 2 AGM 45 | 6 500 lb bombs |
| 2 CBU-24 | 2 CBU-24 | |
| 2 Wing tanks | 2 Wing tanks | 2 Wing tanks |
| No QRC-160[1] | | |

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered low clouds becoming overcast in the east. Pilot interview rated the weather as poor.

| | BLUE FLIGHT |
|---|---|
| Altitude: | 12,000 feet |
| Heading: | 220° |
| Speed: | 525 kts |
| Fuel State: | Unknown |

5. 6. 7. 8. See Narrative Description

9. EQUIPMENT PROBLEMS

Brown 2 had 1/CBU-24 that would not jettison.

10. AIRCREW COMMENTS

Experience

| | Tot Hours | F-105 Hours | CMBT Missions | Remarks |
|---|---|---|---|---|
| Brown | - | - | - | - |
| Brown | 3500 | 1100 | approx. 65 | All time in single engine jet |

11. DATA SOURCES

Project Interviews:

Brown 3 - 16 February 1967

Messages, Reports, etc.

| | | | | |
|---|---|---|---|---|
| 7AF | 1322052 | OPREP3 | DOC030317 | December 1966 |
| 7AF | 131616Z | OPREP4 | DOC030309 | December 1966 |
| 7AF | 132231Z | | CIO 30996 | December 1966 |

12. NARRATIVE DESCRIPTION

Brown flight - an Iron Hand flight-was in spread formation making a right turn when a MIG-21 passed through the formation. The MIG came through at a high angle off in a right climbing turn from 4 o'clock toward 10 o'clock at an estimated airspeed of 500 kts. The MIG-21 then made a descending turn back toward the flight. At this point Brown 2 and 4 jettisoned their ordnance (number 2 had a CBU-24 that would not jettison) and Brown flight made a max power right descending turn to heading 330 and out ran the MIGs.

[1] Pilot reported that ECM pod was not carried, DIO message indicated that flight was QRC equipped.

[redacted]



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Aircraft Involved: 16 F-105Ds vs numerous MIG-21s and MIG-17s

Result: No damage

Vicinity of Encounter: See (1) below

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 13 December 1966/1600-1620H

The flights were a strike force briefed to hit JCS 19.00 (Yen Vien RR Classification yard). There were 5 individual encounters, as listed below:

| | | | Vicinity of Encounter |
|---|---|---|---|
| (Part 1) | BLUE Flight | 4 F-105Ds vs 2 MIG-21s | 20°55'N/105°37'E |
| (Part 2) | GREEN Flight | 4 F-105Ds vs 4 MIG-21s & 4 MIG-17s | 21°38'N/105°28'E |
| (Part 3) | YELLOW Flight | 4 F-105Ds vs 2 MIG-21s & 3 MIG-17s | 2055N/105°25E (M-17) |
| (Part 4) | ORANGE Flight | 4 F-105Ds vs 2 MIG-21s | 21°32N/105°40'E |
| (Part 5) | BLUE Flight | 4 F-105Ds vs 2 MIG-21s | 20°55N/105°37E |

BLUE, GREEN, YELLOW, and ORANGE Flights constituted the force of four strike flights proceeding to the target. They were preceded by PURPLE Flight (4 F-105Ds) which was in a flak suppression role. PURPLE did not see any MIGs, but PURPLE 3 was downed by a SAM prior to the MIG encounters. BROWN Flight was on an IRON HAND mission in the target area (see Event II-97 for details of BROWN's MIG encounter).

2. MISSION ROUTE

Flights departed Korat, Thailand, refueled, proceeded via Channel 97 TACAN and then down east side of Thud Ridge to the target.

3. AIRCRAFT CONFIGURATION

| | BLUE 1,2,3,4<br>YELLOW 1,2,3,4 | GREEN 1,2,3,4<br>ORANGE 1,2,3,4 |
|---|---|---|
| F-105D | 6 | 750 lb bombs |
| | 2 | 450 gallon wing tanks |
| | 1 | QRC-160 ECM pod |
| | Camouflage paint | |

MIG-21
Silver color
Missile equipped

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered clouds west of target and over target, overcast east of Hanoi. Visibility--good.

| | Part 1 | Part 2 | Part 3 | Part 4 | Part 5 |
|---|---|---|---|---|---|
| | BLUE 1,2,3,4 | GREEN 1,2,3,4 | YELLOW 1,2,3,4 | ORANGE 1,2,3,4 | BLUE 1,2,3,4 |
| Altitude: | 14,000 ft | 12-16,000 ft | 16,000 ft | 16,000 ft | 16,000 ft |
| Heading: | | 138° | 135° | 135° | 260°-270° |
| Speed: | | 530 kts | 540 kts | 540 kts | 600 kts |
| Fuel State: | | | less than full internal | est. 10,000 lb | |

Flight Formation: Flights were in pod formation.

5. INITIAL DETECTION

Part 1: While inbound, BLUE 4 saw 2 MIG-21s pass at 3 o'clock with opposite heading to flight.

Part 2: GREEN flight sighted 4 MIG-21s at 11 o'clock and 4 MIG-17s at 1 o'clock at an approximate range of six n mi with opposite heading to flight.

Part 3: YELLOW 3 sighted MIGS, approximate range of 3 1/2 to 4 n mi heading of 270° approximately co-altitude, quartering on YELLOW Flight. MIGS turned and ended up approximately 6 n mi in trail of flight. After leaving target, YELLOW 3 saw group of probable MIG-17s orbiting below and turning towards Hanoi.



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Part 4: ORANGE Flight sighted 2 MIG-21s on a reciprocal heading about 3-4 n mi offset, they turned 180° and ended up approximately 3 n mi in trail of ORANGE Flight.

Part 5: After pulling off target, BLUE 1 (L) sighted 2 MIG-21s at 5,000 ft heading 90° from his 10 o'clock position at a range estimated to be approximately 3 n mi.

8. ORDNANCE EXPENDED

| | AAM | Cannon | Remarks |
|---|---|---|---|
| MIG-1 | 1/0 | 1/0 | Missed, detonated 300-400 ft behind ORANGE 1 and 3 |
| MIG-2 | | 2/0 | Fired 2 bursts, both missed. |

No air-to-air ordnance was expended by U.S. flights.

10. AIRCREW COMMENTS

Experience:

| | Total hours | F-105 hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 1150 | 750 | Unknown | All TAC fighter background |
| BLUE 4 | Unknown | | 63 | All TAC fighter background |
| GREEN 3 | 3700 | 130 | 20 | Mostly ADC experience |
| GREEN 4 | 1200 | 160 | 30 | All but F-105 time is KC-135 and student time |
| YELLOW 3 | 3700 | 1500 | 13 | |
| ORANGE 3 | 4300 | 100 | 15 | |

Comments on this Encounter:

BLUE (Part 5) was surprised that the MIG-21 would attack because of altitude advantage (approximate 10,000 ft) of F-105.

GREEN amazed at maneuverability of MIG-21.

Comments from Overall Experience:

BLUE 1 felt that aircraft modifications (e.g., SAFETY PACK II, Cameras, Vector Gear, etc.) had compromised aircraft capability by increasing drag.

YELLOW 3 felt that F-105 was an excellent airplane for the job due to its superior airspeed capability and because of its ruggedness.

Switching from air-to-ground to air-to-air mode is too complicated, should be able to do this with a single switch.

QRC-160 switches and indicator lights are in an inconvenient position.

ORANGE 3. The only maneuver for the F-105 against the MIG-21 is to head for the deck in maximum power. The F-105 cannot out-turn or out-climb the MIG-21.

11. DATA SOURCES

Project Interview:

| | | | |
|---|---|---|---|
| BLUE 1 | 16 February 1967, | GREEN 3 | 15 February 1967, |
| BLUE 4 | 18 February 1967, | GREEN 4 | 15 February 1967, |
| ORANGE 1 | 15 February 1967, | YELLOW 1 | letter, |
| ORANGE 3 | 4 February 1967, | YELLOW 3 | 18 February 1967. |

Messages, Reports:

| | | | | | |
|---|---|---|---|---|---|
| 7AF | OPREP-3, | 130925Z, | DOCO-30291, | December 1966, | SECRET |
| 7AF | " , | 131628Z, | DOCO-30307, | " , | " |
| 7AF | " , | 132205Z, | DOCO-30317, | " , | " |
| 7AF | OPREP-4, | 131616Z, | DOCO-30309, | " , | CONFIDENTIAL |
| 7AF | " , | 131651Z, | DOCO-30310, | " , | " |
| 7AF | " , | 131651Z, | DOCO-30311, | " , | " |
| 7AF | Intell. message, | 132231Z, | DIO-30996, | " , | SECRET/NOFORN |
| 7AF | " , | 151215Z, | DIO-31005, | " , | " |

12. NARRATIVE DESCRIPTION

This event represented the second time since 2 December 1966 that there was an integration of SAMs and MIGs in the NVN Air Defense system.[1] Between 1606H and 1624H in approximately an 18x26 n mi rectangular area WSW of Hanoi, the following activity was reported: 6 MIG-21s, 9 MIG-17s, 17 SAMs fired, four AAA reactions, 16 F-105s and 19 Navy aircraft. One F-105 was downed by a SAM (PURPLE 3) and 3 Navy aircraft were hit by SAMs. The F-105s were reported egressing at between 15-16,000 ft, MIGs were reported at 6,000 ft, 9,000 ft, and 18,000 ft.

SAMs were sighted before and during MIG activity by BLUE, GREEN, and YELLOW flights.

BLUE, GREEN, YELLOW and ORANGE Flights were flying in a group formation proceeding to the assigned target (JCS 19.00 Yen Vien Railroad Classification Yard). BLUE Flight was the lead flight followed by GREEN and YELLOW with ORANGE Flight being the trailing flight. YELLOW Flight was to the left of GREEN Flight. In case of MIG attack, ORANGE Flight was to drop ordnance and screen the rear of the strike force.

Part 1: While inbound to the target BLUE Flight spotted two MIGs approximately 10,000 ft below them flying in opposite heading to the flight. They were seen at 3 o'clock and were then observed to turn behind the last flight (ORANGE Flight). The strike force had already jettisoned their tanks prior to going into the target.

Part 2: GREEN Flight was about halfway down Thud Ridge, inbound to the target, when GREEN 4 sighted 4 MIG-21s at 11 o'clock on a reciprocal heading and offset about 6 n mi. GREEN 2 sighted 4 MIG-17s at 1 o'clock very low. Identification was readily made due to the delta wings and silver color of the airplane. The MIG-17s pressed on without attacking anyone. The MIG-21s started on a left turn to attack the trailing flight behind GREEN. GREEN Flight was not engaged by MIGs and struck the target as briefed.

Part 3: YELLOW Flight sighted 2 MIG-21s at 1 o'clock on a westerly heading. At the time, YELLOW Flight was on a heading of a 135°, and approximately 15 miles from the target area. As the MIGs passed YELLOW's 3 o'clock position they started to turn in. YELLOW Flight did not take any evasive action and shortly thereafter YELLOW 4 called out the MIGs approximately six miles in trail. The MIGs were positively identified by their silver color. YELLOW Flight then rolled into the target in almost a split-S maneuver heading almost west. In the pullout from the target, YELLOW 4 had become separated from the rest of the flight, and shortly thereafter, he (YELLOW 4) called out that he had two MIG-21s on him and that he was cleaning off the racks and accelerating out. YELLOW 4 exited to the west at Mach 1.3 at about 5,000 ft and successfully outran the MIGs. Meanwhile the remainder of YELLOW Flight climbed out together at Mach 1.15 also exiting to the west. On the way out they saw numerous SAMs in the area as well as numerous MIG-17s orbiting low, none of which pursued YELLOW Flight. They also saw the MIGs that were chasing YELLOW 4 give up and turn back towards their home base. Number 4 rejoined the flight over Laos.

Part 4: ORANGE Flight was about halfway down Thud Ridge when 2 MIG-21s approached on a reciprocal heading, displaced approximately three miles to the right of the Flight. The MIGs executed a right 180° turn to fall in trail approximately three miles behind ORANGE Flight. The MIGs closed rapidly in loose formation and at a range of about a half-mile, one MIG (the one on the right) lined up between ORANGE 1 and 3, and launched an air-to-air missile. At the time, ORANGE Flight was in pod formation with the second element on the left. ORANGE 4 saw the missile being launched and called for a right break. All aircraft in ORANGE Flight jettisoned their tanks and ordnance before and during the break which was down and to the right. ORANGE 4 observed the enemy missile explode approximately 300 to 400 ft behind #3. The second MIG, which was on the left wing of the first one, pressed in on ORANGE 4 and fired his cannon as ORANGE 4 forced him to overshoot. MIG 1 followed up his missile attack by firing his cannon at ORANGE 4. ORANGE 4 in maximum power executed a 180° turn down to the cloud tops. MIG 1 started to follow and then stopped about two-thirds of the way around the 180° break as ORANGE Flight was moving back into defensive formation. At this point ORANGE 3 called out a MIG crossing from left to right in his 6 o'clock position. All members of the flight then lost sight of this MIG. In the meantime, another MIG closed in on ORANGE 4 in his 7 o'clock position, snapped off a burst and then broke away. This MIG was seen by ORANGE 3 before it fired at ORANGE 4; however, it was originally misidentified as a friendly aircraft. When ORANGE 3 realized that it was a MIG it was too late to call a break. Two MIGs continued to shadow the flight until egress from Route Package VI.

Part 5: After pulling off the target BLUE Flight saw 2 MIG-21s on a reciprocal heading below them at 5,000 ft. They were sighted in BLUE's 10 o'clock position at a range of about 3 miles. As the MIGs passed abeam of BLUE Flight they attempted to chandelle up to them. However, they were too far away and too low to be able to complete the attack so the MIGs broke off and headed back towards Hanoi. BLUE Flight recovered without engaging any MIG aircraft.

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[1] Source: DIO 31005, December 1966 (see Item 11) SECRET/NOFORN.

[redacted]

Event II-99

Aircraft Involved: Four F-105D vs at least six MIG-21s

Result: One F-105D lost

Vicinity of Encounter: 21°05'N/105°55'E.

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 December 1966/1625H

Four F-105D (BLUE Flight) aircraft were on a strike mission. The flight was part of a total force attacking JCS 19.00 (21°05'25"N/105°55'15"E). Flights originating from Takhli were to strike the target first followed by those from Korat. The IRON HAND Flights (Events II-103 and II-104) preceeded the strike forces. The Takhli forces (in order of striking the target) were composed of the aircraft in Events II-105 (TOT 0816Z), II-100 (TOT 0817Z), II-99 (TOT 0819Z) and II-102. The Korat forces were composed of the aircraft in Event II-106 and Event II-101, which was the last strike flight on the target. Also in the area were EC-121 aircraft waiting in the vicinity of 20/107 and 20/103 and EB-66B's and C's orbiting in the vicinity of 22°10'N/105°20'E and 21°15'N/104°25'E. The USN was also conducting studies in the same general area.

2. MISSION ROUTE

From Takhli AB direct to Green Anchor for refueling direct to 21°55'N/104°38'E, direct to 21°54'N/105°12'E, direct to 21°38'N/105°29'E direct to 21°26'N/105°42'E direct to 21°16'N/105°56'E direct to the target (JCS 19.00) and egress to 20°57'N/105°27'E then direct to 20°46'N/105°05'E direct to Green Anchor for post strike refuel. BLUE 1 and 2 recovered at Takhli but due to fuel BLUE 4 recovered at UDORN.

3. AIRCRAFT CONFIGURATION

F-105D BLUE 1,2,4

6 750 lb bombs
2 450 gal. tanks
1 QRC-160 POD

F-105D BLUE 3

6 500 lb bombs
2 450 gal. tanks
1 QRC-160 POD

MIG-21 MIG 1,2,3,4,5,6

All Aircraft Silver
Missiles carried by at least one MIG.

No other information available. Those MIGs identified as having the large radome (FISHBED D) are so specified in the narrative.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Low broken to overcast deck, bases 3-4,000 feet, tops 8,000-10,000 feet ~ 5 miles visibility with haze.

| | BLUE (1,2,3,4) on ingress to target |
|---|---|
| Altitude: | 2,000 feet AGL |
| Heading: | 135° |
| Speed: | 550 kts Plus |
| Fuel State: | 10,000 lbs |
| Formation: | Pod Formation |

5. INITIAL DETECTION

After crossing the RED RIVER, while on their ingress to the target, BLUE Flight continuously observed MIG-21 aircraft in the area. However, the first MIGs to threaten the flight were seen by BLUE 2 prior to pop-up. Two MIG-21s were seen at 2 o'clock, co-altitude, 3,000-4,000 feet range. BLUE Flight was at the MIGs 2 o'clock, as the MIGs, in a hard turn, attempted to turn in behind the flight.

6. ACTION INITIATED

BLUE Flight continued on the mission as the two MIGs overshot.

7. SITUATION DEVELOPMENT

BLUE Flight made their bomb run and popped up and during the dive to the target two more MIG-21s passed through the flight, but no firing was observed. After climbing through the clouds, BLUE 2 saw a single MIG-21 at 9 o'clock, then two more, silver MIG-21s

[redacted]

at 6 o'clock to the flight. The flight lost the two MIGs at 6 o'clock by diving below the clouds, but flak forced them back on top.

Shortly after coming back on top, a MIG-21 was seen at BLUE 4's 9 o'clock, which he escaped by diving through the clouds. On BLUE 4's return, BLUE 4 called 2 MIG-21s at 6 o'clock. These last two MIG-21s were FISHBED D's and one attacked BLUE 3 and shot him down with a missile, and he broke off. The other attacked BLUE 1 and was subsequently attacked by BLUE 2 who fired at the MIG-21 but missed. BLUE 2 saw BLUE 3 crash and then joined the rest of the flight for egress.

8. ORDNANCE

(No. Fired/No. Hits)

| | Cannon | AA Missile | |
|---|---|---|---|
| BLUE 2 | 1/0 | ----- | 350 rounds - no sight. |
| MIG | | 1/1 | Hit and destroyed BLUE 3 |

None of the other members of BLUE Flight expended any air-to-air ordnance. None of the other MIG-21s were observed firing.

10. AIRCREW COMMENTS

Comments on this Encounter

Never attack a MIG, unless 3 to 9 o'clock low - so you can make one pass and escape.

11. DATA SOURCES

Project Interviews: BLUE 2 (5 Feb 1967)
Messages, Reports:

| | | | | |
|---|---|---|---|---|
| 7AF | DOCO 30384 | OPREP-3 | 141532Z | Dec 66 |
| 7AF | DOCO 151 | 211905Z | Dec 66 | |
| 7AF | DOCO 30371 | OPREP-4 | 141312Z | Dec 66 |
| 7AF | DOCO 31359 | OPREP-3 | 140952Z | Dec 66 |
| 7AF | DOCO 30354 | OPREP-3 | 140911Z | Dec 66 |
| Source Unknown | | | 150557Z | Dec 66 |

Tape of communications made during the mission
AF Combat Loss Report XOXS62-2567

12. NARRATIVE

BLUE Flight was on a strike mission as part of a larger force attacking JCS 19.00. As soon as the flight crossed the Red River, above the clouds, at about 14,000 feet altitude, numerous SAMs were fired at the flight, in barrage-type volleys, but they did not track very accurately. Just after crossing the Red River, BLUE Flight heard calls of MIGs from the flak suppression flight - (Event II-105) and expecting an engagement they jettisoned tanks and pylons retaining only the MER (loaded with 6 bombs) and the QRC-160 POD. The tanks, when jettisoned, had 500 to 600 pounds of fuel in each.

The flight proceeded down the southeast side of Thud Ridge and descended through the cloud layer. BLUE Flight heard the flight of Event II-100 transmit that they were being jumped by MIGs. After breaking through the cloud layer, and descending to 2,000-3,000 ft. AGL and 550 kts, the flight passed by Phuc Yen Airfield and observed 30-40 MIG-17s, MIG-19s and MIG-21s in revetments. Numerous MIG-21s were seen flying around in the area and two were seen just taking off. As the target came in sight, BLUE Flight started to receive heavy flak.

At this point, two MIG-21s (MIG 1,2) tried to make a pass at the flight. BLUE 2 saw and called the MIGs who were 3,000-4,000 feet away, at 2 o'clock co-altitude. The MIGs were silver and immediately recognized. BLUE Flight was at the MIGs' 2 o'clock as the MIGs attempted a hard turn to intercept the flight. BLUE 2 called the MIGs as passing from 3 o'clock to 4 o'clock, and specifically warned BLUE 4 who was carrying the camera pod and was having trouble maintaining position with the rest of BLUE Flight. The MIGs were in a position that enhanced their attack on BLUE 4 but due to the speed of BLUE Flight, the MIGs could not attain a firing position, and they were lost from view.

As the flight proceeded toward the target, they heard the flight of Event II-102 call that they had been jumped by MIGs. BLUE Flight proceeded through the pop-up and as they rolled in, on the bomb run two more MIG-21s (MIG 3,4) passed through the flight disregarding their own flak, but were not observed to fire at BLUE Flight. BLUE Flight was under heavy ground fire at the same time as the MIGs passed through.

After dropping on the target, BLUE Flight headed out in a southwesterly direction toward the hills and the Black River at 600 kts in afterburner. At this time, BLUE 2 saw a single MIG-21 (MIG-5) at 9 o'clock 2 miles range, co-altitude. BLUE 2 was at the MIG's 10 o'clock, as the MIG approached straight and level at high speed. At this time BLUE 1 was out in front, BLUE 2 and 3 were line abreast 2,000 feet above BLUE 1. Although BLUE 2 called the MIG, the call was delayed due to other radio traffic. The MIG was lost from view.

[redacted]



BLUE Flight came out of afterburner and climbed on top of the clouds. BLUE 1, 2, and 3 were approximately line abreast extending about 4,000 feet across the front. BLUE 4 was back and to the right about 1 mile and lower. BLUE 3 saw 2 MIG-21s (MIG 6,7) at 3 o'clock with other MIGs and a SAM to the South. BLUE 3 called the MIGs. BLUE 2 also saw the two MIG-21s as well as the others in the area. Due to his position, BLUE 2 observed the two MIGs to be at 6 o'clock high and diving into position behind about 8,000 feet away. The MIGs were silver.

BLUE 1 called "burner" and the flight descended into the clouds to evade the MIGs. On descending through the clouds the flight began to receive intense flak. After jinking for several seconds (no more than 20) and reaching the mountains Southwest of Hanoi, the flight again climbed on top of the clouds and although no MIGs were immediately seen, the flight had some SAMs fired at them.

A short time later (estimated 40 seconds) another MIG-21 (MIG-8) was seen by BLUE 2. This MIG was close to BLUE 4. The MIG was at BLUE 4's 9 o'clock, about 1,500 to 2,000 feet away from BLUE 4 and turning into BLUE 4 from a line abreast position. BLUE 2 saw the MIG-21 outlined against a cloud, as both the MIG and BLUE 4 acknowledged and broke down into the clouds with the MIG after him. Just before BLUE 4 dived into the clouds, he called "BLUE 4 you have two MIGs at your 6 o'clock." [What was meant to be transmitted was "BLUE 1 and 2 there are MIGs at your 6 o'clock."] The two MIGs approaching the flight were unseen by BLUE 1, 2, and 3. A short time later, BLUE 4 popped back through the clouds without the MIG.

The flight began to climb, and a target report was given, BLUE 3 called BLUE 4 to "pull it up" and then BLUE 1 called for a shift in frequency from channel 2 to channel 1 to give the code words that the target had been hit. At this point the SAM activity (as indicated by vector strobes) had subsided and little flak was present.

The flight at this time was spread out with BLUE 1 in the lead and BLUE 2 on the left. BLUE 3 was about even with BLUE 2 to the right of BLUE 1 and out a bit farther than BLUE 2. BLUE 4 was very far out to the right and behind the flight. As they climbed through[1] 10,000-11,000 feet and at a speed in the category of 400 KIAS, heading between 230° to 260° degrees in the vicinity of 20°47'N/105°08'E, time 1625H, BLUE 2 in looking back to clear the other flight members, saw 2 MIG-21s (MIG 9, 10)[2] (FISHBED D) BLUE 2's wing and another MIG-21 off to the right of closest MIG-21. One MIG-21 was in the 6 o'clock position of BLUE 1 and the other was in the 6 o'clock position of BLUE 3. The MIG on BLUE 1 appeared to be inside missile range.

As BLUE 2 noticed the MIG-21D behind BLUE 3, that MIG launched an air-to-air missile (BLUE 2 saw the missile leave the MIG) which hit BLUE 3, blowing the aft end off of the F-105 before a warning could be given. Immediately after missile launch the MIG-21 broke off and was not seen again. This was the first U.S. aircraft to be shot down by an air-to-air missile over North Vietnam.

BLUE 2 broke into the MIG that was on the tail of BLUE 1. BLUE 2 simultaneously called for BLUE 3 to eject, which he did in the area of 20°46'N/105°05'E. BLUE 2 was canopy to canopy with the MIG but the MIG broke away and BLUE 2 dived with the MIG down to the ground.

BLUE 2 still had his sight set up for the air-to-ground mode with a depressed piper for bombing. He fired 350 rounds of 20 mm in a single burst at a few hundred feet range, diving, but observed no hits. BLUE 2, in afterburner, broke off from the MIG as they neared the ground.

BLUE 2 saw the chute of BLUE 3 and another parachute about 3 miles apart (suspected to be the drag chute of BLUE 3s aircraft)[3]. He reversed to go back after the other parachute and while in a left bank 500 to 550 knots, BLUE 2 saw another silver MIG-21 (either MIG-9, or 10) in a right bank, turning toward him 2,000-3,000 feet range, canopy to canopy. BLUE 2 rolled back to the right and split-S'ed down to the deck and barrel-rolled in afterburner and went down into the Black River Valley and lost the MIG.

After BLUE 1 and 3 were jumped, another MIG-21 (MIG-11) maneuvered behind BLUE 4 at his 7 o'clock but BLUE 4 escaped by going to afterburner and diving through the cloud deck. BLUE 1 reversed and saw BLUE 3's aircraft going down in flames. He then picked up a MIG-21 at his 7 o'clock so he disengaged and egressed.

BLUE 1 and 2 and 4 egressed. BLUE 2 had 1,800 lbs of fuel when he reached the tanker. Search and rescue forces picked up BLUE 3 at about 1743H (location was 251° magnetic heading, 43 n mi from Hanoi), despite ground fire. At 1745H all aircraft had departed the area.

The only MIG warnings that the flight received were communication from other flights that these other flights had been jumped by MIGs and one broadcast from the picket ships of "MIGS AIRBORNE."

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[1] OPREP quotes 6,000-8,000 feet but this is low considering the weather. However, in both cases, the MIGs jumped the F-105s shortly after the 105s emerged from the cloud layer.

[2] It was surmized by BLUE 2 that MIGs 6 and 7 were the same as MIG 9 and 10, with the MIGs executing a Yo-Yo to get back on top of the clouds

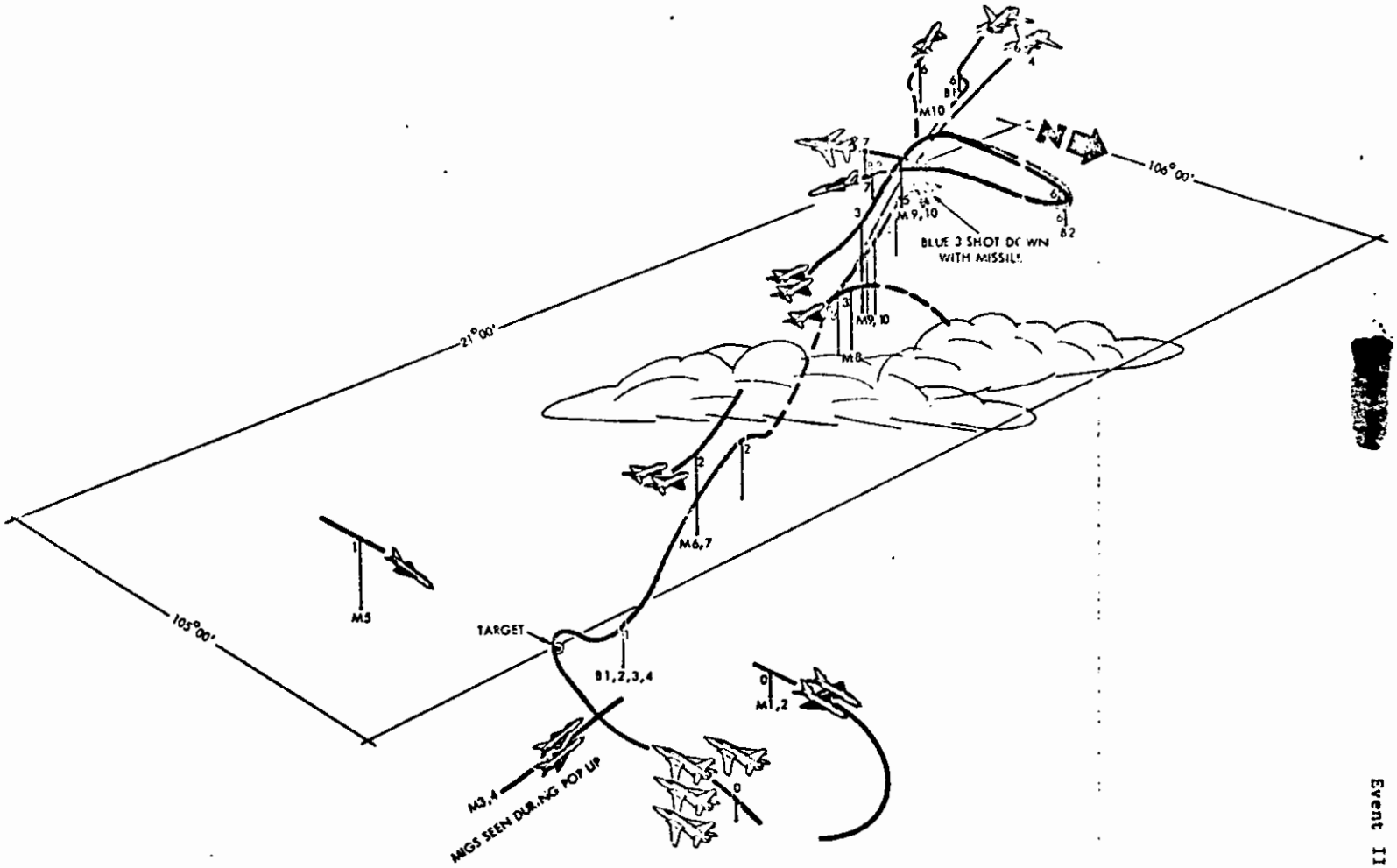
[3] BLUE 2 thought he saw a man in the [redacted]

RED BARON EVENT II-99 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | BLUE Flight in Pod Form. at 2-3000 ft and 550 kts. | BLUE Flight sees M1 at 3 o'clock attempting to attack. BLUE presses on, popping up and striking the target. | | B2 warned B4 of M1 | RED 1 and 2 attempted to attack BLUE Flight but could not catch them and when BLUE came into the flak at the target they broke off. | MIGs silver - immediately identified by delta wing. |
| $T_1$ | 600 kts in after-burner. | BLUE pressing out from target - comes out of burner. B2 sights M5 at 9 o'clock 2 miles out at co-altitude straight and level at high speed. | | B2 calls "MIG at 9 o'clock" but call delayed due to traffic on the radio. | M5 does not attempt to attack BLUE. | |
| $T_2$ | 550-600 kts level 8000 lb fuel. | B1, 2, and 3 line abreast with B4 back and right 1 mile. B2 and 3 see M6 and 7 coming in from 6 o'clock high closing rapidly. BLUE selects afterburner and drops through clouds. | | B3 calls "MIGs at 6 o'clock". | M6 and 7 attacking from 6 o'clock high - about 8000 ft out when BLUE went into clouds. | BLUE drops out under clouds but due to flak and lowering ceiling they climb back on top. |
| $T_3$ | BLUE back | B2 sees M8 on B4 and warns 4. B4 goes into clouds with M8 chasing. About a minute later he climbs back up without M8. B4 sees M9 and 10 at 6 o'clock to B1, 2, 3 and warns them. B1, 2, 3 do not see M9 and 10. | | B2 calls MIG at 9 o'clock on BLUE. B4 calls "BLUE 4 you have 2 MIG-21s at 6 o'clock" - meaning B1 and 2 instead of B4. | B8 was 2000 ft at 9 o'clock to B4 turning in. He chased B4 into clouds and then broke away. M6 and 7 possibly yo-yo'ed up when BLUE Flight went into clouds and are now coming back in. | B2 saw the MIG from about 2 miles away against the clouds. BLUE Flight has several SAMs fired at them - none hitting. |

RED BARON EVENT II-99 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_4$ | BLUE on top of cloud deck. | | | | | BLUE Lead not getting any more SAM activity and feeling safe from MIGs due to distance away slows to climb speed - in a climb - and goes to different frequency to make strike report. |
| [redacted] | BLUE Flight climbing at 400 kt fuel - 5000 ft | B2 sees M9 and 10 at 3 o'clock and sees M10 shoot down B3 with missile. B2 breaks into M9. B1 on different frequency is unaware of MIG activity. | | B2 switches over to guard and tells B3 to eject. | M3 fires a missile into B3, then breaks away. M9 breaks down to evade B2. | |
| $T_6$ | B3 shot at. B2 chasing M9. B1 reversing. | B2 chases M9 to the deck firing but missing. B2 pulls up and reverses back toward B3. B1 reverses to see B3 in flames and M10 attacking. He runs to evade M10. | | | M10 attacking B1. M9 running from B2. | B2 fires 350 rounds at close range but misses - no gunsight. Did not have time to set switches - just pulled nose through M9 while firing. |
| $T_7$ | B1 and 4 departing area. B2 turning toward B3. | B2 sees two chutes coming down. As he reverses to check the second chute he sees M9 coming in. B4 makes a maximum speed dash south - loses M9 and then recovers Udorn. | | | M10 disengages and departs. M9 was at B2', 9 o'clock, 2-3,000 ft out when B2 started high speed escape. | BLUE 2 says "Never attack a MIG unless 9 to 3 o'clock low - so you can make one pass and escape." |


M10
B1
B2
106°00'
M9,10
BLUE 3 SHOT DOWN WITH MISSILE
M9,10
M8
21°00'
M6,7
M5
105°00'
TARGET
B1,2,3,4
M1,2
M3,4
MIGS SEEN DURING POP UP

Event II-99

[redacted]

Event II-100

Aircraft Involved: Four F-105Ds vs six MIG-21s, six MIG-17s

Result: No damage

Vicinity of Encounter: 21°05'N/105°45'E and 21°30'N/105°30'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 December 1966/approx. 1630H

Four F-105Ds (BLUE Flight) strike on target in Route Package VI-A, JCS target 19.00. On the way into the target BLUE Flight dropped tanks but BLUE 3 had one 450-gal tank hang. BLUE 3 and 4 turned back to drop on a target of opportunity in the Red River area while BLUE 1 and 2 continued on to target JCS 19.00. The flight was part of a total force attacking JCS 19.00 (21°05'25"/105°55'15"). The flights originating from Takhli were to strike the target first followed by those from Korat. The IRON HAND flights (Events II-103 and II-104) preceded the strike forces. The Takhli forces (in order of striking the target) was composed of the aircraft in Events II-105 (TOT 0816Z), II-100 (TOT 0817Z), II-99 (TOT 0819Z) and II-102. The Korat force was composed of the aircraft in Event II-106 and Event II-101 which was the last strike flight on the target. Also in the area were EC-121 aircraft orbiting in the vicinity of 20/107 and 20/103 and EB-66B and CS orbiting in the vicinity of 22°10'N/105°20'E and 21°15'N/104°25'E. The USN also had a strike going at the same time.

## 2. MISSION ROUTE

Departed Takhli Air Base, Tahiland; refueled over Laos. They came in over the Red River, around Yen Bai, flew east to Thud Ridge and down the ridge to the target. BLUE 3 and 4 turned around at the south end of the ridge and egressed generally the same route. BLUE 1 and 2 flew west from the target to the Red River; then southwest to post strike refueling.

## 3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 2, 3 4

2 450-gal tanks
6 750 (M117)
1 QRC-160 pod
Camouflage paint
Radar standby, QRC-160 on, TACAN - Receive Only, Doppler silent, IFF standby
Pylon and adaptor but without AIM-9B (BLUE 1 and 3 only)

[The AIM-9B had been pulled off when it was thought that BLUE Flight would strike a secondary target, and insufficient time was available for reinstallation.]

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Broken clouds in the target area 3-5000 ft. Broken to overcast 4-8000 ft to the west of the target. Visibility 5 miles in haze.

| | BLUE | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Altitude: | 6000 ft | 6000 ft | 7000 ft | 7000 ft |
| Heading: | SE | SE | 340 | 340 |
| Speed: | 550 | 550 | 475 | 475 |
| Fuel State: | ----Approximately 9000 lbs------- | | | |

Flight Formation: BLUE Flight separated in two separate elements. The position of BLUE 4 in relation to BLUE 3 is unknown. However, BLUE 2 was flying above and behind BLUE 1 and at the time of their first sighting after BLUE 1 and 2 dropped on the target BLUE 2 came off first and during egress he was about 1/2 mi. in front of BLUE 1, at the time of their second sighting.

## 5. INITIAL DETECTION

On the way to the target received warning from BIG EYE about MIGs in the area. BLUE 2 observed six brown smoke trails going away about 11 o'clock. As BLUE 1 and 2 closed on them they were identified as MIG-17s. After bombing the target, BLUE 2 observed a second flight of four MIGs at 12 o'clock low, about 2-1/2 mi. flying toward BLUE 1 and 2.

BLUE 3 and 4 (had separated from the Lead element) were flying 340° at 6000 ft. BLUE 4 observed two MIG-21s at 11 o'clock; BLUE 3 looked up and saw two more at 1 o'clock. The exact time of these sightings is unknown, approximately 1630H local.

[redacted]

6. ACTION INITIATED

BLUE 1 and 2 (first sighting). Selected max power. Made attempt to close behind the MIGs. On the second sighting BLUE Flight turned in to the approaching flight of four MIGs.

BLUE 3 and 4 turned into the MIGs, which they encountered.

7. SITUATION DEVELOPMENT

BLUE 1 and 2 closed on the six MIGs, but prior to achieving range the MIGs broke up away to the left and BLUE 1 and 2 proceeded on to the target. On the second observation BLUE 1 and 2 turned in to the MIGs as they approached. The MIGs started to turn in behind BLUE 1 and 2 and then broke off.

BLUE 3 and 4, after making a head on pass broke to the left, the MIGs did a semi-chandelle to the right, but were unable to close on BLUE 3 and 4 as they continued westward at a high rate of speed.

8. ORDNANCE

None expended.

9. EQUIPMENT PROBLEMS

BLUE 3 was unable to jettison the right 450-gal fuel tank. The QRC-160 pod on BLUE 1 was reported not operational.

10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 2 | 600 | 350 | 62 | Graduated from flying school, Oct 1965, direct to F-105 school and then to SEA. Had fired 1 AIM-9 in training and fired gun on the dart. |
| BLUE 4 | 2290 | 400 | | First MIG engagement. |

Comments on this Encounter:

BLUE 2. Thought they might have been able to get a kill with an AIM-9 on their first sighting. They were not loaded due to a last minute change in targets. All of BLUE Flight thinks the MIGs were GCI controlled. BLUE 2 thinks there is coordination between SAM activity and MIG.

BLUE 3 had trouble controlling aircraft with hung tank above 500 kt. Below 500 kt control was quite good.

BLUE 4. MIGCAP is no good for the strike flights most of the time. They are too far out of position.

Comments on Overall Experience:

BLUE 2. It is too difficult to go from bombing mode to air-to-air mode. It requires the pilot to look in the cockpit to do it. We have good intelligence available and our pilots have a good knowledge of enemy capabilities, but we need better target photography. BIG EYE is not much help. They clutter up the strike freq. with long MIG calls. Calls should be brief, i.e., "MIGs Thud Ridge" and get off the air.

BLUE 4. Never had recognition problems except for one time when four F-4s made a pass at the flight he was in.

11. DATA SOURCES

Project Interviews: BLUE 2 (4 Feb 67)
BLUE 3 (15 Mar 67)
BLUE 4 (3 Feb 67)

Messages, Reports: 7AF 142204 Dec 66 DIO 3100Z
7AF 141850 Dec 66 OPREP 3 DOCO 30393
7AF 141357 Dec 66 OPREP 4 DOCO 30375

## 12. NARRATIVE DESCRIPTION

BLUE Flight ingressed to the target, and after starting down Thud Ridge, the flight prepared to jettison tanks, in an anticipation of potential MIG encounters. They had had a MIG warning from BIG EYE of MIGs in the area. The left tank of BLUE 3 would not jettison, so BLUE 3 and 4 separated from BLUE 1 and 2 at 21°30'N/105°30'E. BLUE 3 and 4 began to proceed outbound, hit a target of opportunity and return home. BLUE 1 and 2 proceeded on to the primary target.

BLUE 1 and 2 continued on toward the target encountering heavy flak but few SAMs. About 7 mi. from the IP BLUE 2 saw 6 black smoke trails and MIGs about 3000 ft above at 12 o'clock 4 mi. away. The aircraft were not immediately identified, and were not positively identified by BLUE 2 as MIG-17s until the MIGs turned. There were a group of four MIGs parallel to two others who were separated out several thousand feet. BLUE 2 called the MIGs, but BLUE 1 did not see them immediately. The MIGs were going away and since BLUE 1 and 2 were closing they tried to attack the MIGs. BLUE 1 and 2 accelerated in afterburner and approached to within 1 to 1-1/2 mi. when the MIGs broke up and to the left. The MIGs were lost from view in the haze as they passed off to 9 o'clock.

BLUE 1 and 2 continued on and hit the target. As they were egressing in the vicinity of 21°05'N/105°45'E BLUE 2 saw four bogeys at 12 o'clock and 2-1/2 miles range on an opposite heading. The bogeys in two elements and 1000 ft low. BLUE 2 turned to go after the MIGs, and notified BLUE 1 of his intent. BLUE 2 was set up at this time with a non-computing gunsight (fixed pipper at zero depression). The MIGs saw BLUE 2 and turned to climb, passing behind BLUE 2 in a YoYo, but broke away just prior to BLUE 1 and 2 being threatened by a SAM. BLUE 2 made no positive identification but tentatively classified the MIGs as 17s or 21s.

BLUE 1 and 2 were somewhat separated at this time and continued to egress. On egress BLUE 2 saw a four-ship flight of bogeys in a right turn at about 3 mi. range. BLUE 2 turned toward the bogeys and closed to about 2000 ft and started pulling lead on a bogey which was now at 11 o'clock. At this time BLUE 2 identified the aircraft as Navy F-8, so he made a hard right break to a heading of 340° and started to egress.

BLUE 2 continued on out when he saw two unidentified aircraft at 10,000 ft altitude 5 mi. away at his 6 o'clock. The aircraft were in close formation. BLUE 2 called that if they came at him he was going to turn into them despite his fuel state, but the bogeys turned away and were lost from view.

BLUE 1 and 2 noted SAMs during ingress and egress. On egress BLUE 2 noted a SAM detonate 1/4 to 1/2 mi. behind the element at 21°10'N/105°25'E, three other SAMs were seen to explode at 20,000 ft altitude above the east side of Thud Ridge, but these and four SAMs the flight saw detonating on the east side of Thud Ridge during ingress were not bursting near any aircraft that BLUE Flight could see.

BLUE 3 and 4 after leaving BLUE 1 and 2 proceeded to egress back up Thud Ridge. BLUE 3 and 4 reached the northwest end of Thud Ridge, and by this time had climbed through the overcast and were about 2000 ft above it in the vicinity of 21°38'N/105°25'E heading 340° at 7000 ft and climbing at approximately 475 KIAS. BLUE 4 was almost line abreast to BLUE 3's right when he saw two MIG-21s at 2 o'clock low, right on the top of the overcast at a range of 2-3 mi. Due to the cloud background the MIGs shape was easily discerned and identification was immediate. BLUE 4 called BLUE 3 and alerted him to the MIGs. BLUE 3 looked up and saw two MIG-21s high and at 2 o'clock. Although initially BLUE 3 and 4 each saw only two MIGs, the MIGs were in a flight of four with the lead element high and the low element about one mile in trail. The MIGs were initially orbiting in the vicinity of 21°45'N/105°32'E and approached the flight on a heading of 195 degrees with the high element at 8-10,000 ft. altitude.

BLUE 3 called to jettison all ordnance and go to afterburner and turned left into the high element of MIG-21s in an attempt to make a gun attack. The high section of MIGs turned into BLUE 3 and 4 in a descending pass. Due to the closing velocity, the lead (high) element of two MIG-21s passed BLUE 3 and 4 head-on about 50-100 yards away and a bit lower than the F-105s and were first seen by BLUE 4 at this time. The lower element climbed and crossed at about 6000 ft range. As the MIGs passed without firing they were identified as MIG-21D with the large radome. They were clean except for missile launchers on pylons, but no missiles were seen.

BLUE 4 broke right to keep track of the MIGs as the lead element passed by and attempted to get on the tail of BLUE 3 and 4. BLUE 3 and 4 then reversed by breaking down and to the left to a heading of about 240-260°. The two MIGs executed a barrel roll to the right (described as semi-chandelle) ending up about a mile behind BLUE 3 and 4.

The low element of MIGs were not seen after they passed the F-105s. BLUE 3 and 4 accelerated to Mach 1.2 at 4500 ft altitude. The high element of MIGs dived into the clouds and were lost from view. BLUE 3 and 4 came out of afterburner. One emerged again shortly with increased airspeed. However, the MIG was 2-3 miles in trail and BLUE 3 and 4 accelerated in afterburner to Mach 1.3 and the MIG fell behind (BLUE 3 and 4 were opening at about 100 kt). BLUE Flight continued on passing over the 6-7000 foot mountains and the MIG followed to the vicinity of 21°27'N/104°40'E when he broke off.

BLUE 3 and 4 started the engagement with about 9000 lb of fuel. BLUE 4 got to the tanker with 2500 lb of fuel.

BLUE 1 and 2 got to the tanker with only about 1000 lb of fuel.

BLUE 4 never got his sight set up for air-to-air due to the rapidity of the action.

RED BARON EVENT II-100 SUMMARY

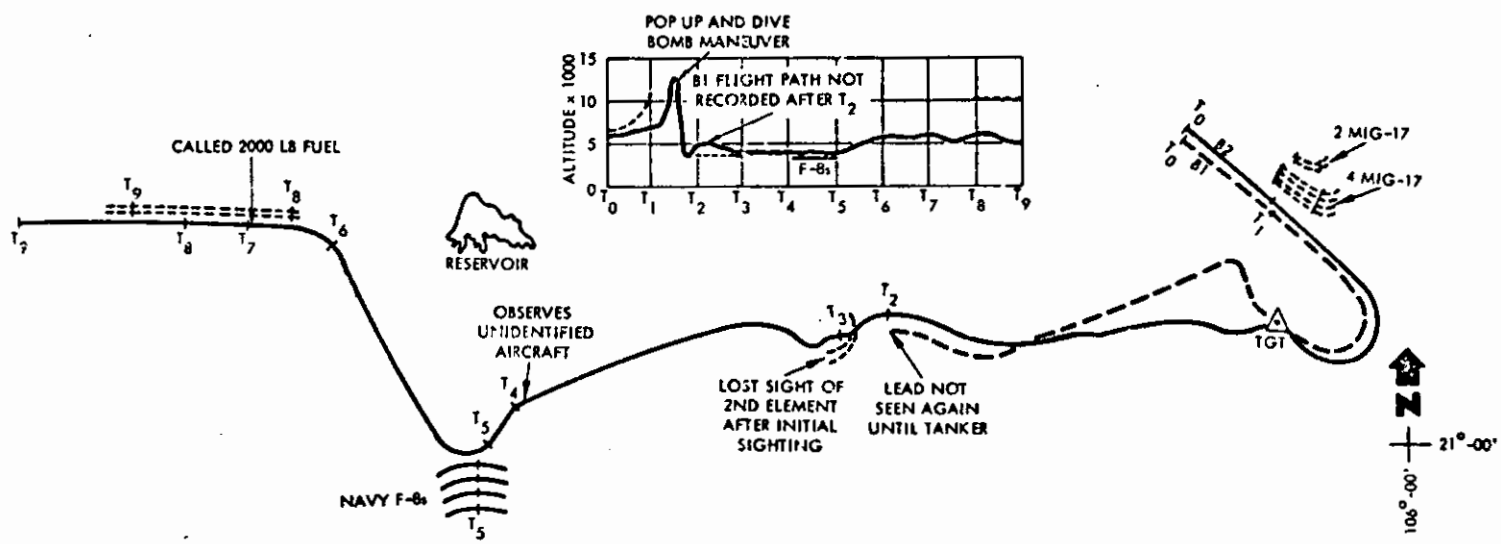
| Time Mark | Action Aircraft (BLUE 1, 2) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | 6000 ft<br>550 kt<br>Had jettisoned 450-gal tank<br>6 750 lb bombs<br>1 QRC-160 pod<br>9000 lb fuel | B2 above and behind B1. Clearing - B2 saw 6 MIG-17s at 11:30 -- went Max A.B. to close from the rear. | Lead did not see smoke trail, initially. | BLUE 2 called "Bogeys at 11:30 or 12 o'clock." | 3000 ft above heading about 110° slower than F-105s | B2 first saw the smoke trails brown color, not like F-105 smoke. B2 spread out going after bogeys. BLUE Flight had jettisoned tanks prior to this time due to MIG alerts in the area and 3 SAM detonations observed. |
| $T_1$ | Climbing and accelerating to about 7000 ft | BLUE Flight closed on the MIGs, made positive identification -- didn't give chase but continued on into the target. | B1 acquired the MIGs. | | MIGs broke up and away to the left. | When MIG got to 9 o'clock they were lost in the haze. B2 felt the MIG must have had GCI warning. When MIGs turned away BLUE Flight did not pursue them but continued on to target at high rate of speed. |
| | NOTE: BLUE 1,2 proceeded to the target without anymore difficulty. They delivered the ordnance and were egressing at the time $T_2$. | | | | | |
| $T_2$ | Conf. clean and QRC pods had dropped bombs on target.<br>550-575 kt | B2 turned toward MIGs constant 3g turn keeping MIGs in sight. | Lost sight of lead. | B2 called "9 bogeys 12 o'clock - I am going in on them." | First element broke into B2 and up. (MIG seemed a little slower than B2.) | B2 lost lead. Did not join until tanker. |
| $T_3$ | B2 started a reverse but lost MIGs -- continued egress on westerly heading. | | | | | SAM went off 1/4 to 1/2 mi. behind B2. |
| | | | | | | |

RED BARON EVENT II-100 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_4$ | | Saw 4 unidentified aircraft. Turned right into bogeys. | | | Bogeys in right turn 3 mi. range. | |
| $T_5$ | 550 kt | Recognizes bogeys as F-8s. Turns right to 340°. | | None. | Identified bogeys to be 4 F-8s. | |
| $T_6$ | 550 kt | In left hand turn toward the west. | | | SAM detonated at 5 o'clock 1/4 to 1/2 mi. co-altitude. | |
| $T_7$ | 550 kt | Flying west -- jinking. | | B2 called 2000 lb fuel. | | QRC-160 MOP Red and Green lights. |
| $T_8$ | 550 kt | Flying west -- sees 2 aircraft flying west at 10,000 ft 6 o'clock in close formation. | | | 2 unidentified aircraft heading west in close formation. | |
| $T_9$ | 550 kt | Continued west -- jinking; lost sight of them. | | B2 called "if they come at me I will turn into them." | Unknown. | |
| | | | | | | |

RED BARON EVENT II-100 SUMMARY

| Time Mark | Action Aircraft (BLUE 3,4) | | Other Friendly | Communications | Eremy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_{0a}$ | Alt. 7000 ft<br>Heading: 340°<br>A/S 475 kt<br>6 750 lb bombs<br>1 QRC-160 pod<br>B3 had 1 450 gal tank. | Observe 4 MIG-21s<br>B3 saw 2 at 1-2 o'clock.<br>BLUE Flight jettisoned their ordnance and turned right into MIG 1 2 in afterburner. | | B4 called 2 MIGs at 11 o'clock.<br>B3 called "Dump all ordnance." Go A.B. | Flying heading of 195°. | Still had ordnance, B4 dropped his tanks, but B3 had one 450-gal tank hung up on the aircraft. They had aborted the original target because of B3's hung tank and were looking for a target of opportunity. |
| $T_{1a}$ | B3 1 450-gal tank<br>B4 clean<br>Alt. 6000 ft<br>A/S 550 kt | Passed MIG head on 50 yds separation then broke left 260°. | | Called for left turn. | MIGs did semi-chandelle to the right. After passing BLUE Flight MIG element was 1000 ft lower. | BLUE Flight unable to bring guns to bear on MIGs -- MIGs did not fire. B3 identified them to be MIG-21Ds. Clean aircraft except for missiles. |
| $T_{2a}$ | In A.B.<br>Slight negative "g" accelerating to 1.3 Mach. | Flying west trying to outrun MIGs. | | | Rolled out behind BLUE Flight trying to catch them. | B3 experienced difficulty in lateral control above Mach 1 with hung 450-gal tank. |
| $T_{3a}$ | In A.B.<br>Approx. 700 kt | Flying min. alt. Gaining separation on MIGs. Crossed Red River 1000 ft alt. 1.3 Mach. | | | MIGs disengaged as they were losing distance on BLUE Flight. | The last MIG to break off kept trying to get his nose down to gain -- possibly to fire a missile but kept losing out and finally gave up the chase. |
| | | | | | | |


POP UP AND DIVE
BOMB MANEUVER
B1 FLIGHT PATH NOT
RECORDED AFTER $T_2$
ALTITUDE x 1000
15
10
5
0
$T_0$ $T_1$ $T_2$ $T_3$ $T_4$ $T_5$ $T_6$ $T_7$ $T_8$ $T_9$
F-8s
CALLED 2000 LB FUEL
$T_9$
$T_8$
$T_7$
$T_6$
RESERVOIR
OBSERVES
UNIDENTIFIED
AIRCRAFT
$T_4$
$T_5$
NAVY F-8s
$T_3$
$T_2$
LOST SIGHT OF
2ND ELEMENT
AFTER INITIAL
SIGHTING
LEAD NOT
SEEN AGAIN
UNTIL TANKER
$T_0$ B2
$T_0$ B1
$T_1$
TGT
2 MIG-17
4 MIG-17
N
21°-00'
106°-00'

Event II-100

[redacted]

Event II-101

Aircraft Involved: Four F-105s vs two MIG-17s

Result: No damage

Vicinity of Encounter: 21°32'N/105°40'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 December 1966/1707H

BLUE Flight was scheduled to strike the Yen Vien RR classification yard. Upon reaching the target they found it obscured by weather. They were turning over the target to the egress heading when this event occurred. The flight was part of a total force attacking JCS 19.00 (21°05'25"N/105°55'15"E). The flights originating from Takhli were to strike the target first followed by those from Korat. The IRON HAND Flight Events II-103 and II-104 preceded the strike forces. The Takhli forces (in order of striking the target) was composed of the aircraft in Events II-105(TOT 0816Z), II-100(TOT 0817Z), II-99 (TOT 0819Z), and II-102. The Korat force was composed of the aircraft in Event II-106 and Event II-101 which was the last strike flight on the target.

## 2. MISSION ROUTE

See Event II-99. BLUE Flight, from Korat, was refueled inbound and outbound.

## 3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 2, 3, 4

6 - 750 lb bombs
2 - 450 gal tanks
1 - QRC-160 Pod
All avionics standby/off except doppler
Camouflage paint

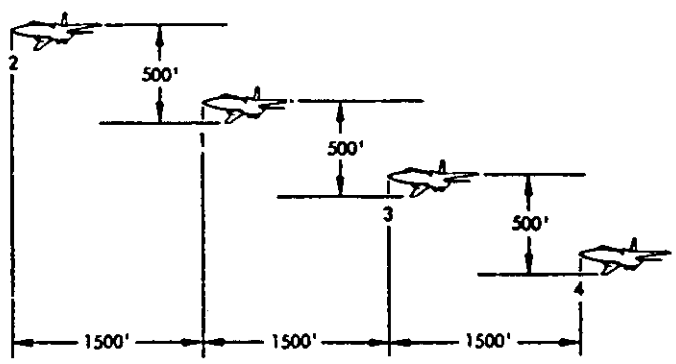
MIG-17 MIG 1, 2

Configuration unknown
Silver colored

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Broken clouds and haze at lower levels, clear above.

| | BLUE 1 2 3 4 |
|---|---|
| Altitude: | ---16,000 ft---- |
| Heading: | 135° inbound, about 250° outbound |
| Speed: | --540 kt G.S.--- |
| Fuel State: | ---10,000 lb---- |
| Flight Formation | Pod formation |

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5. INITIAL DETECTION

Event II-101

BLUE Flight on a heading of 135° was turning right to a westerly heading when they saw two MIG-17s[1] coming from the west, out of the sun, and turning in behind them. The MIGs were at 7 going to 5 o'clock about 6000 ft range and 500 ft higher than the flight. The flight had heard BIG EYE MIG warnings at the tanker but nothing specific.

6. ACTION INITIATED

BLUE Flight jettisoned their bombs, descended to 10,000 ft in maximum power, and at Mach 1.1, out ran the MIGs.

7. SITUATION DEVELOPMENT

See Item 12.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 3600 | 1000 | 25 | Highly qualified fighter pilot. |

Comments on this Encounter

BLUE 1 felt that BIG EYE was useless.

Comments from Overall Experience

BLUE 1:

1. Felt that the peace time operational outfits were negligent in air-to-air training.
2. Felt that the double canopy and accumulated scratches on the canopy caused a glare problem which restricted visibility.
3. Felt that too many switches were involved in changing weapon delivery modes.
4. Felt that a two pilot concept just wasted one pilot.

11. DATA SOURCES

Project Interviews: BLUE 1, 15 Feb 67
Messages, Reports:

7AF DIO 31002 142204 Dec 66

12. NARRATIVE DESCRIPTION

As BLUE Flight turned over the target, aborting the drop due to weather, they saw two MIG-17s at 6000 ft back at the 7 o'clock position, the flight was at the MIG's 10 o'clock. BLUE Flight jettisoned their ordnance and dived down to 10,000 ft at Mach 1.1 to evade the MIGs. The MIGs were in a fighting wing with No. 2 MIG on left. Shortly thereafter all members of BLUE Flight got launch lights on their vector gear so they disregarded the MIGs to prepare for the SAM attack. The SAMs were not seen nor were the MIGs seen again as BLUE Flight returned home. Flight egressed without further incident.

[1]B-4 reportedly saw two more.



[redacted]

[redacted]

Event II-101

Aircraft Involved: Four F-105s vs two MIG-17s

Result: No damage

Vicinity of Encounter: 21°32'N/105°40'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 December 1966/1707H

BLUE Flight was scheduled to strike the Yen Vien RR classification yard. Upon reaching the target they found it obscured by weather. They were turning over the target to the egress heading when this event occurred. The flight was part of a total force attacking JCS 19.00 (21°05'25"N/105°55'15"E). The flights originating from Takhli were to strike the target first followed by those from Korat. The IRON HAND Flight Events II-103 and II-104 preceded the strike forces. The Takhli forces (in order of striking the target) was composed of the aircraft in Events II-105(TOT 0816Z), II-100(TOT 0817Z), II-99 (TOT 0819Z), and II-102. The Korat force was composed of the aircraft in Event II-106 and Event II-101 which was the last strike flight on the target.

## 2. MISSION ROUTE

See Event II-99. BLUE Flight, from Korat, was refueled inbound and outbound.

## 3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 2, 3, 4

6 - 750 lb bombs
2 - 450 gal tanks
1 - QRC-160 Pod
All avionics standby/off except doppler
Camouflage paint

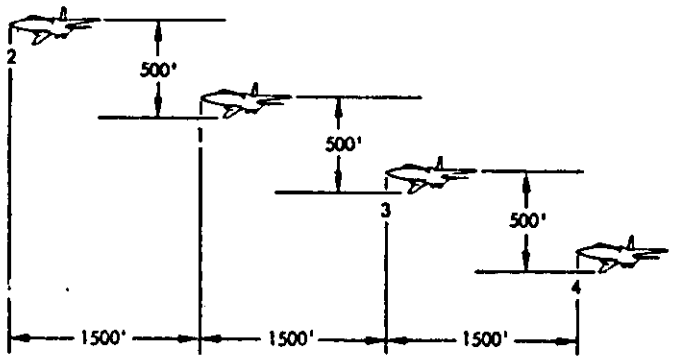
MIG-17 MIG 1, 2

Configuration unknown
Silver colored

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Broken clouds and haze at lower levels, clear above.

| | BLUE 1 2 3 4 |
|---|---|
| Altitude: | ---16,000 ft---- |
| Heading: | 135° inbound, about 250° outbound |
| Speed: | --540 kt G.S.--- |
| Fuel State: | ---10,000 lb---- |
| Flight Formation | Pod formation |




[redacted]

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5. INITIAL DETECTION

BLUE Flight on a heading of 135° was turning right to a westerly heading when they saw two MIG-17s[1] coming from the west, out of the sun, and turning in behind them. The MIGs were at 7 going to 5 o'clock about 6000 ft range and 500 ft higher than the flight. The flight had heard BIG EYE MIG warnings at the tanker but nothing specific.

6. ACTION INITIATED

BLUE Flight jettisoned their bombs, descended to 10,000 ft in maximum power, and at Mach 1.1, out ran the MIGs.

7. SITUATION DEVELOPMENT

See Item 12.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 3600 | 1000 | 25 | Highly qualified fighter pilot. |

Comments on this Encounter

BLUE 1 felt that BIG EYE was useless.

Comments from Overall Experience

BLUE 1:

1. Felt that the peace time operational outfits were negligent in air-to-air training.
2. Felt that the double canopy and accumulated scratches on the canopy caused a glare problem which restricted visibility.
3. Felt that too many switches were involved in changing weapon delivery modes.
4. Felt that a two pilot concept just wasted one pilot.

11. DATA SOURCES

Project Interviews: BLUE 1, 15 Feb 67
Messages, Reports:

7AF DIO 31002 142204 Dec 66

12. NARRATIVE DESCRIPTION

As BLUE Flight turned over the target, aborting the drop due to weather, they saw two MIG-17s at 6000 ft back at the 7 o'clock position, the flight was at the MIG's 10 o'clock. BLUE Flight jettisoned their ordnance and dived down to 10,000 ft at Mach 1.1 to evade the MIGs. The MIGs were in a fighting wing with No. 2 MIG on left. Shortly thereafter all members of BLUE Flight got launch lights on their vector gear so they disregarded the MIGs to prepare for the SAM attack. The SAMs were not seen nor were the MIGs seen again as BLUE Flight returned home. Flight egressed without further incident.

[1]B-4 reportedly saw two more.



[redacted]

[redacted]

Event II-102

Aircraft Involved: Four F-105s vs two MIG-21s[1]

Results: No Damage

Vicinity of Encounter: 21°28'N/104°48'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 December 1966/1615H

BLUE Flight (four F-105s) were enroute to JCS-19. The flight was part of a total force attacking JCS 19.00 (21°05'25N/105°55'15E). The flights originating from Takhli were to strike the target first followed by those from Korat. The IRON HAND flights Events II-103 and II-104 preceded the strike forces. The Takhli forces (in order of striking the target) was composed of the aircraft in Events II-105(TOT 0816Z), II-100 (TOT 0817Z), II-99(TOT 0817Z) and II-102. The Korat forces was composed of the aircraft in Event II-106 and Event II-101 which was the last strike flight on the target. There were BIG EYE EC-121 aircraft orbiting at 20°N/107°E and 20°N/103°E. EB 66Bs and Cs were orbiting at 22°10'N/105°20'E and 21°15'N/104°25'E. Also the Navy was conducting at strike in the immediate vicinity. The flights were about two minutes (18 mi) apart.

2. MISSION ROUTE

The exact route is unknown. However, it is known that the flight had refueled and was just approaching the Red River inbound to the target on a northeast heading.

3. AIRCRAFT CONFIGURATIONS

F-105s BLUE 1, 2, 3, 4

6 - 750 bombs on controlling
2 - 450 gal tanks on inboard stations
1 - QRC -160 POD
1 - AIM-9-B (BLUE 1 only)
Blue 4 had camera pod on LHOBD.
Camouflage paint
BLUE 1 TACAN IFF doppler all on and radiating
BLUE 4 doppler was on; IFF standby; TACAN receive; radar standby
M-61 cannon

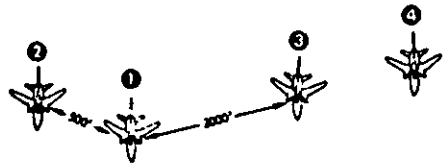
MIG-21 MIG 1, 2

Air-to-air missiles
Silver paint - no markings
Cannons
One of the MIG-21s was identified as a Fishbed D.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: One check at 4000-8000 ft broken and another at 5000 ft overcast visibility unknown.

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 11,000 ft (about halfway between closed layers) | | | |
| Heading: | 050° | | | |
| Speed: | 500 | | | |
| Fuel State: | Full internal plus (about 11,000 lbs) | | | |
| Flight Formation: | Elements almost line abreast | | | |




5. INITIAL DETECTION

BLUE 2 called, "MIGs at 6 o'clock." The MIGs at that time were coming down from a cloud deck which was at 15,000 ft and the only reason they were seen was the vapor trails - water vapor coming off the wing tips. The MIGs were 1 1/2 miles away and closing. Although the flight had head MIG warnings, none was given for the area in which they were flying.

[1] The OPREP messages cite two MIG-17s, however, the aircraft described and identified in the interviews are MIG-21s. Also annotated mission tape Blue 2 of Event II-99 also indicated that the MIGs were 21s.

[redacted]

6. ACTION INITIATED

Because of other rapid chatter BLUE 1 asked for a repeat and BLUE 4 confirmed the MIGs. At this time, BLUE Flight jettisoned ordnance and tanks, went burner and started a left break.

7. SITUATION DEVELOPMENT

The MIGs fired singly (not in salvo) over a short period of time two missiles which detonated about 50 yards behind BLUE 3 and 4 - doing no damage. With BLUE 1 and 2 in an easy left turn and BLUE 3 and 4 in a hard break, MIG 1 and 2 closed in on BLUE 3 and 4, pulled up in a yo-yo, back in on BLUE 4 about 1000 ft back, and started firing the cannons. By this time BLUE Flight had jettisoned all stores except the QRC pods and had selected maximum power. BLUE 3 and 4 had accelerated to Mach 1.1 and were out running the MIGs. Meanwhile, BLUE 1 and 2 were able to position behind the MIGs. As BLUE 1 dropped back and reversed, the MIGs disengaged by dropping down into the lower cloud dock. During the hassle, BLUE 3 had dropped down into the lower cloud layer so, rather than join up, BLUE 1 sent BLUE 3 to orbit in Laos. BLUE 1, 2, and 4 joined up and set up a MIG patrol just north of the Red River. No other MIGs were sighted and at bingo fuel the flight went home.

8. ORDNANCE

(No. fired/No. hits)

BLUE Flight No ordnance expended

| | Cannon | Soviet AAM(ATOLL) | Remarks |
|---|---|---|---|
| MIG 1 | 1/0 | 2/0 | Detonated behind BLUE 3 and 4<br>No damage |

10. AIRCREW COMMENTS

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 3600 | 1150 | 55 | All TAC FTR background<br>First MIG engagement |
| BLUE 4 | 1100 | 600 | 11 | All TAC FTR background<br>First MIG engagement |

Comments on this Encounter

BLUE 1:
- Would have liked radar to have been able to maintain contact with MIG
- Says pilots need more air to air training
- Would have liked capability to jam EW radar
- Would like a larger envelope for error at low altitude
- Would like more acceleration and turn capability
- Would like range readout on gunsight
- Says pilot has too many switches to change to go from ground attack to air to air
- Thought MIG pilots had good basic training, good flight discipline-but not too aggressive

BLUE 4:
- Wants tighter turn capability
- Wants better air to air training
- Wants more acceleration
- Wants better visibility to 6 o'clock
- Says "Lucky to be alive."

11. DATA SOURCES

Project Interviews: BLUE 1 2 Feb 67, BLUE 4 14 Dec 66
Messages, Reports: 7AF DIO 31002 142204

12. NARRATIVE DESCRIPTION

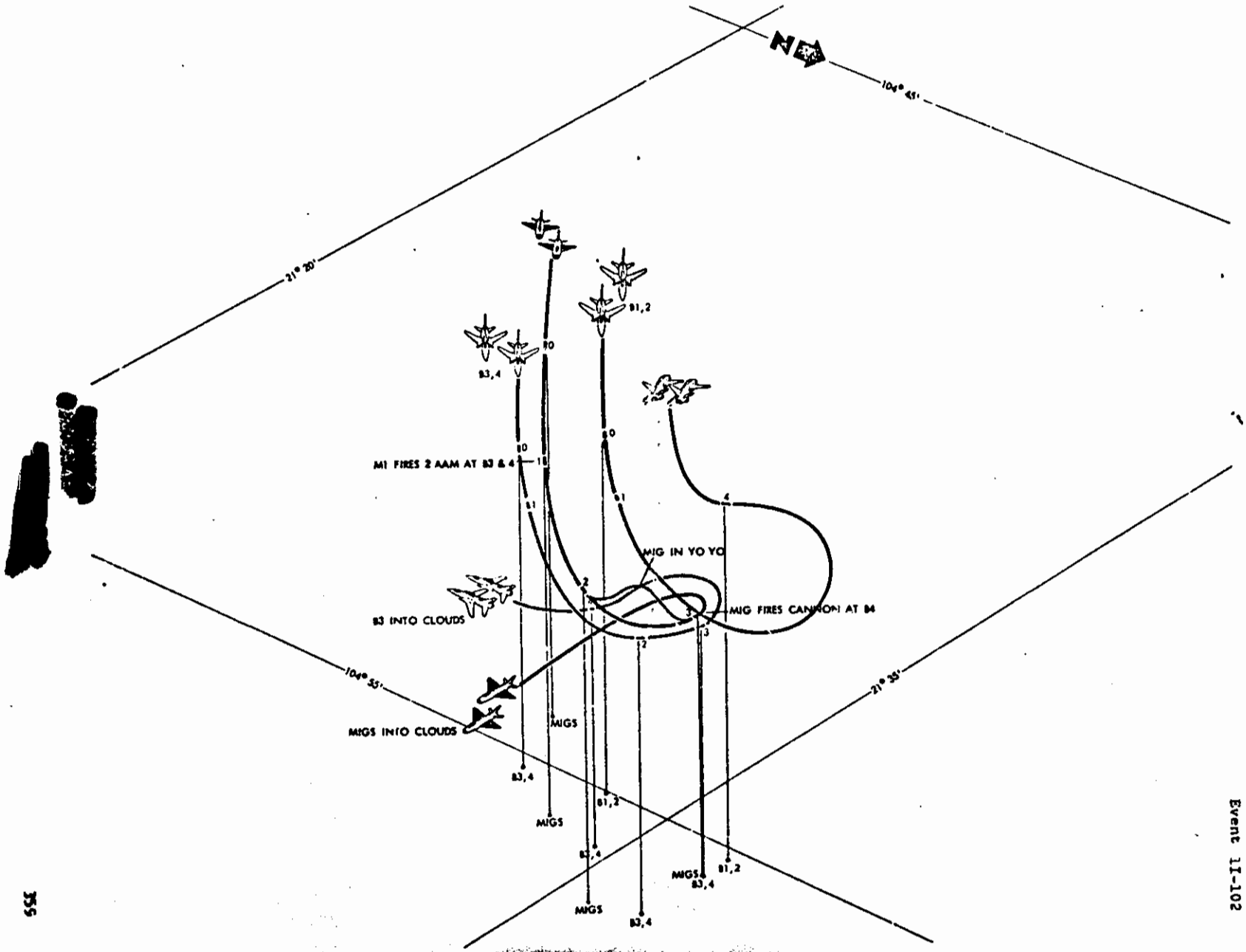
BLUE Flight, inbound to a Package VI target, was at 11,000 ft between 9000 ft and 13,000 ft cloud layers when BLUE 2 spotted MIG Flight coming out of the upper cloud layer about one to one and a half miles back and at the 6 o'clock position. BLUE Flight jettisoned stores at 21°28'N/104°48'E and started a left break when MIG Flight launched two air-to-air missiles. Both missiles detonated behind BLUE 3 and 4 but caused no damage. MIGs then closed to 1000 ft on BLUE 3 and 4 and opened fire with his cannon. BLUE 3 and 4 accelerated to Mach 1.1 in the left break and escaped undamaged. Meanwhile, BLUE 1 and 2 were maneuvering to the 6 o'clock position on MIG flight. However, before BLUE 1 and 2 could position on MIG Flight, MIG Flight disengaged by dropping into the lower cloud dock. BLUE 1, 2, and 4 rejoined for MIG patrol. BLUE 3 had gone into the lower cloud layer during the hassle so rather than rejoin the flight he went to an orbit in Laos. It was felt that due to the attack position, the MIGs had been under GCI.

RED BARON EVENT II-102 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 2, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | Alt 11,000 Hdg 043-050° about 500 KTAS 10,500 lb of fuel. | B2 saw 2 MIGs (M1, 2) closing on the flight. | BLUE Flight elements separated by about 2000 ft. | B2 called MIG at 6 o'clock 1-1/2 miles from B1 - "Did you say BLUE Flight" B2 confirms. | MIGs in tight fighting wing, M2 about 40-60° back, 300-1000 ft out from M1. MIGs had good overtake. | B4 saw two silver aircraft and was able to identify by color only. MIGs seem to have contrails from the wing tips. |
| $T_1$ | Same as $T_0$ | BLUE Flight jettisons stores and tanks and goes to afterburner. B3 and 4 start a left break and nose over rapidly after missile launch. B1 and 2 start a left. B1 sets switches for AIM-9B and sights in air-to-air mode. | | From B1 "Jettison bombs and stores, | M1 fired two AAMs at B3 and B4. The two Atolls miss. | Missiles explode at about 5 o'clock at about 50 yards range, somewhere beyond closest point of approach. B1 has no plan to use radar lock for radar ranging. |
| $T_2$ | B3 and 4 descending in a left turn 4-5 g 525 KTAS. B1 and B2 in 4g turn at higher altitude. | | | | MIGs go after B3 and B4, start to cut inside of B3 and B4s turn. MIGs in tight formation to prevent overshoot, the MIGs execute a yo-yo. | Yo-yo is perfectly timed and executed. |
| $T_3$ | B3 and 4 at 600 KTAS. Still in hard turn to keep airspeed up. Altitude 6-7000 ft B1 and 2 at about 9500 ft. | | | | MIG at 800-900 ft from B4, and fires cannon. | B4 saw white puffs of smoke from underside of aircraft. Intermittent puffs from lead MIG only. |

RED BARON EVENT II-102 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_4$ | B1, 2 at 9500 ft 3-4 g turn | B1 and B2 start to reverse to the right. Come out of afterburner.<br><br>B3 goes into clouds. B4 reverses to right and joins B1 and B2.<br><br>B1, 2 and 4 set up an orbit at 10-11,000 ft. | | B1 called "Where are MIGs"<br><br>B4 answered that MIGs had gone into clouds.<br><br>Lead tells B3 to go home. | MIGS reverse and dive into the clouds. | |
| | | | | | | |


N
104° 45'
21° 20'
21° 35'
104° 55'
B1,2
B3,4
M1 FIRES 2 AAM AT B3 & 4
MIG IN YO YO
B3 INTO CLOUDS
MIG FIRES CANNON AT B4
MIGS INTO CLOUDS
MIGS
B3,4
B1,2
MIGS
B3,4
MIGS
B3,4
MIGS
B3,4
B1,2

Event II-102

[redacted]



Aircraft Involved: Two F-105s vs two possible MIG-17s

Result: No damage

Vicinity of Encounter: 20°40'N/105°05'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 December 1966/1740H

BLUE 1 and 2 (two F-105F WILD WEASEL aircraft) from Takhli had completed their primary mission and were flying RESCAP for a downed F-105 (BLUE 3 from Event II-99). Two other F-105F were also on RESCAP but were not in the immediate vicinity. The flight was part of a total force attacking JCS 19.00 (21°05'25"N/105°55'15"E). The flights originating from Takhli were to strike the target first followed by those from Korat. The IRON HAND flights (Events II-103 and II-104) preceded the strike forces. The Takhli forces (in order of striking the target) were composed of the aircraft in Events II-105(TOT 0816Z), II-100 (TOT 0817Z), II-99(TOT 0819Z) and II-102. The Korat forces were composed of the aircraft in Event II-106 and Event II-101 which was the last strike flight on the target. There were EC-121 aircraft on station at 20°N/107°E and 20°N/103°E. Also EB-66Bs and Cs were in orbits in the vicinity of 22°10'N/105°20'E and 21°15'N/104°25'E. The Navy had a strike in the immediate vicinity of JCS 19.00. These other aircraft had left the area by the time of this event.

3. AIRCRAFT CONFIGURATIONS

No information except that BLUE 1 and 2 carried tanks.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Specifics unknown -- however, it was overcast in the target area such that the strike flights aborted. In the RESCAP area it must have been VFR since the RESCAP was effected.

BLUE Flight was in a left orbit at 12,000 ft when the MIG attack started. Other flight condition information unknown.

5. INITIAL DETECTION

BLUE Flight was in a left orbit at 12,000 ft flying RESCAP for a downed F-105 pilot. About the time the pick-up was being completed, BLUE 2 called out bogeys at 7:30 o'clock.

6. ACTION INITIATED

BLUE 1 didn't see the bogeys. BLUE 2 called that the bogey was shiny and from that BLUE 1 assumed that the bogey was a MIG. BLUE 2 jettisoned his tanks; BLUE 1 attempted to jettison his tanks but one would not come off. BLUE Flight broke down and into the MIGs. The MIGs got no closer than 3000 feet to BLUE Flight when they did a hard climbing turn to disengage.

7. SITUATION DEVELOPMENT

This event terminated when the MIGs disengaged and disappeared.

9. EQUIPMENT PROBLEMS

BLUE 1 had one 450-gal tank that he could not jettison.

10. AIRCREW COMMENTS

Experience: Unknown

Comments on This Encounter

BLUE 1 felt that the MIGs would have been short on fuel since they were so far from the airfield (?).

11. DATA SOURCES

Project Interview: BLUE 1, 14 Mar 1967.

Messages:

7AF DIO 31002 142204Z Dec 66
7AF 141850Z Dec 66 OPREP-3 DOCO 30393

12. NARRATIVE DESCRIPTION

BLUE Flight had completed their mission and had egressed to the tanker for post-strike refueling. On receiving communication that an F-105 had been shot down (see Event II-99), BLUE 1 and 2 returned to set up a RESCAP orbit about 1700H. There were two other F-105s in the area and were seen by BLUE Flight several times. The other two F-105s departed the area due to low fuel state, and about at this time (about 1740H) BLUE Flight heard that the pick-up of the pilot was being completed.

[redacted]

12. NARRATIVE DESCRIPTION (Continued)

At this time BLUE 2 called bogeys at 7:30 o'clock. BLUE 1 never saw the bogeys but when BLUE 2 called that they were shiny, BLUE Flight punched tanks and broke left and down. BLUE 2's tanks came off but only one of BLUE 1's jettisoned.

The MIGs were coming from the 8 o'clock position sliding into the 6 o'clock and were 2-3 miles out when first detected.

As BLUE Flight broke into the MIGs, they executed a hard climbing turn and headed back towards Hanoi. No firing was observed and the MIGs never closed to less than 3000 ft.

[redacted]

Event II-104

Aircraft Involved: Four F-105s vs two MIG-21s

Result: Sighting

Vicinity of Encounter: 21°55'N/105°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 December 1966/1650H

BLUE Flight (one F-105F and 3 F-105Ds) from Korat was on an IRON HAND mission. The flight was part of a total force attacking JCS 19.00 (21°05'25"N/105°55'15"E). The flights originating from Takhli were to strike the target first followed by those from Korat. The IRON HAND Flights (Events II-103 and II-104) preceded the strike forces. The Takhli forces (in order of striking the target) were composed of the aircraft in Events II-105 (TOT 0816Z), II-100 (TOT 0817Z), II-99 (TOT 0819Z) and II-102. The Korat forces were composed of the aircraft in Event II-106 and Event II-101 which was the last strike flight on the target. There were KC-121 aircraft orbiting at 20°N/107°E and 20°N/103°E as well as EB-66Bs and Cs orbiting at 22°10'N/105°20'E and 21°15'N/104°25'E. The Navy was also conducting strikes in the immediate vicinity of JCS 19.00.

2. MISSION ROUTE

Generally followed the other flight routes (see Event II-99)

3. AIRCRAFT CONFIGURATION

Unknown - ordnance on BLUE 4 was bombs.

BLUE Flight had no AIM-9Bs.

MIGs were silver.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Unknown, but in this case not a factor.

| | BLUE Flight |
|---|---|
| Altitude: | 14,000 ft |
| Heading: | 092° |
| Speed: | 480 kt |
| Fuel State: | Unknown |
| Formation: | Unknown |

5. INITIAL DETECTION

BLUE 4 looked overhead and saw two possible MIG-21s passing over the formation at 6 o'clock high. BIG EYE had called out MIGs in the area ahead of BLUE Flight. The MIGs were on the same heading as BLUE Flight and were at 23,000 ft altitude.

6. ACTION INITIATED

The MIGs were about 0.2 Mach faster. As they passed overhead and for about three minutes after, BLUE watched the MIGs press away.

7. SITUATION DEVELOPMENT

BLUE did not attack and the MIGs soon disappeared in the distance.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 2800 | Unknown | Unknown | Mostly ADC experience. |
| BLUE 4 | 4300 | 100 | 15 | |

Comments on This Encounter

BLUE 4 felt that if he had a SIDEWINDER he could have killed these MIGs.

Comments from Overall Experience

11. DATA SOURCES

Project Interviews: BLUE 2, 2 Feb 67; BLUE 4, 4 Feb 67

Messages:

7AF DIO 3.002 142204Z Dec 66

12. NARRATIVE DESCRIPTION

S : as Item 7.

[redacted]

[redacted]

Event II-105

Aircraft Involved: Four F-105s vs numerous MIGs

Result: No damage

Vicinity of Encounter: 21°15'N/105°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 December 1966/1613H

BLUE Flight (four F-105s) was the lead flight with flak suppression responsibilities for JCS target 19.00. BLUE 1 was the force commander for this strike. The flight was part of a total force attacking JCS 19.00 (21°05'25"N/105°55'15"E). The flights originating from Takhli were to strike the target first followed by those from Korat. The IRON HAND flights (Events II-103 and II-104) preceded the strike forces. The Takhli forces (in order of striking the target) were composed of the aircraft in Events II-105 (TOT 0816Z), II-100 (TOT 0817Z), II-99 (TOT 0819Z) and II-102. The Korat force was composed of the aircraft in Event II-106 and Event II-101 which was the last strike flight on the target.

On station were EC-121 aircraft orbiting in the vicinity of 20°N/103°E and 20°N/107°E also in the area were EB-66Bs and Cs in the vicinity of 52°10'N/105°20'E and 21°15'N/105° 25'E. The Navy was also conducting strikes in the vicinity of JCS-19.00.

2. MISSION ROUTE

BLUE Flight departed Takhli, refueled, flew to the north tip of Thud Ridge, and then down the west side of the ridge to the target. (See Event II-99).

3. AIRCRAFT CONFIGURATIONS

BLUE 1, 2, 3, 4

5 - 750 lb bombs
2 - 450-gal tanks
M-61 cannon/1029 rounds
All aircraft had QRC-160 pods

MIGs

Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Overcast - Bases 1,500 ft and tops 5,000 ft, heavy rain and bad visibility underneath. These conditions prevailed except right over the target where the sky condition was clear.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 3,000 ft (approx) |
| Heading: | Approximately 138° |
| Speed: | 580 kt |
| Fuel State: | Full internal plus |

Flight Formation:

Unknown

5. INITIAL DETECTION

BLUE 1 had just descended through the cloud layer when he got a MIG call putting MIGs at his 3 o'clock. The flight was in the vicinity of 21°15'N/105°40'E.

6. ACTION INITIATED

As the MIG (type unknown) passed to 5 o'clock, BLUE Flight lit afterburner and climbed back on top of the cloud layer.

7. SITUATION DEVELOPMENT

As BLUE Flight came up above the clouds, a SAM was fired at them. MIGs were also seen, so BLUE went back down under the clouds. And as they passed Phuc Yen they saw several MIGs taking off to the north. MIG-21 followed BLUE 1 until he pulled up for bomb delivery. BLUE Flight popped up into a left, approximately 270° turn, delivered their bombs on the target, and departed for home. Outbound at 1617H two unidentified aircraft were observed in formation at 20°55'N/105°40'E, heading 090°.

8. ORDNANCE

BLUE Flight expended no air-to-air ordnance (bombs only).

9. EQUIPMENT PROBLEMS

BLUE 2 had one tank that would not jettison.

[redacted]



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10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 1 | 5500 | 200 | 30 |

Comments on this Encounter:

BLUE 1 felt that flak suppression was tremendously effective -- that CBUs were good but they got only the crews and that 3,000 VT bombs would get the crews and the guns.

11. DATA SOURCES

Project Interview:

BLUE 1 - 6 Feb 67

Messages, Reports:

7AF OPREP-4 DOCO 30373 141312Z Dec 66
7AF 142204Z Dec 66 DIO 31002
7AF 141850Z Dec 66 OPREP-3 DOCO 30393

12. NARRATIVE DESCRIPTION

See Items 5, 6, and 7 above.

[redacted]

Event II-106

Aircraft Involved: One F-105D vs two MIG-21s

Result: Sighting

Vicinity of Encounter: 21°00'N/105°00'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 December 1966/unknown

BLUE Flight of four F-105Ds were egressing from a strike mission. The flight was part of a total force attacking JCS 19.00 (21°05'25"N/105°55'15"E). The flights, originating from Takhli, were to strike the target first, followed by those from Korat. The IRON HAND Flights (Events II-105 and II-104) preceded the strike forces. The Takhli forces (in order of striking the target) were composed of the aircraft in Events II-105 (TOT 0816Z), II-100 (TOT 0817Z), II-99 (TOT 0819Z) and II-102. The Korat forces were composed of the aircraft in Event II-106 and Event II-101 which was the last strike flight on the target. There were EC-121 aircraft orbiting in the vicinity of 20°N/107°E and 20°N/103°E. Also in the area were EB-66B and C aircraft orbiting in the vicinity of 22°10'N/105°20'E/21°15'N/104°25'E. Navy aircraft also had a strike in the vicinity of JCS 19.00.

2. MISSION ROUTE

BLUE flight departed Korat and proceeded along a route similar to that described in Event II-99.

10. AIRCREW COMMENTS

Experience

| Total Hours | F-105 Hours | Combat Missions |
|---|---|---|
| 2500 | 150 | About 20 |

11. DATA SOURCES

Project Interview: BLUE 4, 15 February 1967
Messages: None

12. NARRATIVE DESCRIPTION

BLUE Flight was egressing at 24,000 ft altitude 510 KTAS. BLUE 4 sighted two MIG-21s (recognized because of their silver color and delta wing) at 7 o'clock high. The MIGs were 5 miles away and about 10,000 ft above BLUE Flight at location 21°N/105°E. The MIGs closed on the flight until they were at a range of about one mile at location 20°30'N/104°35'E, at which time the MIGs broke off and were lost from view.

[redacted]

[redacted]

Event II-107

Aircraft Involved: Four F-105Ds vs two MIG-17s and two MIG-21s

Result: No damage

Vicinity of Encounter: 21°25'N/105°45'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 December 1966/1557H

Four F-105Ds (BLUE flight) were on a strike mission against JCS 51.10 (21°16'00"N/105°50'24"E). The first part of the strike force was from Korat and preceded the force from Takhli to the target in a "gaggle" with the five strike flights in a diamond formation. (Events II-107, -113, -114, -115, -116) The force from Takhli followed in a trail formation with the flights about two minutes apart. This force was led by a flak suppression flight, Event II-108 (TOT 0800Z), followed by the flights in Event II-112, Event II-110 (dropped at 0805Z), Event II-111 (TOT 0806Z) and Event II-109 (TOT 0808Z).

There were two IRON HAND flights (one each for Korat and Takhli) in the area, but no CAP flights. The IRON HAND flights did not encounter MIGs. (It is assumed that the supporting B-66 and BIG EYE aircraft were on station although specific OPREP reference was not available.)

2. MISSION ROUTE

Departed Korat refueling en route to "Y" in the Red River then down Thud Ridge to the target. Return by reverse route. The mission route was similar to the Takhli flight route. Refueling was on Green Anchor.

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 2, 3, 4

6 750-lb bombs

1 SIDEWINDER (AIM-9B) on B-1, 2 and 3

1 QRC-160

2 450-gal droptanks

MIG-17 and 21 MIG 1, 2, 3, 4

Silver color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered clouds with tops estimated 8,000 ft. Visibility 3 to 5 miles in low altitude haze with good visibility at altitude.

| | |
|---|---|
| Altitude: | 14,000 ft |
| Heading: | 135° |
| Speed: | 540 kts G.S. |
| Fuel State: | Unknown |
| Flight Formation: | Finger tip with element on left side 1,000 to 1,500 feet out. BLUE flight trailing one mile and to the left of lead flight (Event II-113). |

5. INITIAL DETECTION

Had received warnings of MIGs in the area. BLUE flight was in straight and level flight when BLUE 3 called MIGs at 1 o'clock, low. BLUE 3 estimated them to be 5,000 feet low, climbing and starting to turn in behind BLUE flight. When first seen, the MIGs were at a range of 4 to 5 miles. The four MIGs were in two elements.

6. ACTION INITIATED

BLUE 1 looked and saw MIGs at 3 o'clock low, range 6,000-7,000 feet starting to turn in behind and called BLUE flight to jettison external stores and break.[1] BLUE 1, 2, and 4 jettisoned while BLUE 3 elected to retain all stores. BLUE 1 broke down right and monitored MIG 1 and 2 (MIG-17s).[2] BLUE 3 broke down right and probably monitored MIG 3 and 4 (MIG-21s). BLUE 2 trailed BLUE 1 as BLUE 4 trailed BLUE 3.

---

[1] Bombs dropped at 1557H.

[2] The OPREP sources identify these as MIG-21s. B-3 was only certain that 2 (MIG 3, 4) were 21's, while B-1 was certain that MIG 1 and 2 were MIG-17s due to high tail.

[redacted]

7. SITUATION DEVELOPMENT

BLUE flight continued the hard diving turn 5 1/2 to 6g and continued it for about 180°-200°. During the turn BLUE 1 and 2 forced MIG 1 and 2 to overshoot from 3 o'clock to the 10 o'clock high position. BLUE 3 and 4 forced MIG 3 and 4 to overshoot behind them from 5 o'clock to the 6 o'clock position, but lost sight of the MIGs as they passed to 6 o'clock at 4,000 ft range. BLUE 1 and 2 turned left to position behind MIG 1 and 2 when BLUE 1 spotted two Bogies 6 o'clock low and then BLUE 1 broke left into the Bogies, dropping the speed to 420 knots. The Bogies were identified as F-105s then BLUE 1 and 2 turned back to the right on a northwestern heading to egress up Thud Ridge, after unloading to regain speed. BLUE 3, while in the break, observed "grey streaks" (similar to 2.75 rocket smoke) pass between BLUE flight elements. BLUE 3 and 4 started to turn back up Thud Ridge after breaking for 180° when BLUE 4 on the inside of the turn observed what he thought to be a missile, pass off the right wing and explode 100 yards in front of BLUE 4. BLUE flight rejoined while egressing, and BLUE 3 expended on a secondary target, at location 21°14'N/104°21'E, and at the same time inadvertently expended his AIM-9B.

8. ORDNANCE

| | |
|---|---|
| BLUE flight | None |
| MIG 1, 2 | Unknown |
| MIG 3, 4 | (Possibly missiles, rockets, guns) |

9. EQUIPMENT PROBLEMS

None

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 3300 | 450 | 25 | 18 months as I.P. in the F-105 |
| BLUE 2 | Unknown | | Est. 65 | |
| BLUE 3 | 3500 | 1100 | 70 | |
| BLUE 4 | Unknown | | | |

Comments on this Encounter

BLUE 1 MIG pilots not highly skilled. MIGs should not have overshot.

BLUE 3 None

Comments from Overall Experience

BLUE 1 MIG warnings clutter Guard Channel and are useless. Having the AIM-9B allows more aggressiveness. Size of the sight pipper should be exact (1 or 2 mils). Switchology needs improvement. Visibility in the F-105 to the 6 o'clock area is poor. Fighter crew should be one person, pilot. Missions were stereotyped. Would like to have identified the F-105s earlier.

11. DATA SOURCES

Project Interviews: BLUE 1 (15 February 1967), BLUE 3 (16 February 1967).

Messages, Reports: 7AF DAI-014 0192248Z December 1966 DIO 31041 December 1966
388 TFW KORAT OPREP 3 191411Z December 1966 DOI 04720 December 1966

12. NARRATIVE DESCRIPTION

(See items 5, 6, 7)

[redacted]

Event II-108

Aircraft Involved: Four F-105s vs one MIG-21C and four MIG-?

Result: Sightings only

Vicinity of Encounter: 21°16'N/105°50'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 December 1966/1600H

Four F-105Ds (BLUE Flight) were on a strike mission against JCS 51.10 (21°16'00"N/105°50'24"E). The first part of the strike force was from Korat and preceded the force from Takhli to the target in a "gaggle" with the five strike flights in a diamond formation. (Events II-113, -107, -116, -115, -114). The force from Takhli followed in a trail formation with the flights about two minutes apart. The force was led by a flak suppression flight, Event II-108 (TOT 0800Z) followed by the flights in Event II-112, Event II-108, (dropped at 0805Z) Event II-111 (TOT 0806Z) and Event II-109 (TOT 0808Z).

There were two IRON HAND flights (one each for Korat and Takhli) in the area, but no CAP flights. The IRON HAND flights did not encounter MIGs. (It is assumed that the supporting B-66 and BIG EYE aircraft were on station although specific OPREP reference was not available.)

2. MISSION ROUTE

The mission route for all aircraft was Takhli direct to Red Anchor extended, direct to 20°28'N/103°43'E, at 15,000 ft; direct to 21°30'N/105°40'E at 15,000 ft; direct to 21°32'N/105°27'E at 6,500 ft; direct to the target at 4,000 to 8,000 ft. Egress was the reverse route, at 6,000 to the Red River then at 30,000 to White Anchor post-strike refueling.

A total of 18 MIGs were sighted by all flights.

Ingress was on the SW side of Thud Ridge and roll in was on a generally northerly direction.

3. AIRCRAFT CONFIGURATION

| F-105 BLUE 1, 3 | BLUE 2, 4 |
|---|---|
| 2 - 450-gal wing tanks | 2 - 450-gal tank |
| 4 - CBU-24s | CBU-24s |
| 1 - M-61 gun (1,029 rounds 20mm) | M-61 gun 20mm |
| 1 - QRC 160 POD | 1 - QRC 160 POD |
| 1 - AIM-9B | |

1 MIG-21C Unknown
4 MIG-? Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Broken cloud layer at about 3,500 ft.

Altitude, head, airspeed, and flight formation unknown.

5. INITIAL DETECTION

Two sightings were reported. One was a single MIG-21C below the flight and the other was a flight of four MIGs above the clouds at 8,000 to 10,000 ft.

6. ACTION INITIATED

No action was initiated to attack any of the MIGs sighted.

7. SITUATION DEVELOPED

The MIG-21 turned into the flight but did not engage.

8. ORDNANCE

None

9. EQUIPMENT PROBLEMS

Unknown.

10. AIRCREW COMMENTS

Comments of overall Experience:

BLUE 2 says weather helps SAMs since if you are close to clouds and cannot move fast enough, MIGs can also pop through deck and pop right back under GCI control.

11. DATA SOURCE

[redacted]

[redacted]



## 11. DATA SOURCE

Project Interviews:

BLUE 2 (16 Mar 67)

Messages, Reports:

7AF OPREP-3 191113Z Dec 66 DOCC 28235
7AF 192248Z Dec 66 DIO 31041

## 12. NARRATIVE DESCRIPTION

BLUE Flight dropped their CBUs on the target (areas C, A, 3, 2 and surrounding) at 1600H which was defended by very light, inaccurate AAA. During the popup at the target, BLUE Flight saw MIG-17s on the ground at Phuc Yen. Also during popup to the target one MIG-21C was seen below. The MIG-21 turned into BLUE Flight but did not engage. On egress from the area, the flight saw four MIGs of unknown type above clouds at 8 to 10,000 ft. The flight was below the clouds and egressed the area. No engagements, only MIG sightings.



[redacted]

[redacted]

Event II-109

Aircraft Involved: Four F-105Ds vs four MIG-?

Results: Sighting only

Vicinity: 21°32'N/105°23'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 December 1966/1605H

Four F-105Ds (BLUE Flight) were on a strike mission against JCS 51.10 (21°16'00"N/105°50'24"E). The first part of the strike force was from Korat and preceded the force from Takhli to the target in a "gaggle" with the five strike flights in diamond formation. (Events II-113, -107, -116, -115, -114) The force from Takhli followed in a trail formation with the flights about two minutes apart. The force was led by a flak suppression flight, Event II-108, (TOT 0800Z) followed by the flights in Event II-112, Event II-110, (dropped at 0805Z), Event II-111 (TOT 0806Z), and Event II-109 (TOT 0808Z).

There were two IRON HAND flights (one each for Korat and Takhli) in the area, but no CAP flights. The IRON HAND flights did not encounter MIGs. (It is assumed that the supporting B-66 and Big Eye aircraft were on station although specific OPREP reference was not available).

2. MISSION ROUTE

The mission route was from Takhli (take off 1415H direct to Red Anchor extended, direct to 20°28'N/103°43'E at 15,000 feet; direct to 21°30'N/105°40'E at 15,000 feet; direct to 21°32'N/105°27'E at 6,500 feet; direct to the target at 4,000 to 8,000 feet. Ingress was on the SW side of Thud Ridge and roll-in was on a generally northerly heading. Egress was the reverse route at 6,000 ft altitude to the Red River then at 30,000 ft to White Anchor post-strike refueling.

3. AIRCRAFT CONFIGURATION

F-105 BLUE 1, 3

6 - 750-lb bombs
2 - 450-gal tanks
1 - gun (M-61)
1 - QRC-160 pod
1 - AIM-9B

BLUE 2, 4

6 - 750-lb bombs
2 - 450-gal tanks
1 - M-61 cannon
1 - QRC-160 pod

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Broken clouds at 3,500 feet, haze,
Altitude: Unknown
Heading: Unknown
Speed: Unknown
Fuel: Unknown
Formation: Unknown

5. INITIAL DETECTION

On ingress BLUE Flight saw four MIGs in two elements of two. The MIGs in the vicinity of 21°42'N/105°32'E were at 16,000 feet heading 320°. Type identification was not made due to distance.

6. ACTION INITIATED

BLUE Flight pressed on and dropped on the target, at 1680Z. The MIGs made no move toward the flight.

7. SITUATION DEVELOPED

The flight saw no flak, and egressed without further incident.

11. DATA SOURCE

Messages, Reports:

355TFW 191113Z Dec 66 OPREP-3 DOCC 28235
7AF 192248Z Dec 66 DIO 31041

COPY AVAILABLE TO DDC DOES NOT PERMIT FULLY LEGIBLE PRODUCTION

[redacted]

[redacted]



12. DESCRIPTIVE NARRATIVE

BLUE Flight was egressing area at 21°32'N/105°23'E where they saw four MIGs in two elements at 16,000 ft heading 320° and climbing. MIGs were at 21°32'N/105°23'E and were at such a distance that model type was undetermined. No engagement attempted.



[redacted]

[redacted]

Event II-110

Aircraft Involved: Four F-105Ds vs six MIG-17s

Results: No damage

Vicinity: 21°25'00"N/105°41'10"E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 December 1966/1603H

Four F-105Ds (BLUE Flight) were on a strike mission against JCS 51.10 (21°16'00"N/105°50'24"E). The first part of the strike force was from Korat and preceded the force from Takhli to the target in a "gaggle" with the five strike flights in a diamond formation. (Events II-113, -107, -116, -115, -114.) The force from Takhli followed in a trail formation with the flights about two minutes apart. The force was led by a flak suppression flight, Event II-108 (TOT 0800Z) followed by the flights in Event II-112, Event II-110 (dropped at 0805Z), Event II-111 (TOT 0806Z), and Event II-109 (TOT 0808Z).

There were two IRON HAND flights (one each for Korat and Takhli) in the area, but no CAP flights. The IRON HAND flights did not encounter MIGs. (It is assumed that the supporting B-66 and BIG EYE aircraft were on station although specific OPREP reference was not available.)

2. MISSION ROUTE

The mission route was from Takhli direct to Red Anchor extended, direct to 20°28'N/103°43'E at 15,000 feet; direct to 21°32'N/105°27'E at 6500 feet; direct to the target at 4,000 to 8,000 feet. Ingress was on the southwest side of Thud Ridge and roll-in was on a generally northerly heading. Egress was the reverse route at 6,000 feet altitude to the Red River then at 3,000 feet to White Anchor Post-strike refueling.

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 3

6 - 750 lb bombs
2 - 450 gal tanks
1 gun (20mm)
1 QRC-160 pod
1 AIM-9B
TACAN in rec only, radar off

F-105D BLUE 2, 4

6 - 500 lb bombs
2 - 450 gal tanks
1 - M-61 (20mm)
1 - QRC-160 pod
1 - Camera pod (BLUE 2 only)

MIGs

Silver

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clouds at 800 feet, scattered 4,000 to 6,000, broken 5 miles in haze.

BLUE Flight

| | |
|---|---|
| Altitude: | 1500 feet AGL (approx. 3500 feet indicated) |
| Heading: | southerly |
| Speed: | 550 kt |
| Fuel State: | 9000 lb approx., external tanks empty |

5. INITIAL DETECTION

Initial detection was made by BLUE 4 at his 11 o'clock position, level two miles out. Warnings by BIG EYE of MIGs being all over the area were given throughout the flight. MIGs were heading northerly approximately 180° to BLUE Flight. They were identified as MIGs initially by the silver color. Positive ID as MIG-17 occurred as the MIGs rolled up to turn in behind BLUE Flight.

6. ACTION INITIATED

BLUE Flight had already dropped its tanks earlier. When MIGs turned into flight at 1 1/2 miles from BLUE 4 at BLUE 4's 8:30 o'clock position, BLUE Flight engaged afterburner and accelerated away.

7. SITUATION DEVELOPMENT

None.

8. ORDNANCE

None.

9. EQUIPMENT PROBLEMS

None.

[redacted]

## 10. AIRCREW COMMENTS

| Experience | Total Hours | Total F-105 | Missions |
|---|---|---|---|
| BLUE 2 | 3000 | 270 | 61 |
| BLUE 4 | 4000 | 375 | 17 |

Comments on this Encounter

BLUE 2: Never saw them turn into flight. Would have seen them even if they had been camouflaged. Didn't see any external stores. Just noticed a plain Red Star on the aircraft. Didn't notice any afterburner.

BLUE 4: When they went afterburner, he didn't worry about IR missiles because MIGs were too far back. No MIGCAP in area. Only saw two MIGs coming after flight. Even if MIGs camouflaged, he still would have seen them as soon as we did, maybe sooner. No indication of GCI control. MIGs move in without wingman falling out. Didn't see any markings on MIGs.

Comments from Overall Experience

BLUE 2: Rather than split the flight and jettison their bombs and get into a turning contest, they just kept right on going. Training was not adequate for the engagement. Never had the opportunity to do visual laydown or radar deliveries. With more training could get better at dive bombing. Enough information displayed to use guns. Believe in less automation in jettisoning equipment because there are times when one wishes to keep things on the aircraft. Feels he doesn't have to throw very many switches. Had no prior knowledge of enemy weapon system capability and learned most of it from older heads. Assesses enemy pilot's capabilities by saying they are undertrained. Are getting more aggressive though. Once we jettison our ordnance, the mission is shot and MIG accomplishes his objective.

BLUE 4: Generally with a MIG there won't be a SAM day; not a hard and fast rule though. It is possible that tanks could hit slab and cause control problems. Good idea to put charges in tanks, so when they come off, they would explode and give an enemy something to think about. Sufficient information available to use gun. Usually cages his sight when he uses gun. Would rather use a depressed sight. When carrying a GAR-8 (AIM-9) bombs come first, then after leaving target he sets up for air-to-air. At low altitude radar is not the answer to firing the gun. Can't see in a 30° cone behind aircraft - mirrors help some. The only answer to the 6 o'clock coverage is you cover the other element, the other element covers you.

## 11. DATA SOURCES

Project Interviews: BLUE 2, 4 Feb 67; BLUE 4, 8 Feb 67

Messages, Reports:

7AF OPREP-3 19111BZ Dec 66 DOCC 28235
355TFW OPREP-4 191022Z Dec 66 DOI 5421
7AF 192248Z Dec 66 DIO 31041

## 12. NARRATIVE DESCRIPTION

While inbound to target, BLUE 4 observed a flight of four shiny silver MIGs at 11 o'clock two miles low altitude with the flight. One more MIG 2000 feet higher was ahead of this flight of MIGs, all of which were in trail with an outbound flight of F-105s. The MIGs were falling behind as the F-105s were doing about 600 knots. BLUE 4 observed two MIG-17s out of the flight of four turn into flight as the MIGs passed his 8:30 o'clock position approximately 1 1/2 miles out. The MIGs were co-altitude. The MIGs were lost from view as they passed to 6 o'clock. BLUE 2 got a glimpse of two MIGs before they passed out of his vision. BLUE Flight had already jettisoned their tanks so all they did was light afterburner and head straight to the target at 1500 feet. They dropped their ordnance on the target in area B-2 at 0805Z and jettisoned. BLUE Flight saw no MIGs while outbound.

[redacted]

Event II-111

Aircraft Involved: Four F-105Ds vs four MIG-21s

Result: Sighting only

Vicinity of Encounter: 21°30'N/105°15'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 December 1966/1600H

Four F-105Ds (BLUE flight) were on a strike mission against JCS 51.10 (21°16'00"N/105°50'24"E). The first part of the strike force was from Korat and proceeded the force from Takhli to the target in a "gaggle" with the five strike flights in a diamond formation. (Events II-113, -107, -116, -115, -114). The force from Takhli followed in a trail formation with the flights about two minutes apart. The force was led by a flak suppression flight, Event II-108 (TOT 0800Z) followed by the flights in Event II-112, Event II-110 (dropped at 0805Z), Event II-111 (TOT 0806Z) and Event II-109 (TOT 0808Z).

There were two IRON HAND flights (one each for Korat and Takhli) in the area, but no CAP flights. The IRON HAND flights did not encounter MIGs. (It is assumed that the supporting B-66 and BIG EYE aircraft were on station although specific OPREP reference was not available.)

2. MISSION ROUTE

The mission route was from Takhli (take off 0615Z) direct to Red Anchor extended, direct to 20°28'N/103°43'E at 15,000 feet; direct to 21°30'N/105°40'E at 15,000 feet; direct to 21°32'N/105°27'E at 6,500 feet; direct to the target at 4,000 to 8,000 feet. Ingress was on the SW side of Thud Ridge and roll in was on a generally northerly heading. Egress was the reverse route at 6,000 feet altitude to the Red River then at 30,000 feet to White Anchor post strike refueling.

3. AIRCRAFT CONFIGURATION

| BLUE (1, 3) | BLUE (2, 4) |
|---|---|
| 6 750-lb bombs | 6 750-lb bombs |
| 2 450-gal tanks | 2 450-gal tanks |
| 1 QRC-160 pod | 1 QRC-160 pod |
| 1 AIM-9B | TACAN receive only standby on radar and IFF |

MIG-21

Silver

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Broken clouds at about 3,500 feet haze.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 3,000 ft AGL (6,000-7,000 ft indicated) |
| Heading: | 135° |
| Speed: | 500 kts |
| Fuel State: | 500-700 lbs in external tanks |
| Formation: | Unknown -- probably in pod formation |

5. INITIAL DETECTION

BLUE flight heard calls from BIG EYE and from the preceding flights who saw MIGs. BLUE 4 and another flight member saw four silver aircraft at 11 to 10 o'clock, range 5 miles or less. The MIGs were at 10,000 ft altitude and were on an opposite heading to the flight. The MIGs were spotted by the silver color shining in the sun. BLUE 1 identified them as MIG-21s. The MIGs were in two elements with the second about one mile in trail, and 2,000 feet higher than the lead.

6. ACTION INITIATED

BLUE flight continued on past the MIGs.

7. SITUATION DEVELOPMENT

As the MIGs passed to 9 o'clock 4 to 5 miles out, the first, and then the second, MIG started to turn in towards the flight. BLUE 1 then called to jettison bombs and engage the afterburner. BLUE flight accelerated to 550-575 knots and went down into the haze at 1,500-1,800 feet AGL, the MIGs were lost from view. As the flight popped up over Phuc Yen, BLUE 3 called that MIGs were taking off under BLUE flight. Although one was 1,500 feet under BLUE 4 the MIG turned away and was not seen again.

8. ORDNANCE

None.

[redacted]

9. EQUIPMENT PROBLEMS

None.

10. AIRCREW COMMENTS

| | | | |
|---|---|---|---|
| BLUE 2 | Total unknown | F-105 | Mission |
| BLUE 4 | 1,200 | 675 | 13 |

Comments on this encounter: Did not like rear visibility since MIGs were lost from view easily when they went behind.

11. DATA SOURCES

Interview: BLUE 4 (4 February 1967), BLUE 2 (4 February 1967).

Messages:

| | | | | |
|---|---|---|---|---|
| 355TFW | 191113Z | December 1966 | OPREP-3 | DOCC 28235 |
| 7th AF | 192248Z | December 1966 | DIO 31941 | |

12. NARRATIVE

See Items 5, 6, and 7.

[redacted]

Event II-112

Aircraft Involved: Four F-105s vs two MIG-17s and two MIGs (type unknown)

Results: No damage

Vicinity: 21°24'N/105°39'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 December 1966/1603H

Four F-105Ds (BLUE flight) were on a strike mission against JCS 51.10 (21°16'00"N/105°50'24"E). The first part of the strike force was from Korat and proceeded the force from Takhli to the target in a "gaggle" with the five strike flights in a diamond formation. (Events II-113, -107, -116, -115, -114). The force from Takhli followed in a trail formation with the flights about two minutes apart. The force was led by a flak suppression flight, Event II-108 (TOT 0800Z) followed by the flights in Event II-112, Event II-110 (dropped at 0805Z), Event II-111 (TOT 0806Z) and Event II-109 (TOT 0808Z).

There were two IRON HAND flights (one each for Korat and Takhli) in the area, but no CAP flights. The IRON HAND flights did not encounter MIGs. (It is assumed that the supporting B-66 and BIG EYE aircraft were on station although specific OPREP reference was not available.)

## 2. MISSION ROUTE

The mission route was from Takhli direct to Red Anchor extended, direct to 20°28'N/103°43'E at 15,000 feet; direct to 21°30'N/105°E at 15,000 feet; direct to 21°32'N/105°27'E at 6,500 feet; direct to the target at 4,000 to 8,000 feet. Egress was the reverse route, at 6,000 feet to Red River then at 30,000 feet to White Anchor post strike refueling. Ingress was on the southwest side of Thud Ridge and roll in to the target was made on a northerly heading.

## 3. AIRCRAFT CONFIGURATIONS

| BLUE 1 and 3 | BLUE 2 and 4 |
|---|---|
| 6 750-lb bombs | 6 750-lb bombs |
| 2 450-gal tanks | 2 450-gal tanks |
| 1 QRC-160 | 1 QRC-160 |
| 1 AM 9B | |
| camouflage | |

MIGs

Silver color

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered to clear, haze up to 5000 ft; visibility 3 to 5 miles.

| | BLUE | MIGs |
|---|---|---|
| Altitude: | 8,000 ft | about 5,000 ft |
| Heading: | 145° | about 325° |
| Speed: | 540 kts | Unknown |

## 5. INITIAL DETECTION

At approximately 1603H, when BLUE flight was at 21°24'N/105°39'E, inbound BLUE 2 saw two MIGs (type not known) at 12:30 o'clock low pass under BLUE flight as BLUE flight proceeded down Thud Ridge toward the target. The MIGs were 2,000 feet under the flight, and were following a flight of F-105s.

## 6. ACTION INITIATED

BLUE 2 called MIGs and received a reply from the flight, and BLUE flight continued to the target.

## 7. SITUATION DEVELOPMENT

The flight proceeded on the bomb run. Within 2 miles of the target, as BLUE flight started a pop-up, two MIG-17s (BLUE 4 identified them as MIG-19s) were seen orbiting the target. The MIGs were about 4,000 feet above and 2,000-3,000 feet out. BLUE 4 recognized it first as a MIG due to the silver color. The tentative identification was made later by referring to photographs.

The MIGs made a feint toward BLUE flight but did not follow. BLUE flight continued on the bomb run and was near supersonic speed as they left the target and exited up the NE side of Thud Ridge. During roll in on the target one SAM was seen one mile south on an apparent ballistic trajectory, heading west.

[redacted]

[redacted]



8. ORDNANCE

None.

9. EQUIPMENT PROBLEMS

None mentioned.

10. AIRCREW COMMENTS

BLUE 3, 70th mission, 300 hours, F-105.

11. DATA SOURCES

Project interviews: BLUE 3 (6 February 1967) and BLUE 4 (5 February 1967).

Messages, Reports: 7AF 192248Z December 1966 DIO 31041

12. NARRATIVE DESCRIPTION

None.



[redacted]

[redacted]

Event II-113

Aircraft Involved: Four F-105Ds vs Two MIG-21s

Result: No damage

Vicinity of Encounter: 21°25'N/105°49'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 December 1966/1549H

Four F-105Ds (BLUE Flight) were on a strike mission against JCS 51.10 (21°16'00"N/105°50'24"E). The first part of the strike force was from Korat and preceded the force from Takhli to the target in a "gaggle" with the five strike flights in a diamond formation. (Events II-113, -107, -116, -115, -114). The force from Takhli followed in a trail formation with the flights about two minutes apart. The force was led by a flak suppression flight, Event II-108 (TOT 0800Z) followed by the flights in Event II-112, Event II-110, (dropped at 0805Z) Event II-111 (TOT 0806Z) and Event II-109 (TOT 0808Z).

There were two IRON HAND flights (one each for Korat and Takhli) in the area, but no CAP flights. The IRON HAND flights did not encounter MIGs. (It is assumed that the supporting B-66 and Big Eye aircraft were on station although specific OPREP reference was not available).

2. MISSION ROUTE

Departed Korat, refueling enroute to "Y" in the Red River, then down "Thud Ridge" to the target. Return by reverse route. The route was approximately the same as that of the Takhli flights.

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 2, 3, 4

4 - CBU-24s
1 - SIDEWINDER (AIM-9B)
1 - QRC-160 pod
2 - 450-gal wing tanks
IFF and radar standby
TACAN - Receive only
Doppler - on

MIG-21 MIG 1, 2

Silver (no markings observed)

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Estimated 2/10 coverage with tops up to 8000 ft. Visibility 5 to 7 miles above 8000 ft.

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | -- 17,000 ft------- | | | |
| Heading: | --------- 140°----- | | | |
| Speed: | --------- 520 kt--- | | | |
| Fuel State: | Unknown | | | |
| Flight Formation: | element on left side - almost line abreast | | | |

5. INITIAL DETECTION

Had received warnings of MIGs in the area. Flight was in straight and level flight when BLUE 1 spotted two MIG-21s at 1 o'clock level, about 1549H. MIGs were at 17,000 ft, heading 320° and were about 5 miles away and offset 4-5 miles away. MIGs were in element with wingman, approximately 1000 feet to the outside. The MIGs were immediately identified due to color and then by the wing planform.

6. ACTION INITIATED

BLUE Flight observed MIGs jettison tanks and turn right when passing 3 o'clock position. MIGs turned thru 5 into 6 o'clock position as BLUE Flight started a right turn, then broke hard right, descending as BLUE 1 called to jettison everything and break.

7. SITUATION DEVELOPMENT

After approximately 180° of turn MIGS were met head-on and observed to be reversing to the left. BLUE Flight had selected afterburner and descended to 6000 ft altitude for separation as contact was lost. At 21°55'N/104°50'E during egress, BLUE Flight was climbing thru 17,000 feet heading 272°, and 520 kt when BLUE 4 spotted what he thought to be a MIG-19[1] at 21°55'N/104°38'E, altitude 3 to 4000 AGL, (5000 to 8000 ft true altitude)

[1]MSG 192248Z and 191413Z cites it as MIG-17.

[redacted]

heading approximately 210° making gentle left and right turns. No other flight members could confirm this sighting.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 3 | 6200 | 120 | Approx. 20 | Interceptor background |
| BLUE 4 | 2800 | Est. 150 | Approx. 35 | Bomber background |

Comments on this Encounter

BLUE 3 - MIGs appeared to be from Phuc Yen and under GCI control

BLUE 4 - Did not think a MIG-21 could turn so rapidly. Felt that the MIGs he saw were MIG 3 and 4.

11. DATA SOURCES

Project Interviews: BLUE 3, 16 Feb 67; BLUE 4, 18 Feb 67.

Messages, Reports: 7AF DAI-014 192248Z Dec 66 DIO 31041 Dec 66
388TFW Korat OPREP-3 191413 Dec 66 DOI 04721

12. NARRATIVE DESCRIPTION

BLUE Flight was one of five strike flights ingressing down Thud Ridge to the target at the end of the ridge line. MIG 1 and 2 were spotted by BLUE 1 at his 1 o'clock position, level heading opposite to BLUE Flight. BLUE 1 called out the MIGs and had his flight watch them as MIG 1 and 2 passed to the right then started turning in behind BLUE Flight. BLUE 3 called the MIGs passing 5 o'clock turning to 6 o'clock as BLUE 1 directed his flight to jettison external stores and break right. Ordnance was jettisoned, armed, at 1549H in the vicinity of 21°20'N/105°48'E. BLUE Flight started in a level right hand turn then descended to meet MIG 1 and 2 head on, about 500 feet away. The break was terminated at 6000 ft as BLUE Flight egressed up Thud Ridge in afterburner, losing sight of MIG 1 and 2.

In the turn BLUE 4 attempted to set up his sight but was unable to do so while jettisoning his stores at the same time. The first MIG-21 went past in an almost head-on pass, with the MIG attempting to pull lead. BLUE 3 then started to pull away. At this time the second MIG-21 came by 500 to 600 feet away from BLUE 4, canopy to canopy. BLUE 4, at this time, was in a turn at 500 knots. Although the second MIG passed head-on, the MIG turned as BLUE 4 watched over his right shoulder, and saw the intake lip as the MIG turned very tightly behind BLUE 4. BLUE 4 accelerated away and lost the MIG.

At 21°55'N/104°50'E climbing thru 17,000 ft heading 272°, 520 kt, BLUE 4 saw what he thought to be a MIG-19 10,000 ft low at 12 o'clock making gentle turns in a southwesterly direction then turn southeast down the Red River. No other flight members could confirm this sighting.

BLUE 4 stated that during egress some flight called that a flight of four MIG-17s were about 5 miles to the north of BLUE Flight, tracking BLUE Flight and at the same altitude as BLUE Flight. These MIGs made no pass at BLUE Flight nor were they seen by any member of BLUE Flight.

RED BARON EVENT II-113 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | Heading SE 520 kt<br>See 2 MIG-21s at about 4 mi<br>Alt 17,000 ft | Tried to maintain integrity.<br><br>Just watched MIGs while pressing in | Two friendly flights of 4 each close to MIGs<br><br>There were two other strike flights astern | B3 and others called out MIGs | Opposite course, 2 o'clock, low; climbing at high rate of speed about 2000 ft lower than F-105s | One of the first big formation gaggles. (5 flights) |
| $T_1$ | " Continued | | B3 called turn. Lead said keep your eyes on them. B3 called MIGs in B3s 3 o'clock position | MIGs turned 180° to right and ended up on BLUE's 5 o'clock Co-altitude | | |
| $T_2$ | Same altitude | Started turn right and dropped tanks and bombs. Went to afterburners. Made hard right 4 g descending turn. Lost sight of MIGs for a while. Attempted to pull up | Lead called break right. Jettison bombs and tanks. | Closing at 5 o'clock in trail formation. Remain co-altitude | | |
| $T_3$ | B3 and B4 sighted MIGs again "canopy-to-canopy". Both still turning right. BLUE elements split, diving. B3 and B4 about 14,000 ft | | | Garbage on the radio | Climbing attitude. MIGs apparently reverse course after passing canopy-to-canopy. Climbing and turned in vertical | Only one MIG seen 3-5 ft on opposite heading. Lost sight of him again when MIG went up over B3. |
| | | | | | | |

[redacted]

Event II-121

Aircraft Involved: Four F-105s vs four MIG-21s
Result: No damage
Vicinity of Encounter: 21°44'N/104°52'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 7 January 1967/late afternoon.

Four F-105Ds (BLUE Flight) were the lead flight of a strike force of five flights, which had been diverted from the primary target (near Thai Nguyen) and looking for targets of opportunity along the Red River after diverting from acquired target due to weather in Route Package VI-A. BLUE Flight was the flak suppression flight. The flights had executed an in-place turn so that BLUE Flight was now at the rear of the formation.

2. MISSION ROUTE

Departed Korat, headed north to tankers for refueling, then north to TACAN #97, thence east to Thai Nguyen, back to the Red River (vicinity Yen Bai) then 210° outbound to tankers for post-strike refueling.

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 2, 3, 4

4 - CBU-124 bombs (returned to base)
1 - QRC-160 pod operating
1 - SIDEWINDER AIM-9B (returned to base)
BLUE 4 IFF standby, radar in ground map, TACAN in receive only

MIG-21 1, 2

Not given
Silver in color

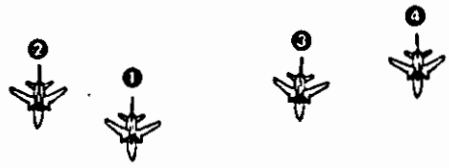
4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Broken undercast, top up to 9,000 ft - visibility not given.

| | BLUE Flight | MIG-21s |
|---|---|---|
| Altitude: | 16,000 ft | 10,000 ft |
| Heading: | West | West |
| Speed: | 480 kt | 500 kt est. |
| Fuel State: | Not given | |

Flight Formation

BLUE Flight QRC-160 formation distance between aircraft 1500 to 2000 ft apart. 500 ft vertical separation.




5. INITIAL DETECTION

BLUE 3 saw four MIG-21s (two flights of two each) coming in on BLUE Flight's 5 o'clock position and BLUE 3 called "MIGs at 5 o'clock." The MIGs were coming about 90° to BLUE Flight about 7 miles out. The MIGs were easy to see against the cloud background. BLUE 4 saw them at 7:30 o'clock.

6. ACTION INITIATED

BLUE 1 call for an in-place turn to the right.

7. SITUATION DEVELOPMENT

MIG-21s closed to 3-1/2 miles behind BLUE Flight. As BLUE Flight continued its in-place turn the MIG-21s broke off and headed north.

8. ORDNANCE

None fired by either side.

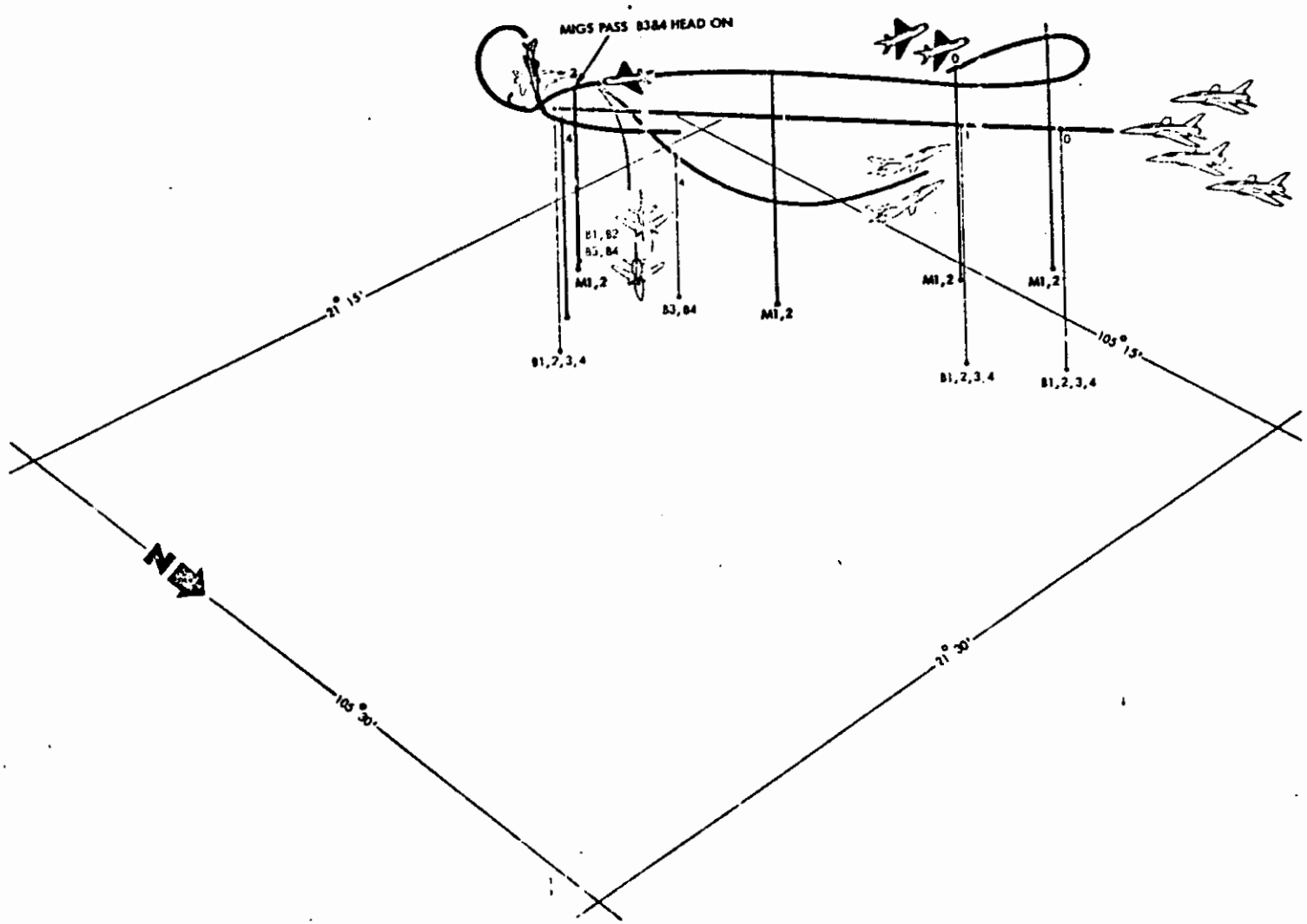
9. EQUIPMENT PROBLEMS

None reported.

[redacted]

RED BARON EVENT II-113 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_4$ | Pulling up. Pick up MIG 4 o'clock high, 5000 ft, 2 miles away in good position. B3 and B4 at 10,000 ft. | Tightening turn and pulling up, then he saw MIGs higher and getting good position. F-105 lost air speed. Broke hard left and down. Stayed in afterburner accelerating rapidly. Disengaged with speed. | | This flight did not communicate until trying to reform on way out. | Had speed advantage getting in good position. | Objective seemed to break up formation and cause jettison. Then they were just harassing. QRC worked throughout. |
| | | | | | | Lead three flights all jettisoned. No F4 CAP this day Last two flights got to target. |
| | | | | | | |


MIGS PASS B3&4 HEAD ON
B1,B2
B3,B4
M1,2
B3,B4
M1,2
M1,2
M1,2
B1,2,3,4
B1,2,3,4
B1,2,3,4
21° 15'
105° 15'
105° 30'
21° 30'
N

Event II-113

[redacted]

Event II-114

Aircraft Involved: Four F-105s vs 14 MIG-17s

Result: No damage

Vicinity of Encounter: 21°47'N/105°18'E to 21°25'N/105°48'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 December 1966/1545H

Four F-105Ds (BLUE Flight) were on a strike mission against JCS 51.10 (21°16'00"N/105°50'24"E). The first part of the strike force was from Korat and preceded the force from Takhli to the target in a "gaggle" with the five strike flights in a diamond formation (Events II-113, -107, -116, -115, -114). The force from Takhli followed in a trail formation with the flights about two minutes apart. The force was led by a flak suppression flight, Event II-108 (TOT 0800Z) followed by the flights in Event II-112, Event II-110 (dropped at 0805Z), Event II-111 (TOT 0806Z) and Event II-109 (TOT 0808Z).

There were two IRON HAND flights (one for Korat and Takhli) in the area, but no CAP flights. The IRON HAND flights did not encounter MIGs. (It is assumed that the supporting B-66 and BIG EYE aircraft were on station although specific OPREP reference was not available.)

## 2. MISSION ROUTE

Korat, Thailand direct to Red Anchor extended, direct to North Station, direct to the Red River, direct to 21°54'N/105°12'E, southeast down Thud Ridge to target. Return route reverse. The flight followed the same general path as those from Takhli.

## 3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3

6 - 750 lb bombs[1]
1 - SIDEWINDER (AIM-9B)
1 - QRC-160 ECM pod
2 - 450 gal wing tanks
1029 rd 20mm ammo

BLUE 1 - Doppler operating, IFF standby, TACAN receive only

BLUE 2 - Radar and doppler off, IFF standby, and TACAN receive only

F-105 BLUE 4

6 - 750 lb bombs
1 - QRC-160 ECM pod
2 - 450 gal wing tanks
1029 rd 20mm ammo

MIG-17[2] MIG 1-14

Unknown
Silver color

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Tops at 11,000 feet

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 12,000 feet |
| Heading: | 130° |
| Speed: | 540 KTAS |
| Fuel State: | 9,000 lb |

Flight Formation: Modified Fluid-Four due to QRC-160 ECM pod coverage.

## 5. INITIAL DETECTION

MIG warnings for the area had been called by BIG EYE on Guard Channel. Radio calls from preceding flights also confirmed that MIGs were in the area. BLUE Flight at 21°30'N/105°30'E just north of Thud Ridge sighted 2 MIG-17s at 9 o'clock low.

## 6. ACTION INITIATED

BLUE Flight continued on toward target.

## 7. SITUATION DEVELOPMENT

BLUE Flight had sufficient speed and the MIGs that attacked from 9 o'clock were too far back to present a threat, so BLUE Flight continued on course. About one-half way down the ridge, four more MIG-17s attacked from 4 o'clock, causing BLUE Flight to jettison bombs.

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[1] In the 24 750-lb bombs carried, 23 were general purpose and one was VT.

[2] Although the OPREP 191410Z states that all four members of BL[illegible] light validate the number sighted, BLUE 2's interview indicates that he thought the fir[illegible] and last groups seen were MIG-21s.

[redacted]

Near the south end of Thud Ridge BLUE Flight made a 180° turn back up the ridge and egressed the target area. Another flight of four MIG-17s attacked BLUE Flight in the turn but were unable to get within gun range.

8. ORDNANCE

None expended

9. EQUIPMENT PROBLEMS

None

10. AIRCREW COMMENTS

Experience:

Not available

Comments on this Encounter:

BLUE 2: The MIG warning by BIG EYE are of limited value. All BIG EYE can tell you is that the MIGs are up and in what general area, after you hear the first call, subsequent MIG calls accomplish nothing more than clutter on the radio. The F-105 high speed capability at low altitude is the greatest asset we have in the area. It gives you the option of attacking or egressing the area pretty much at will. The F-105 is not maneuverable enough to hassle with either the MIG-17 or the MIG-21. If you do not have a definite advantage in the attack you had better not attack a MIG. The M-16 gun is the best piece of equipment available for close-in air-to-air. Radar has a limited value in the operation up north, in that you have to get close enough to make a visual identification before firing.

Shortcomings: The F-105 is not maneuverable enough in a MIG encounter, also it has very poor acceleration at low speeds and will not maintain speed in a high g turn. The present AIM-9 pylon and the QRC-160 pod are high drag items at high speed-low altitude. Switch setting changes when changing from a ground to air mode are too complicated and the air-to-air radar is unreliable in a fast-moving hassle.

11. DATA SOURCES

Project Interviews: BLUE 2, 15 Feb 67

Messages, Reports:

7AF OPREP-3 DOI 04718 191402 Dec 66
7AF DAI-DIO 31041 192248Z Dec 66

12. NARRATIVE DESCRIPTION

BLUE Flight was the last flight in the force and was trailing the preceding flights (Events II-113, 107, 116, 115) with instructions to jettison ordnance and turn into MIGs if the MIGs threatened the strike force.

BLUE Flight had just made their turn at 21°45'N/105°12'E heading 130° when two MIG-17s came from their 9 o'clock position at 3,000 ft altitude, and after a left climbing turn, rolled into their 6 o'clock. The MIGS stayed about 2-3 nmi behind and no firing was observed. BLUE Flight continued on down the ridge and lost sight of the MIGs.

Approximately one minute later, at 0746Z, BLUE 1 observed four MIG-17s at 2:30 o'clock, 5-6 nmi out heading 300°, 10,000 ft, but lost sight of them after just a few seconds. The MIGs were in the vicinity of 21°30'N/105°30'E. Approximately 30 seconds later there were four MIG-17s flying parallel to the flight at their 4 o'clock position 2-3 nmi out. The MIGs flew in finger tip formation for about two minutes and then turned into the flight; although the MIGs had good speed they were not closing rapidly. BLUE Flight jettisoned their bombs, in the vicinity of 21°30'N/105°35'E at 0749Z and turned into the MIGs. The MIGs overshot and then broke off. No firing was observed.

BLUE Flight followed the rest of the strike force down the ridge and proceeded to make a left descending 180° turn, when BLUE 4 observed four MIG-17s coming head-on, from 1 o'clock high and to the right, pass over and slide into BLUE Flight's 6 o'clock position. The MIGs were at 11,000 feet altitude, heading 300°. No firing was observed and the flight completed the turn and egressed back up the ridge. The MIGs were not seen again.

[redacted]

Event II-115

Aircraft Involved: Four F-105Ds vs nine MIG-17s

Result: Sightings only

Vicinity of Encounter: 21°31'N/105°35'E and as noted

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 December 1966/1547H and as noted

Four F-105Ds (BLUE Flight) were on a strike mission against JCS 51.10 (21°16'00"N/105°50'24"E). The first part of the strike force was from Korat and preceded the force from Takhli to the target in a "gaggle" with the five strike flights in a diamond formation. (Events II-113, -107, -116, -115, -114). The force from Takhli followed in a trail formation with the flights about two minutes apart. The force was led by a flak suppression flight, Event II-108 (TOT 0800Z) followed by the flights in Event II-112, Event II-110, (dropped at 0805Z) Event II-111 (TOT 0806Z) and Event II-109 (TOT 0808Z).

There were two IRON HAND flights (one each for Korat and Takhli) in the area, but no CAP flights. The IRON HAND Flights did not encounter MIGs. (It is assumed that the supporting B-66 and Big Eye aircraft were on station although specific OPREP reference was not available).

2. MISSION ROUTE

The flight departed Korat and took what is referred to as the mandatory route. This route followed the Takhli force route which was described in Event II-99.

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 2, 3, 4

4 - 750-lb bombs--
1 - SIDEWINDER (AIM-9B)
1 - QRC-160 ECM pod
2 - 450 gal external tanks

MIG-17s

Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clouds 3-4,000 ft, 5/8 coverage; visibility 5 miles in haze.

| BLUE 1, 2, 3, 4 | 1st sighting | 2nd sighting | 3rd sighting |
|---|---|---|---|
| Altitude: | 16,500 ft | unknown | 12,000 ft |
| Heading: | 135° | 285° | 325° |
| Speed: | 520 KTAS | unknown | 440 KTAS |
| Fuel State: | unknown | unknown | unknown |
| Flight Formation:: | unknown | unknown | unknown |

5. INITIAL DETECTION

Three separate sightings occurred, which are described as follows:

a. (1st sighting) BLUE Flight was inbound to the target area at 21°31'N/105°35'E. BLUE 4 spotted four MIG-17s at 3 o'clock, 14,000 ft, heading NW 1-2 mile range. Two MIGs continued NW, and the other two rolled into BLUE Flights 6 o'clock position at 1-1/2 n mi. BLUE Flight jettisoned their tanks and made a right turn into the MIGs doing 550 kt (no afterburner). As the MIGs got in trail, BLUE reversed back to the left and observed the MIGs breaking off towards the NNW. The MIGs made no attempt to fire on BLUE Flight. BLUE Flight continued on to the target.

b. (Second sighting) At 1550H BLUE Flight was starting their roll-in on their target, heading 285° when BLUE 1 sighted two MIG-17s 1-1/4 n mi to the SE. BLUE continued the strike and lost the MIGs as they passed through a cloud layer on the dive bomb run. The MIGs were not seen again.

c. (Third sighting) During BLUE Flight's egress at 21°40'N/105°27'E, time 1555H, they observed three MIG-17s at their 9 o'clock position, 3-4 n mi away, at 3 to 4,000 ft AGL. The MIGs were on approximately the same heading as BLUE Flight, and paralleled BLUE Flight's path for 1 to 1-1/2 min. until they disappeared in the weather. No markings were seen on the MIG aircraft.

6. ACTION INITIATED

See Item No. 5.

7. SITUATION DEVELOPMENT

See Item No. 5.

[redacted]

8. ORDNANCE

None expended.

9. EQUIPMENT PROBLEMS

BLUE 4 stated that when operating the QRC-160 ECM pod, the only feature of the vector gear that remained reliable was the launch light.

10. AIRCREW COMMENTS

Experience: unknown

Comments on this Encounter: BLUE 3 commented that their flight was the last of approximately five to go into the target. Only the last two flights actually hit the target, because MIG-21s making head-on passes had forced the first flights to jettison their ordnance and abort the strike.

Comments from Overall Experience: BLUE 3 mentioned the following shortcomings on the F-105:

a. No need for an internal bomb bay as all ordnance could be carried on an external station.
b. If bomb bay is retained, then the several thousand pound plunger should be removed. This would either reduce weight, or space could be used to enlarge the internal fuel tanks.
c. He feels that all aircraft should carry an AIM-9 type missile.
d. Effective range of the guns should be increased.
e. He feels the aircraft control system is too stiff and heavy, and also that aircraft is difficult to trim.
f. Feels that "toss bomb computer" is an excellent piece of equipment, but that it should be designed for greater accuracy.
g. He would like to see a combination doppler and inertial avionics system installed in the aircraft.

BLUE 4 stated that most people fly with the X-band pickup of the vector gear turned off, because radar from our own aircraft causes excessive chatter and blocks out other returns.

11. DATA SOURCES

Project Interviews: BLUE 3, 15 Feb 67 and BLUE 4, 16 Feb 67
Messages, Reports: 388TFW, OPREP-3, 191411Z Dec 66 DOI 04719
7AF, MSG 192248Z Dec 66 DIO 31041

12. NARRATIVE DESCRIPTION

See Item No. 5 for details. Of the nine MIG-17s sighted, there were no repeats. Of the first flight of MIGs, one pilot saw only one, two pilots saw two, and one pilot saw all four. The second and third flights were seen by all members.

[redacted]

Event II-116

Aircraft Involved: Four F-105Ds vs four Mig-21s

Result: No damage

Vicinity of Encounter: 21°31'N/105°41'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 December 1966/1545H

Four F-105Ds (BLUE Flight) were on a strike mission against JCS 51.10 (21°16'00"N/105°50'24"E). The first part of the strike force was from Korat and preceded the force from Takhli to the target in a "gaggle" with the five strike flights in a diamond formation. (Events II-113, -107, -116, -115, -114). The force from Takhli followed in a trail formation with the flights about two minutes apart. The force was led by a flak suppression flight, Event II-108 (TOT 0800Z) followed by the flights in Event II-112, Event II-110, (dropped at 0805Z) Event II-111 (TOT 0806Z) and Event II-109 (TOT 0808Z).

There were two IRON HAND flights (one each for Korat and Takhli) in the area, but no CAP flights. The IRON HAND flights did not encounter MIGs. (It is assumed that the supporting B-66 and BIG EYE aircraft were on station although specific OPREP reference was not available).

2. MISSION ROUTE

Departed Korat refueling enroute to "Y" in the Red River then down Thud Ridge to target. Return by reverse route. The route was about the same as that of the Takhli force.

3. AIRCRAFT CONFIGURATIONS

F-105D, BLUE 1, 2, 3, 4

6 - 750 lb bombs
1 - SIDEWINDER (AIM-9B)
1 - QRC-160
2 - 450 gal ECM pod drop tanks

MIG-21 MIG 1, 2, 3, 4

Silver

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered to broken with tops of cumulus type clouds at 8,000 feet MSL.
Altitude: 10-12,000 feet MSL.
Heading: 140°
Speed: Estimated 520 kt
Flight Formation: Fourth of five flights, in a pod formation.

5. INITIAL DETECTION

Had received MIG and SAM warnings from BIG EYE and previous flights. BLUE 1 spotted 4 MIG-21s at 10 o'clock on a reciprocal heading, 4 to 5,000 ft high at approximately 1545H. The MIGs were 2 to 3 miles out. BLUE 2 did not see the MIGs until they were abreast of BLUE flight. They were identified by their silver color.

6. ACTION INITIATED

BLUE flight observed MIGs starting a descending turn behind them well out of range. The closest approach was estimated to be no closer than 2 miles.

7. SITUATION DEVELOPMENT

BLUE 1 kept his formation intact while descending and weaving through the cumulus clouds into the target area. MIGs were no longer observed to be a threat. The flight hit the target (areas C and B-1) and egressed. After leaving the target BLUE 2 at 7,000-8,000 feet and 600 kt, saw a single MIG-21 at 12 o'clock high. The MIG was in the vicinity of 21°30'N/105°40'E heading 170° at an altitude of 9-10,000 feet. The MIG made a descending Split-S and was lost from view as he moved to 6 o'clock on BLUE Flight.

8. ORDNANCE

None expended

9. EQUIPMENT PROBLEMS

None

[redacted]

## 10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 2950 | 1100 | 70 | Fighter weapons school grad. |
| BLUE 2 | 3100 | Est. 90 | Est. 10 | SAC and ATC - 6 yr each |

Comments on this encounter

BLUE 1 using the cumulus clouds to lose the MIGs allowed BLUE Flight to hit the target

BLUE 2 first mission in Route Package VI-A and first MIG encounter.

Comments from Overall Experience

BLUE 1 thinks MIGs are trying to make strike flights jettison ordnance prior to the target. Utilizing the same UHF frequencies for all missions into North Vietnam allows easy interception of strike force communications. MIG and SAM warnings block out the radio frequently.

Some F-105s had trouble with the AIM-9B installation such that when the tation selector was turned on to check the IR tone, the missile would fire.

BLUE 2; F-4Cs and MIG-21s look very much alike. Likes the low altitude speed capability of the F-105.

## 11. DATA SOURCES

Project Interviews: BLUE 1, (17 Feb 1967), BLUE 2 (17 Feb 1967)

Messages, Reports:

7AF DAI-014 192248Z Dec 66 DIO 31041 Dec 66

388TFW OPREP-3 191120Z Dec 66 DIO 04416

## 12. NARRATIVE DESCRIPTION

(See Items 5, 6, and 7).

[redacted]

Event II-117

Aircraft Involved: Four F-105Ds vs two MIG-21s
Result: No damage
Vicinity: Unknown

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: December 1966/Unknown

Strike mission in North Vietnam

3. AIRCRAFT CONFIGURATION

BLUE 1, 2, 3 and 4

1 M-61 (full - 1,029 rounds)
1 QRC-160

MIGs

Silver in color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 18,000 and climbing |
| Heading: | 240° |
| Speed: | Unknown |
| Fuel State: | Unknown |

5. INITIAL DETECTION

BLUE flight was at 18,000 ft heading 240° after dropping their ordnance on target when BLUE 2 observed two MIG-21s at 2 o'clock position, 10 miles out, at 18,000 feet. BLUE flight had no MIG warning.

6. ACTION INITIATED

When MIGs turned and rolled out at the flight 8:30 o'clock position, BLUE flight turned into them in a left shallow turn just to keep them in sight and accelerated down and away from MIGs.

7. SITUATION DEVELOPMENT

None, no encounter.

8. ORDNANCE

None expected.

9. EQUIPMENT PROBLEMS

None.

10. AIRCREW COMMENTS

Experience

| | Total | F-105 | Combat |
|---|---|---|---|
| BLUE 2 | 1200 | 250 | Unknown |

Comments from Overall Experience

BLUE 2: Carrying just one SIDEWINDER is not really a waste of time but carrying two would increase a kill capability. Too many switches to throw when coming off a target to go to air-to-air from air-to-ground.

11. DATA SOURCE

Project Interview - BLUE 2 (16 February 1967)

12. NARRATIVE DESCRIPTION

BLUE flight en route after striking target heading 240° at 18,000 ft and climbing when BLUE 2 observed two MIGs at 2 o'clock, 10 miles distant. He called them out but BLUE 1 did not see them until they were at 4 o'clock, 4 miles. MIGs turned for a tail attack and at this point they were positively identified as MIG-21s. MIGs overshot tail attack and wound up at BLUE flights 8 to 8:30 o'clock position about 7 miles in trail. BLUE flight thus made a slight turn to the left to keep MIGs in sight and accelerated down and away. MIGs were not seen again. All aircraft returned safely to home station with no damage or engagement encountered.

[redacted]

[redacted]

Aircraft Involved: Two F-105Ds and two F-105Fs vs two MIG-21s

Result: Sighting only

Vicinity of Encounter: 21°00'N/105°00'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 2 January 1967/1510H

Four F-105s were on an IRON HAND mission at an orbit between 20°00'N/105°00'E and 21°35'N/105°18'E, in support of Operation Bolo (Event I-68a,b,c).

2. MISSION ROUTE

Departed Takhli to Channel 97 then into Area V then establishing left-hand orbits in the vicinity cited above.

3. AIRCRAFT CONFIGURATIONS

F-105F, BLUE 1 and 3

2 - AGM-45
2 - AIM-9B
1 - 650 gal round centerline tank
1 - M-61 Gatling gun (1029 rounds)

F-105D, BLUE 2 and 4

4 - CBU-24s (centerline station)
2 - 450 gal wing tanks
2 - AGM-45s
1 - Gun

No QRC equipment

MIG-21s

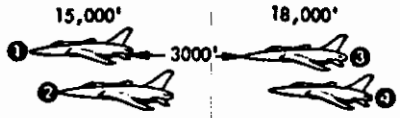
Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Overcast, 3 to 4,000 feet broken, tops at 9,000 feet.

| | BLUE 1, 2 | BLUE 3, 4 |
|---|---|---|
| Altitude: | 15,000 ft | 18,000 ft |
| Heading: | 270° | 270° |
| Speed: | Unknown | Unknown |
| Fuel State: | Unknown | Unknown |

Flight Formation:




5. INITIAL DETECTION

BLUE Flight was in a left turn passing through 330° for 270° at 15,000 ft and 18,000 ft when BLUE 3 and 4 observed two MIG-21s at 20,000 ft at 330° on a parallel course.

6. ACTION INITIATED

BLUE Flight continued to turn left, engaged afterburner and descended to 10,000 feet.

7. SITUATION DEVELOPMENT

Upon reaching 10,000 feet the flight searched for the MIGs but was unable to detect them. The flight then continued to orbit in the area without further sightings.

8. ORDNANCE

No air-to-air ordnance expended.

9. EQUIPMENT PROBLEMS

None.

[redacted]



10. AIRCREW COMMENTS

| Experience | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 3 | Unknown | 400 | Approx. 21 | |
| BLUE 2 | | | | Thought the flight could have attacked the MIGs if they had turned right instead of left. |

11. DATA SOURCES

Project Interviews: BLUE 2 (16 June 67) and BLUE 3 (17 Feb 67)

Messages, Reports:

355TFW 021345Z Jan 67, FASTEL DOI 0028

12. NARRATIVE DESCRIPTION

BLUE Flight was in a racetrack orbit with BLUE 3 and 4 at 18,000 feet, 3,000 feet behind BLUE 1 and 2 who were at 15,000 feet. BLUE Flight was in a left hand turn, heading 330° to 270° when BLUE 3 and 4 observed two MIG-21s at 20,000 feet on a parallel heading. BLUE 3 called for a break to the left. The flight broke left and descended to 10,000 feet and completed two 360° turns but did not see the MIGs again. BLUE Flight continued their orbit, but did not sight any more MIGs.



[redacted]

[redacted]

Event II-119

Aircraft Involved: Four F-105s vs one MIG-21
Result: Sighting only
Vicinity of Encounter: 20°13'N/104°21'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 6 January 1967/1534H

Four F-105s (BLUE Flight) was on a strike mission north of Hanoi. Strike mission could not get to assigned target area due to weather.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Very bad. Actual conditions not known.

| | BLUE 1, 2, 3, 4 | MIG 21 |
|---|---|---|
| Altitude: | 16,000 | 22,000 |
| Heading: | 010° | 010° |
| Speed: | 450 | 450 (estimated) |
| Fuel Status: | Unknown | Unknown |

Flight Formation: Unknown

10. AIRCREW COMMENTS

| Experience | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 1 | 3600 | Unknown | 70 |

Comments on overall experience:

BLUE 1 - Considers the F-105 is the best airplane for the job of bombing N. Vietnam but not an air-to-air fighter. The F-105 can out-run anything at low altitude, which is excellent defense.

11. DATA SOURCES

Pilot Interview: BLUE 1, 17 Feb 67
Messages: 388TFW JOPREP OPREP-4 RT 022 SEA, 6 Jan 67

12. NARRATIVE DESCRIPTION

BLUE Flight was in a 360° turn. A MIG-21 was observed on left side of BLUE Flight and flew parallel to BLUE Flight at 1.5 miles distance for 3-4 minutes. MIG-21 then broke off and departed the area of BLUE Flight.

[redacted]

[redacted]

Event II-120

Aircraft Involved: Four F-105s vs four MIG-21s

Result: No damage

Vicinity of Encounter: 21°44'N/104°52'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 7 January 1967/late afternoon

Four F-105s (BLUE Flight) was providing MIG cover for a strike force of F-105 aircraft operating out of Korat, T. Weather caused the strike force to divert to targets of opportunity along the Red River. BLUE Flight was heading west along with the strike force when the encounter occurred.

2. MISSION ROUTE

All aircraft in strike force departed Korat, T. Proceeded northeast to TACAN #97 and thence eastward (050° heading) to Red River, to primary target area (JCS 51.10), back to Red River (vicinity Yen Bai). Strike force egressed to post-strike refueling (Orange Anchor) and to home base.

3. AIRCRAFT CONFIGURATIONS

4 F-105s BLUE 1, 2, 3, 4

Not given, but bombs were carried by BLUE Flight.

MIG-21s 1, 2, 3, 4

Not given.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Broken to overcast below 9,000 ft. Visibility good above clouds.

| | BLUE | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Altitude: | 15,000 ft | | | |
| Heading: | in orbit vicinity Yen Bai | | | |
| Speed: | not given | | | |
| Fuel State: | not given | | | |

Flight Formation

QRC 160 formation

1500/2000 ft horizontal separation
500 ft vertical separation

5. INITIAL DETECTION

No MIG warnings were called by ELINT aircraft. MIG-21s were first sighted by member of BLUE Flight (BLUE 3) 10 to 12 miles off to the right of BLUE Flight. MIG-21s were low approximately 10,000 ft (heading 020°, speed not given). MIGs were positively identified as they closed to within 5 miles.

6. ACTION INITIATED

BLUE Flight started a right turn to keep the MIGs in sight.

7. SITUATION DEVELOPMENT

As BLUE Flight started a right turn, the MIG-21s broke off by pulling up and started down after the IRON HAND flight but broke off all together and left the area. The MIGs were not seen again by BLUE Flight.

8. ORDNANCE

None fired by either side.

9. EQUIPMENT PROBLEMS

None

10. AIRCREW COMMENTS

| Experience: | Total Hours | F-105 Hours | Total Missions |
|---|---|---|---|
| BLUE 1 | 4,300 | 100 | 20 |
| BLUE 3 | not given | not given | 80 |

[redacted]

Comments on this Encounter

BLUE 1
F-105 can't out-maneuver MIGs.
F-105 has switch difficulty in changing from one firing mode to another.

BLUE 3
F-105 is not a turning aircraft but will destroy anything in front of it.
F-105 pilots don't see the need for MIG and SAM warnings on Guard channel. All it does is clutter up the radio.

11. DATA SOURCES

Pilot interview BLUE 1, 19 February 1967
Pilot interview BLUE 3, 18 February 1967
Pilot interview BLUE 2, 3 October 1967

12. NARRATIVE DESCRIPTION

Four MIG-21s started to attack BLUE Flight but broke off as BLUE Flight started a right turn. The MIG-21s made a half-hearted attempt to go after another flight of four F-105s that were in the same area as BLUE Flight but broke off before closing and left the area completely.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | Not given | 600 | 80 | Switchology is bad in F-105 for switching to air-to-air. |
| BLUE 4 | Not given | 150 est. | 50 | |

11. DATA SOURCES

Interviews: BLUE 1, 14 March 1967
BLUE 4, 7 January 1967

12. NARRATIVE DESCRIPTION

BLUE Flight (four F-105s) operating with a strike force (20 F-105s from Korat) had diverted from primary target and was orbiting in the vicinity of Yen Bai along the Red River. BLUE Flight was flying over broken to overcast clouds. BLUE 2, 3 saw four MIG-21s approaching BLUE Flight from the 7:30 o'clock position. The MIG-21s were coming in low (approx. 10,000 ft) to BLUE Flight. The MIG-21s were in elements of two in trail with the 2d element approximately one mile behind the lead element. The MIG-21s closed to 3-1/2 miles of BLUE Flight but broke off and left the area just as BLUE Flight started to turn into the MIG-21s.

BLUE 1 did not see the MIGs until they started to exit and then could not positively identify them.

[redacted]

Event II-122

Aircraft Involved: Twenty F-105s vs two MIG-21s

Result: No damage

Vicinity of Encounter: 21°35'N/105°00'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 7 January 1967/0830Z

BLUE Flight was part of a 20-ship F-105 strike force operating in Package VI-A North Vietnam. BLUE Flight was the IRON HAND flight for this mission.

2. MISSION ROUTE

Departed Korat headed north to tankers for refueling continued north to TACAN station #97 then east to Red River and on to target, north of Hanoi.

3. AIRCRAFT CONFIGURATIONS

BLUE 1 and 2

2 AGM-45s
2 CBU-24s
20mm ammo
1 630-gal centerline drop tank

BLUE 3 and 4

6 500-lb bombs MER plus/20mm ammo
1 SIDEWINDER AIM-9B
1 QRC-160 pod
2 450-gal drop tanks

All Aircraft

Camouflaged color
IFF, radar, TACAN (OFF in target area)

MIG-21s

Not given

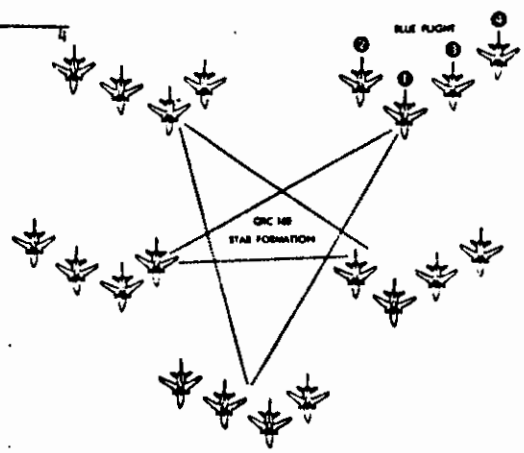
4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Not given, except there was a low undercast and a haze in the area of operation.

| | BLUE |
|---|---|
| Altitude: | 17,000 ft |
| Heading: | East |
| Speed: | Not given |
| Fuel State: | Not given |

Flight Formation

QRC-160 pod formation (star gaggle).




5. INITIAL DETECTION

BLUE Flight heard the lead flight call MIGs. Then BLUE 3 saw two MIG-21s coming in at 1:30 o'clock to formation, 3 to 4 miles away. The MIGs were at 12,000 ft. The MIGs were easily identified by their shape and shiny silver color.

6. ACTION INITIATED

BLUE Flight turned into the MIGs. The MIG-21s turned left and flew parallel to the formation then turned further left and flew away from the formation, going down into the clouds.

7. SITUATION DEVELOPMENT

BLUE Flight mistakenly made an attack pass on a flight of F-105 that was flying below the formation as the MIG-21s flew away. BLUE Flight broke off the attack after identification was made. BLUE Flight dodged a non-existent SA-2 missile then trought up

[redacted]

a tremendous amount of flak (37/57mm) by flying low (2,000 ft). It was a suspected "dry" launch since they got a launch light on the WILD WEASEL gear but never saw a SAM.

8. ORDNANCE

None fired by either side.

9. EQUIPMENT PROBLEMS

None given.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 2 | 2,000 | 800 | 10 |

All others not given.

11. DATA SOURCES

Project Interviews: BLUE 2, 15 February 1967
BLUE 3, 16 February 1967

[redacted]

Event II-123

Aircraft Involved: Four F-105Ds vs four MIG-21s

Results: Sighting only

Vicinity: 21°30'N/104°27'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 8 January 1967/0825H

Four F-105Ds (BLUE flight), part of a strike force operating out of Korat, Thailand, was to hit a prebriefed target in Route Package VI-A. Weather prevented entry into Route Package VI-A and BLUE flight was looking for a target of opportunity along the west side of the Red River.

2. MISSION ROUTE

BLUE flight departed Korat, proceeded north to the tanker, then NE to the Red River.

3. AIRCRAFT CONFIGURATIONS

BLUE 1, 2, 3, 4

6 - 500-lb bombs
1 - AIM-9B (SIDEWINDER)
1 - QRC-160 ECM Pod
2 - 450-gal wing tanks
1 - Mk-61 Gatling Gun (1026 rounds)

MIG-21 (1, 2, 3, 4)

Silver Color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Low overcast condition in primary target area. Clear, with unrestricted visibility above clouds.

| | BLUE Flight | MIGs |
|---|---|---|
| Altitude: | 13-14,000 ft | 21-22,000 ft |
| heading: | NW along Thud Ridge | Opposite heading |
| Speed: | 480 Kt | Unknown |
| Fuel State: | Unknown | Unknown |

10. AIRCREW COMMENTS

| | Number of Hours | | Combat Missions |
|---|---|---|---|
| | Total | F-105 | |
| BLUE 2 | 3100 | 150 | approx. 30 |

General Comments

BLUE 2 - Unable to use X-band warning gear when using QRC-160 pods.

Turned off IFF and TACAN to minimize electronic emissions when over North Vietnam.

Would prefer better geographical reference when receiving MIG warnings.

F-105 doesn't have sufficient wing area to permit turning with MIGs.

11. DATA SOURCES

Project Interview: BLUE 2 (undated)

12. NARRATIVE DESCRIPTION

BLUE flight (vicinity of 21°30'N/104°27'E) was heading NW along Thud Ridge when they observed a flight of four MIGs at a range of 6-8 n mi heading in the opposite direction. When the MIGs passed abeam (BLUE's 3 o'clock) at 3-4 n mi, the MIGs turned left towards BLUE flight in an attempt to get into the 6 o'clock position. BLUE flight made a descending left turn in order to pick up airspeed; they did not jettison ordnance. As the flight went through 180° they looked to the left and noted that the MIGs had made a turn in the other direction and were departing the area. The MIGs were never any closer than approximately 2-1/2 n mi. Identification was easy even at 5 n mi because when the MIG pulled up, the top to bottom profile clearly showed the delta wing.

[redacted]

[redacted]

Event II-124

Aircraft Involved: Eight F-105s vs four MIG-21s

Result: No damage

Vicinity of Encounter: 20°40'N/104°30'E and 21°15'N/104°42'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 15 January 1967/1615H and 1617H

Four F-105s (BLUE Flight) and four F-105s (GREEN Flight) were part of a strike force bombing a railroad bridge S.E. of Thai Ngyen BLUE Flight and GREEN Flight had hit the target and were out-bound when the MIG sighting occurred.

2. MISSION ROUTE

Departed Korat headed north to rendezvous with tankers, then northeast to the Black River then east to the Red River ari target (vicinity of Thai Ngyen). Egress by same route to post strike tankers.

4. FLIGHT CONDITIONS

Weather: Clear, 2-4 mile visibility in haze.

| | BLUE 1, 2, 3, 4 | GREEN 1, 2, 3, 4 | MIG 1, 2, 3, 4 | MIG 5, 6, 7, 8 |
|---|---|---|---|---|
| Altitude: | 14,000 ft | 15,000 ft | 20,000 ft | 22,000 ft |
| Heading: | 210° | 195° | 030° | 030° |
| Speed: | 500 Kts | 540 Kts | Unknown | |
| Position: | 20°40'N/104°30'E | 21°15'N/104°42'E | 20°40'N/104°30'E | 21°15'N/104°42'E |
| Flight Formation: | Pod (QRC-160) | Pod (QRC-160) | Approx. finger tip elements in trail | |

5. INITIAL DETECTION

BLUE Flight sighted a flight of four MIG-21s at 1615H. The MIG-21s were at 1 o'clock high on a reciprocal heading to BLUE Flight. GREEN Flight sighted a flight of four MIG-21s at 1617H. The MIG-21s were at 22,000 to 23,000 feet, 8 o'clock to GREEN Flight heading 030°.

6. ACTION INITIATED

BLUE Flight continued on course and lost sight of the MIG-21s. GREEN Flight observed MIG-21's move behind them to within 2 mi. GREEN Flight lit afterburners and descended to the mountain tops losing sight of the MIGs.

7. SITUATION DEVELOPMENT

No further action on either side no engagement resulted.

8. ORDNANCE

None expended.

9. EQUIPMENT PROBLEMS

BLUE Flight: None
GREEN Flight: None

10. AIRCREW COMMENTS

| | Total Hours | F-105 | Combat Missions |
|---|---|---|---|
| BLUE 2 | 850 | 600 | 17 |
| BLUE 1, 3, 4 | Not Interviewed | | |
| GREEN 1, 2, 3, 4 | Not Interviewed | | |

11. DATA SOURCES

OPREP-4 RT 049 - 388TFW 151310Z Jan 67

12. NARRATIVE DESCRIPTION

BLUE Flight (four F-105s) sighted a flight of four MIG-21s at 1615H. BLUE Flight position 20°40'N/104°30'E heading 210°, altitude 14,000 feet, 500 kts. MIG-21s were at 1 o'clock high 20,000 to 22,000 ft. MIG-21s began turning toward BLUE Flight. BLUE Flight continued on course and lost sight of MIG-21s.

GREEN Flight sighted four MIG-21s at 1617H. GREEN position 21°15'N/104°42'E heading 195°, altitude 15,000 ft, 540 kts. MIG-21s were at 8 o'clock to GREEN Flight heading 030° at 22,000 to 23,000 feet. The MIG rolled in behind GREEN Flight and closed to 2 miles of GREEN Flight. GREEN Flight lit afterburners descended to the mountain tops and lost sight of MIG-21s.

[redacted]

[redacted]

Event II-125

Aircraft Involved: Four F-105Ds vs one MIG-21
Result: Sighting only
Vicinity of Encounter: North Laos

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 15 January 1967/1645H

Four F-105s (BLUE Flight) outbound for the target.

11. DATA SOURCES

Project Interview: BLUE 3, 16 Feb 67

12. NARRATIVE DESCRIPTION

BLUE 2 sighted an aircraft believed to be a MIG-21. There is some doubt whether it was an F-4 or a MIG-21, since BLUE Flight was in North Laos and MIGs were not known to operate in that area.

BLUE 3 felt that the single SIDEWINDER armament in the F-105 is insufficient.

Event II-126

Aircraft Involved: Four F-105s vs probable four MIGs
Result: Sighting only
Vicinity of Encounter: 20°57'N/105°04'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 January 1967/0818H

Mission and tactical situation not contained in data available.

3. AIRCRAFT CONFIGURATIONS

MIGs

Silver color.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

| | BLUE Flight | MIGs |
|---|---|---|
| Altitude: | 18,000 ft | 35,000 ft (est.) |
| Heading: | 069° | In a left turn |
| Speed: | 500 kt | Unknown |

5. INITIAL DETECTION

BLUE 2 sighted four silver airplanes at an estimated range of 25 mi to the northeast at approximately 35,000 ft. The contacts quickly faded out of sight.

7. SITUATION DEVELOPMENT

MIGs faded from sight.

11. DATA SOURCES

Project Interviews: BLUE 3, 17 Feb 1967
Messages, Reports:

Project RED BARON Event folder contains an extract from an OPREP-4 concerning this event.

12. NARRATIVE DESCRIPTION

Sighting only.

[redacted]

[redacted]

Event II-127

Aircraft Involved: Four F-105s vs two MIG-21s
Result: Sighting only
Vicinity of Encounter: 21°37'N/104°55'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 January 1967/0838H

Four F-105 aircraft, BLUE Flight, were part of a strike against a POL storage area south of Thud Ridge.

2. MISSION ROUTE

BLUE Flight had completed the attack and was egressing from the area to rendezvous with airborne tankers for refueling.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4

1 SIDEWINDER (AIM-9B)
1 Mk-61 gun (20mm)

MIG-21 MIG 1, 2

Silver color.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear, 8 to 10-mile visibility with light haze.

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 20,000 | | 17,000 | 15,000 |
| Heading: | ----------200°---------- | | | |
| Speed: | ---------490-540 kt---------- | | | |
| Fuel State: | ----------6-6500 lb---------- | | | |

Flight Formation: Loose finger-four.

5. INITIAL DETECTION

BLUE 4 sighted two MIGs at 11 o'clock almost directly over the flight about 2000 ft above them. The MIGs were heading in an opposite direction and were quickly out of sight.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 1100 | 900 | 50 | Fighter background |
| BLUE 3 | 1200 | 150 | 20 | |
| BLUE 4 | 3700 | 700 | 15 | |

Comments on this Encounter

BLUE 3 No opportunity to attack the MIGs developed from the head-on encounter.

BLUE 3 and 4 Both pilots were impressed with the turning ability of the MIG-21.

11. DATA SOURCES

Project Interviews: BLUE 1, 17 Feb 1967; BLUE 3, 15 Feb 1967; BLUE 4, 18 Feb 1967.

12. NARRATIVE DESCRIPTION

BLUE Flight was egressing from the target area in a loose formation when the MIG-21s were sighted. From the head-on encounter neither side maneuvered to attack. The MIG-21s quickly disappeared from sight.

Two MIG-17 fighters were sighted either shortly before or shortly after the sightings of the MIG-21s. The conditions were very similar with no attempt to engage made by either side. The MIGs were above the F-105s and passed on an opposite heading at a range of about three miles.

[redacted]

[redacted]



Aircraft Involved: Four F-105s vs one MIG-21
Result: Sighting only
Vicinity of Encounter: 21°30'N/105°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 January 1967/0825H

Four F-105s were departing the target area as the third of four flights on the strike mission.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4

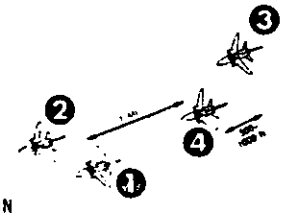
1 - QRC 160 Pod
2 - 450-gal external fuel tanks
1 - SIDEWINDER (AIM-9B)
1 - M-61 Gun (20mm)

MIG-21

Silver color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

| | BLUE Flight |
|---|---|
| Altitude: | 18,000 ft climbing |
| Heading: | Southwest |
| Speed: | 550 kt |
| Fuel: | 3000 lb |
| Flight Formation: | |




5. INITIAL DETECTION

BLUE 4 first sighted the MIG at the 4 o'clock position in a 45° dive, approximately 5000 to 6000 ft above BLUE 4 at a range of approximately two miles.

6. ACTION INITIATED

BLUE 3 and 4 started a hard, descending turn to the right.

7. SITUATION DEVELOPMENT

The MIG was observed to break off from his attack and to depart the area.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 4 | 3,500 | 110 | 15 |

Comments from Overall Experience

BLUE 4, "I got 80 hrs in the RTU Program and most of that was just learning to fly the airplane with little emphasis on tactics. What little tactics we learned were not valid once we got over here because the tactics change so rapidly. The people in the RTU who were veterans of SEA...didn't even know anything about (QRC-160) pods."

11. DATA SOURCES

Project Interviews: BLUE 4 17 Feb 1967

[redacted]



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## 12. NARRATIVE DESCRIPTION

BLUE 3 and 4 were outbound from the target on a southwesterly heading approximately one mile behind BLUE 1 and 2. The flight was climbing through 18,000 ft at 550 kt when BLUE 4 sighted a MIG-21 in the 4 o'clock position in a 45° dive about 5,000 to 6,000 ft above his altitude. BLUE 4 called the bogey and BLUE 3 turned hard right descending as he engaged afterburner. BLUE 4 engaged afterburner and maneuvered to stay with BLUE 3. Visual contact with the MIG was lost but BLUE 1 reported the MIG broke off his attack and departed the area. BLUE Flight then jettisoned external fuel tanks and rendezvoused with an emergency tanker with 1000 lb of fuel remaining.

[redacted]

[redacted]

Event II-129

Aircraft Involved: Four F-105s vs two MIG-21s

Result: Sighting only

Vicinity of Encounter: 21°36'N/104°57'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 January 1967/0805H

Four F-105s departed Takhli AB on an IRON HAND mission in support of a strike mission.

2. MISSION ROUTE

Departed Takhli AB and refueled with GREEN ANCHOR before proceeding to TACAN Station 97. From the TACAN, the flight proceeded to 21°37'N/104°56'E then to 21°34'N/105°33'E. The MIG sighting occurred at 21°36'N/104°57'E. Return of the flight was by reverse route with air refueling prior to return to base.

3. AIRCRAFT CONFIGURATIONS

F-105 - BLUE 1, 2, 3, 4

2 - 450-gal external fuel tanks
1 - M-61 Gun (1,029 rd 20mm ammo)

BLUE 1 and 3 (F-105F)

2 - SHRIKE (AGM-45)
4 - CBU-24

BLUE 2 (F-105F)

2 - SHRIKE (AGM-45)
6 - 500-lb bombs

BLUE 4 (F-105D)

6 - 500-lb bombs

BLUE 3, 4

TACAN/Off; Radar, IFF/Stby; Doppler/On

MIG-21 MIG 1, 2

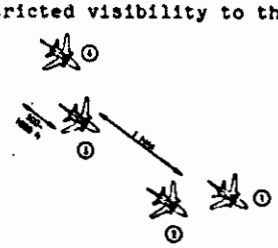
Silver color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Low stratus of heavy haze which restricted visibility to the east to 1-2 miles and to the west to 3-4 miles.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 16,000 ft |
| Heading: | Southeasterly |
| Speed: | 550 kt |
| Fuel: | 12,000 lb |

Flight Formation:



5. INITIAL DETECTION

BLUE 4 first sighted two MIGs at 7 o'clock at a range of approximately 1/2 mile diving toward the flight in a descending turn and approximately 2,000 ft above the flight. An area MIG warning had been heard by BLUE 4.

6. ACTION INITIATED

BLUE 4 jettisoned his wing tanks as he called a break. BLUE 3 broke hard right and down as he jettisoned external fuel tanks.

7. SITUATION DEVELOPMENT

BLUE 1 and 2 jettisoned external stores and maneuvered to counter the MIG attack. As BLUE 3 and 4 entered the haze, where visibility was approximately one mile, they lost sight of the MIG and of BLUE 1 and 2.

9. EQUIPMENT PROBLEMS

BLUE 4 was having difficulty with one of the bayonet fittings on his oxygen mask allowing the mask to fall away from his face with movements or from g forces.

[redacted]

## 10. AIRCREW COMMENTS

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 3 | 1,700 | 1,000 | 50 | TAC background |
| BLUE 4 | 2,290 | 400 | 75 | B-47 background |

Comments on this Encounter

BLUE 3 - The MIGs were not very aggressive. Generally the MIGs go after the Wild Weasel and know which airplane in the flight is the Wild Weasel.

BLUE 4 - Could not stay with BLUE 3 in the defensive maneuvering.

Comments from Overall Experience

BLUE 3 - The EWO in the F-105F is very helpful as a lookout because of the poor visibility to the rear. The MIGs can out-turn the F-105 so it is a difficult situation with a MIG at 6 o'clock.

BLUE 4 - BIG EYE area warnings just clutter the radio. Need coordination among the different types of aircraft and missions. When using QRC pods, the SAM doesn't appear to guide and AA doesn't follow a flight as effectively.

## 11. DATA SOURCES

Project Interviews:

BLUE 3 8 Feb 1967

BLUE 4 3 Feb 1967

Messages, Reports:

355TFW OPREP-3 160215Z Jan 67 DOI 0218
355TFW OPREP-3 160545Z Jan 67 DOTO-0 10178 Jan 67

## 12. NARRATIVE DESCRIPTION

BLUE Flight was flying down the south side of Thud Ridge at an altitude of 16,000 ft maintaining 550 kt. BLUE 3 and 4 were approximately one mile behind BLUE 1 and 2 with BLUE 4 trailing BLUE 3 by 500-1,000 ft. BLUE 4 sighted two MIGs at his 7 o'clock in an attack. The flight was alerted to the presence of MIGs by BLUE 4. The lead section, BLUE 1 and 2, jettisoned all external stores and dove into the haze layer in a descending right turn leveling out at 6,000 ft and egressing from the area. BLUE 3 broke right in a descending turn and jettisoned his external tanks. As he tried to follow, BLUE 4 jettisoned his tanks, engaged afterburner, and then jettisoned his bombs. When BLUE 3 entered the haze, while reversing his turn, BLUE 4 lost sight of BLUE 3 and the MIGs. BLUE 4 executed a modified Split-S and leveled out at 4,000 ft in the haze and departed the area. BLUE 3 continued into the target area but when he discovered he was alone he returned to base. BLUE 1, 2 and 4 rejoined in the refueling area and returned to base.

[redacted]

Event II-130

Aircraft Involved: Four F-105s vs Four MIG-21s

Result: No damage

Vicinity of Encounter: 21°36'N/104°55'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 17 January 1967/0759H (or 2359Z on 16 Jan 1967)

Four F-105 aircraft (BLUE flight) from Korat on a strike mission.

11. DATA SOURCE

RED BARON MIG Incident Summary (Reference PACAF CP31).

12. NARRATIVE DESCRIPTION

BLUE flight was engaged with four MIG-21s, no damage.

Event II-131

Aircraft Involved: Four F-105s vs one MIG-21

Result: Sighting only

Vicinity of Encounter: 21°22'N/105°03'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 January 1967/1538H

Four F-105 aircraft on an IRON HAND mission.

11. DATA SOURCES

RED BARON MIG Incident Summary

12. NARRATIVE DESCRIPTION

This was a sighting only. No other data available.

[redacted]

[redacted]

Event II-132

Aircraft Involved: Four F-105s vs two MIG-21s
Result: No damage
Vicinity of Encounter: Approx. 21°50'N/105°50'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 17 January 1967/0838H

BLUE Flight of four F-105s, operating on a strike mission out of Takhli, had bombed railroad yards target (JCS 21.11; 21°31'41"N/105°51'03"E) by Thai Nguyen and were proceeding outbound to home base.

2. MISSION ROUTE

Departed Takhli Air Base, headed north to tankers for pre-strike refueling, then northeast to Red River, to target, egressed back across Red River, then to tankers for post-strike refueling, to home base.

3. AIRCRAFT CONFIGURATION

F-105 BLUE 1, 2, 3, 4

1 - QRC-160 pod
1029 rounds 20mm
2 - 450 gal wing tanks
Centerline tank
IFF and TACAN receive only, radar off, doppler was on.
camouflaged color paint
6 - 750 lb bombs

F-105 BLUE 1 and 3

1 - AIM-9

MIG-21 MIG 1, 2

2 - AAM missiles
Silver color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear, visibility one to two miles in haze layer up to 6000 ft.

| | BLUE 1 2 3 4 | MIG-21 1 2 |
|---|---|---|
| Altitude: | ----7000 ft---- | 9-10,000 ft |
| Heading: | Generally west- | --North-- |
| Speed: | ----Mach 1----- | |
| Fuel State: | ----9000 lb---- | |

5. INITIAL DETECTION

BLUE Flight was egressing west from the target area at a speed of Mach .95 to 1.1 Mach and turning when BLUE 4 spotted two MIGs at their 9 o'clock position, one mile out at an altitude of 10,000 ft. They were identified as MIG-21s almost immediately, due to their shape as seen when they turned in.

6. ACTION INITIATED

BLUE Flight started a small turn into the MIG-21s. The MIGs fell in behind BLUE Flight at their 7 o'clock position.

7. SITUATION DEVELOPMENT

BLUE Flight lit afterburners and MIG-21s started to lag behind. BLUE Flight continued to out run MIG-21s and left the area, homeward bound.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 4 | 450 | 200 | 20 | Very experienced pilot. |

Comments on this Encounter

The MIGs, when seen, were smoking. The high speed at low altitude was the saving factor in this encounter. They cannot fight a MIG air-to-air due to the MIG's superior turn capability.

Comments from Overall Experience

Would like a heads-up display of range from the radar for gun ranging. It would also help establish closure rate. Would like one switch to go from ground to air-to-air.

[redacted]

[redacted]

11. DATA SOURCES

Event II-132

Project Interview: BLUE 4, 6 Feb 1967.

12. NARRATIVE DESCRIPTION

BLUE Flight was the last one in from Takhli. It was about eight minutes late and came in almost due south on target before the second wave which was from Korat. Flight from Korat was scheduled to come in approximately 10 minutes after the flight from Takhli finished. There was a lot of congestion in the taxiway that morning and the airplanes were lined up all the way back to the tower. Due to the planned airspeed it was difficult to pick up a minute. The weather was clear with about two miles visibility through a haze layer up to an altitude of about 6000 ft. BLUE Flight sighted the target by the 85mm that was slightly to the west and had a barrage that was impossible to miss. Very little fire was encountered coming in. When moving out from the target, and making a turn at about .95 to 1.1 Mach, BLUE 4 spotted two MIGs at 9 o'clock and a range of one or possibly two miles. The MIGs started to turn in behind the BLUE Flight. BLUE 4 called two bogeys at 9 o'clock and turning in. At this point, BLUE 2 punched his tanks off. BLUE Flight started a very small turn into the MIGs, not losing any airspeed, and no break or heavy g's. BLUE Flight was in afterburner, and the MIGs fell in behind at 7 o'clock. The MIGs started falling behind. The MIGs were within missile range but they weren't within the angle off. The MIGs had a range problem and couldn't close in on BLUE Flight. The MIGs dropped back and BLUE Flight continued up the hill where a SAM was launched at them.

When BLUE Flight was at the top of Thud Ridge and turning they sighted two more MIGs, but too far out to tell whether they were 21s or 19s. Once beyond this point they had light AAA and a little flak.



[redacted]

[redacted]

Event II-133

Aircraft Involved: Four F-105s vs MIGs

Result: No damage

Vicinity of Encounter: Approx. 21°30'N/105°10'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 17 January 1967/25 minutes after sunrise (approx. 0815H)

Four F-105s were on a strike mission to JCS 21.11 (21°33'41"N/105°51'03"E) when they sighted MIGs. BLUE Flight was preceeded by a flak-suppression flight and another strike flight.

2. MISSION ROUTE

Departed Takhli, refueled and headed northeast until reaching the Red River where it crosses the 105° longitude. Then proceeded southeast to target.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4

MIGS - Silver

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Cloudy with an overcast over the mountains to the west and scattered into the valley leading into Hanoi with 1 mile visibility to the east and 3 miles to the west.

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 8,000 feet | | | |
| Heading: | Northeast | | | |
| Airspeed: | Not reported | | | |
| Fuel State: | Not reported | | | |
| Flight Formation: | Unknown | | | |

5. INITIAL DETECTION

BLUE Flight initially acquired sun glints at his 10:30 o'clock position, a few miles probably from MIGs in an orbit.

6. ACTION INITIATED

MIGs started a turn toward, descended and paralleled BLUE Flight's course; then BLUE Flight descended into the haze.

7. SITUATION DEVELOPED

The MIGs followed BLUE Flight for 3 or 4 minutes. As BLUE Flight descended, BLUE 2 lost sight of the MIGs and they were no longer a threat.

8. ORDNANCE

None expended.

9. EQUIPMENT PROBLEMS

None

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 3 | 4000 | 375 | 17 |

Comments on this Encounter

BLUE 3: MIGs seemed to be under OCI control and were directed on another flight.

11. DATA SOURCE

Project Interview: BLUE 3 (8 Feb 67)

[redacted]

12. NARRATIVE DESCRIPTION

BLUE Flight was separated from the other flights since they were 2 miles to the right of course and the others were 2 miles to the left. BLUE Flight was inbound to the target at 8,000 when BLUE 3 saw some flashes of sunlight to the northwest at about his 10:30 o'clock position. The MIGs seemed to be in an orbit and then started to turn and descent into BLUE Flight at first but then continued on around to parallel BLUE Flight's course. BLUE 2 kept them in sight and the MIGs stayed with the flight for about 3 minutes, 3 to 4 miles outside of BLUE Flight's position. During this time BLUE 1 was in a descent into the haze layer which when reached all sight of the MIGs vanished. BLUE Flight continued on to the target and then home. The MIGs were never identified as to type.

[redacted]

Event II-134

Aircraft Involved: Three F-105s vs one MIG
Result: Sighting only
Vicinity of Encounter: 21°35'N/104°46'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 17 January 1967/1609H

IRON HAND mission for strike on railroad yard at 21°33'N/105°51'E.

2. MISSION ROUTE

BLUE Flight from Korat flew over Red River and egressed with strike force from target, Thai Nguyen.

3. AIRCRAFT CONFIGURATIONS

F-105F BLUE 1

2 SHRIKE missiles
650-gal centerline
2 CBUs on wing

F-105D BLUE 2, 4

6 500-lb bombs
2 450-gal tanks
SIDEWINDER
QRC-160

MIG

Silver in color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Not reported
Altitude: 9000 ft
Heading: Not reported
Air Speed: 580-600 kts
Fuel State: Not reported
Flight Formation: Not reported

5. INITIAL DETECTION

Made by unknown member of BLUE flight at the same altitude, 2 or 4 o'clock from flight's position at a distance of 5 n mi. Unidentified aircraft thought to be a MIG.

6. ACTION INITIATED

MIG trailed BLUE flight for a short distance and then BLUE flight lost sight of it.

7. SITUATION DEVELOPMENT

The aircraft took no aggressive action and disappeared into the clouds.

8. ORDNANCE

None expended.

9. EQUIPMENT PROBLEMS

Electronic warfare operator's vector gear. (BLUE 1)
BLUE 3 aborted on tanker.
BLUE 1's heading indicator.

10. AIRCREW COMMENTS

Experience: Unknown

Comments on this Encounter:

This particular day we had a WEASEL and two wingmen due to the fact that Number 3 had aborted, so we were just more or less staying back in a fighting wing position.

11. DATA SOURCES

Project Interviews: BLUE 2, 15 February 1967
Message: OPREP-3 0-1716592, 17 January 1967 from 388 TFW for DOCO

[redacted]

[redacted]

Event II-135

Aircraft Involved: Four F-105s vs two MIG-17s
Result: Sighting only
Vicinity of Encounter: 21°37'N/104°55'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 17 January 1967/0820H

A strike mission of four F-105s. (BLUE Flight) from Korat.

2. MISSION ROUTE

Not reported.

3. AIRCRAFT CONFIGURATIONS

Not reported.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Not reported.

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | | 15,000 ft | | |
| Heading: | | Not reported | | |
| Speed: | | 540 kts | | |
| Fuel State: | | Not reported | | |

Flight Formation: Not reported

5. INITIAL DETECTION

Made by BLUE 2 at his 10 o'clock position, 4 miles distant.

6. ACTION INITIATED

None

7. SITUATION DEVELOPED

Sighting only.

9. EQUIPMENT PROBLEMS

None.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 2 | 1200 | 200 | 20 |

Comments from Overall Experience

BLUE 2 would not want to give up speed for turning capability. If he fought would want to be low, never high, and in the 6 o'clock position. Would never turn with any MIG. Training was not adequate in air-to-air tactics to cope with MIGs. The lights which operate off the pod are in the wrong place, and one has to look back and down to see them. The radio is in the wrong place. Would like to see the guns checked out with boresighting. High speed at low altitude is an advantage. If we pull 4 G's, we have defeated his weapon systems.

11. DATA SOURCE

Project Interview: BLUE 2, 15 February 1967

12. NARRATIVE DESCRIPTION

BLUE 2 saw a MIG at his 10 o'clock position, 4 miles distant and level with his flight just as they were about to roll in on the target. BLUE Flight was at 15,000 ft and about 540 kt ground speed. When sighted, the MIGs were turning. No action was initiated, flight dropped bombs on target and returned safely to home base.

BLUE 2 did not identify the aircraft. It was not until later that it was positively identified by other members of the flight and correlated by another flight in the gaggle.

[redacted]

[redacted]

Event II-136

Aircraft Involved: Four F-105Ds vs four MIG-21s

Result: No damage

Vicinity of Encounter: 21°06'N/105°05'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 January 67/0844H

Strike mission by four F-105Ds (BLUE Flight) on the Viet Tri RR yard at 21°17'56"N/105°26'10"E. There was a MIGCAP on this mission. The strike flights which encountered the MIGs were those in Events II-136, II-137, II-139 and II-141. The aircraft in Event II-136 was the lead flight.

2. MISSION ROUTE

Departed Korat, Thailand to tanker (refueled on Red Anchor), direct to Channel 97, direct to target (21°18'N/105°26'E) and returned the same route.

3. AIRCRAFT CONFIGURATION

F-105D BLUE 1, 2, 3, 4

4 - CBU-24s
1 - QRC-160 (on B-4 for certain)
1 - AIM-9B
2 - 450-gal fuel tanks
1 - gun (1,029 rounds)

MIG-21 MIG 1, 2, 3, 4

Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 12,000 ft overcast tops at 16,000 ft with breaks in the overcast, visibility was 10 miles.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 15,000 ft |
| Heading: | 062° |
| Speed: | 500 kt |
| Fuel State | Unknown |
| Formation: | Pod formation |

5. INITIAL DETECTION

Four MIG-21s were seen by all four flight members at their 8 o'clock position going to 6 o'clock, high, heading 240° at a distance of 3 miles. No prior MIG warnings were received.

6. ACTION INITIATED

BLUE Flight dropped ordnance and tanks, made a hard right turn then reversed it with a Split-S.

7. SITUATION DEVELOPMENT

MIGs fired, overshot BLUE Flight, and climbed out of sight. No encounter developed.

8. ORDNANCE

(No. fired/No. hits)

| | Cannon | Remarks |
|---|---|---|
| BLUE | None | |
| MIG-21s | 1/0 | Used by one MIG as seen by B-4. |

11. DATA SOURCES

Messages:

OPREP-3 Z 210527Z Jan 67 from 388th TFW Korat EOI 0208 Jan 67

OPREP-4 ROLLING THUNDER 034 21 Jan 67 388th TFW

12. NARRATIVE DESCRIPTION

The flights in Events II-136, II-137, II-139, and II-141 were proceeding to the target in a box formation, and the box formation had 2 flights in the lead, line abreast, followed by 2 more flights, line abreast, about one mile to the rear and about 1,000 ft higher. The flights flying line abreast were 1,500 to 2,000 ft apart, with the aircraft in Event II-136 (the mission commander) on the right front, and those of Event II-141 on the left front.

[redacted]



[redacted]

12. NARRATIVE DESCRIPTION (Continued)

Following were the aircraft in Events II-137 and II-139, with the aircraft of Event II-139 on the right. The placement of the elements within each flight is unknown.

At least two flights of MIG-21s (probably 3-4 aircraft each) made a pass on the formation, one descended from 9 o'clock and very high passing through the formation in a steep dive, between the lead and following flights. The other MIGs were able to attack the lead two flights closing to within 1/2 mile.

The action occurred at some time between 0840H and 0844H and lasted about 1.5 minutes. When first attacked, the formation was in the general vicinity of 21°07'N/105°05'E.[1]

While the action was restricted in time and place, the accounts are such that correlation of sightings cannot be accomplished precisely. Moreover, the flights did not maintain continuous visual contact with each other; therefore, the reconstruction of the action of each flight has been documented separately.

BLUE Flight was inbound to the target at 15,000 ft altitude heading 062°, at 500 kt when they saw a flight of four MIG-21s at their 9 o'clock 3 miles range, high, heading 240°. The MIGs were in two ship elements, with 3,000 ft between elements and 500 to 1,000 ft between individual aircraft of the element. MIGs were then seen to roll in on BLUE Flight from the 9 o'clock position, to the 6 o'clock position with 150 kts overtake speed and closed the flight to within 3,000 ft level, at which time BLUE Flight jettisoned their ordnance and tanks (at 21°06'N/105°05'E) keeping their AIM-9Bs. BLUE Flight then executed a hard right turn, then reversed back with a Split-S. The MIGs were seen to overshoot BLUE Flight and climb sharply out of sight and BLUE 4 observed white smoke streaming from one of the MIGs, assumed to be cannon fire. BLUE Flight did a 180° and returned to base safely with no damage to any aircraft.

BLUE 4 received X-band signal on his vector gear immediately after the encounter. The signal was 2-1/2 to 3 rings at 6 o'clock, and could have come from either the MIGs or another friendly flight. The flight received no MIG warnings. There was no communication by BLUE Flight with the MIGCAP before the sighting or after.

[1]There are minor differences in the OPREP sources as to time and place, depending on the particular flight.

[redacted]

Event II-137

Aircraft Involved: Four F-105Ds vs three MIG-21s

Result: No damage

Vicinity of Encounter: 20 miles from target (approx. 21°27'N/105°07'E)

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 January 1967/0842H

Mission was a strike mission on the Viet Tri RR yard (21°17'56"N/105°26'10"E). The strike flights which encountered MIGs were those in Events II-136, II-141, II-139 and II-137. were MIGCAP aircraft in support of this mission.

2. MISSION ROUTE

Departed Korat Air Base, Thailand for Red Anchor to Channel 97, then direct to target.

3. AIRCRAFT CONFIGURATION

F-105Ds BLUE 1, 2, 3, 4

6 - 750-lb bombs
2 - 450-gal tanks
1 - SIDEWINDER (AIM-9B)
1 - Gun (1,029 rounds)

MIG-21

Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 8000 ft undercast

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 14,000 |
| Heading: | 062° |
| Speed: | Unknown |
| Fuel State: | Unknown |
| Flight Formation: | Pod Formation |

5. INITIAL DETECTION

BLUE 4 saw three MIG-21s at his 9 o'clock position, in trail formation, high, with a positive overtake of approximately 1-1/2-2 miles out, heading 100°, flying straight and level.

6. ACTION INITIATED

BLUE Flight turned hard left into MIGs but MIGs did not follow or fire at BLUE Flight.

7. SITUATION DEVELOPMENT

MIGs were then seen at 11 o'clock and diving on the flight in front of BLUE Flight who went into a sharp right turn jettisoning their ordnance. [This flight was the flight of Event II-141.] BLUE flight also jettisoned ordnance and followed the turn.

8. ORDNANCE

None

9. EQUIPMENT PROBLEMS

None reported

10. AIRCREW COMMENTS

Experience: Unknown

Comments on this Encounter: None

Comments from Overall Experience

BLUE 1: It would be ideal if we had one switch that we could throw that would make us able to fire the AIM-9 after being in an air-to-ground mode.

11. DATA SOURCE

Project Interviews: BLUE 1, 10 Feb 67
Messages: OPREP-3 Z 210505Z Jan 67, from 388TFW Korat DOI 0211

[redacted]

12. NARRATIVE DESCRIPTION

The flights in EventsII-136, II-137, II-139, and II-141 were proceeding to the target in a box formation. Each flight was in a pod formation, and the box formation had two flights in the lead, line abreast, followed by two more flights, line abreast, about one mile to the rear and about 1,000 ft higher. The flights flying line abreast were 1,500 to 2,000 ft apart, with the aircraft in Event II-136 (the mission commander) on the right front, and those of Event II-141 on the left front. Following were the aircraft in Event II-137 and II-139, with the aircraft of Event II-139 on the right. The placement of the elements within each flight is unknown.

At least two flights of MIG-21s (probably 3-4 aircraft each) made a pass on the formation, one descended from 9 o'clock and very high, passing through the formation in a steep dive, between the leading and following flights. The other MIGs were able to attack the lead two flights closing within one-half mile.

The action occurred at sometime between 0840H and 0844H[1] and lasted about 1.5 minutes. When first attacked the formation was in the general vicinity of 21°07'N/105°05'E.[1]

While the action was restricted in time and place, the accounts are such that correlation of sightings cannot be accomplished precisely. Moreover, the flights did not maintain continuous visual contact with each other; therefore, the reconstruction of the action of each flight has been documented separately.

The flight was in the pod formation with other flights, inbound to the target. At about 20 miles out from the target the flight saw three MIG-21s at their 9 o'clock position in a positive overtake, high, one and one-half miles out, heading 100°. BLUE Flight was at 14,000 ft, heading 062°. BLUE Flight then turned left into MIGs but they did not turn into BLUE Flight, attack, or fire their cannons. BLUE Flight rolled out 070°. At 14 miles out BLUE 2 called out MIGs at 11 o'clock at which time BLUE 1 looked up and saw what he thought was an afterburner igniting[2] from a diving aircraft. BLUE Flight then heard BLUE 2 and 4 of this flight call MIGs at 6 o'clock.

Shortly after the MIGs passed through the formation (these MIGs were not seen by BLUE Flight, only inferred from calls from other flights), BLUE Flight heard a call from an IRON HAND Flight that there were SAMs launched. Three SAMs were then observed to come out of the overcast. BLUE 1 estimated only 30 seconds elapsed between the MIGs and the SAM attack. The flight directly in front of BLUE Flight broke left, the flight on the right broke right and up, and the flight out in front broke right and down, jettisoning ordnance.

With the weather conditions compounded by SAMs and MIGs, the decision was made to abort, so the bombs and tanks were jettisoned at 21°09'N/105°15'E at 0845H, altitude 13,000 ft, speed 400 kt, heading 020 deg. The AIM-9Bs were retained. BLUE Flight then proceeded outbound to Channel 97. During egress BLUE 2 and 4 called out MIG-21s behind the flight and on a reciprocal heading. BLUE 1 did not see these, only the afterburner light as the MIGs engaged afterburner.

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[1]There are minor differences in the OPREP sources as to time and place, depending on the particular flight.

[2]BLUE 1 did not see any MIGs in this instance, only the afterburner light. All flight members saw the initial three MIG-21s.

[redacted]

Event II-138

Aircraft Involved: Four F-105s vs eight MIG-17s and two MIG-21s

Result: No damage

Vicinity of Encounter: 21°25'N/106°27'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 January 1967/1605H

Four F-105s (BLUE Flight) was one of a group of flights on a strike mission on a railroad yard 15 miles north of Kep airfield.

2. MISSION ROUTE

The flight was from Korat but the route is unknown.

3. AIRCRAFT CONFIGURATIONS

BLUE 1, 2, 3, 4

(Drop ordnance unknown)

1 - AIM-9B
1 - QRC-160
1 - Gun (1,029 rounds)
2 - 450-gal fuel tanks

MIG-17 (MIGs 1 to 8)

Grey in color

MIG-21 (MIG 9, 10)

Silver

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 10,000 ft. overcast

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 9,000 ft |
| Heading: | Passing through 135° |
| Speed: | 450 kt |
| Fuel: | Unknown |
| Flight formation: | Unknown |

5. INITIAL DETECTION

BLUE 1 saw the MIGs low while in a left turn at his 1 to 2 o'clock position, about 4,000 ft altitude chasing another flight of F-105s.

6. ACTION INITIATED

BLUE Flight jettisoned their ordnance and set up for air missiles. By this time, BLUE Flight had overtaken the MIGs so that the MIGs were at 5 o'clock and were lost from sight.

7. SITUATION DEVELOPED

The flight continued, and sighted more MIG-17s and MIG-21s, but no engagement evolved.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 1 | 3,300 | 450 | 15 |

Comments on this Encounter

BLUE 1: MIGs were lost visually partly because he had to set up missiles and take his eye off them. Takes too much time.

Comments from Overall Experience

BLUE 1: When carrying QRC-160, I have noticed the 85mm flak is quite inaccurate and obviously visually fired.

11. DATA SOURCE

Project Interviews: BLUE 1, 15 Feb 67
Messages: OPREP-4 ROLLING THUNDER 086, 21 Jan 67 from 388TFW

[redacted]

[redacted]



12. NARRATIVE DESCRIPTION

BLUE Flight was the lead flight of a four-flight gaggle (including GREEN Flight) attacking a railroad yard on the northeast railway about 15 miles north of Kep airfield. The strike force encountered very heavy and accurate 85mm flak from 21°30'N/106°27'E to the target (approximate location 21°37'N/106°34'E). The weather was restricting the operation since clouds were at 10,000-12,000 feet.

Two aircraft in the number two strike flight collided while dodging the flak, bursting at the flight's altitude, which was about 1,000 feet below the overcast.

When the flight got to the vicinity of the target an unidentified voice called "there are MIGs back there." BLUE Flight turned left to check, but no MIGs were observed. The distraction, combined with the flak, caused BLUE Flight to overfly the target and so the flight started a left turn.

In the left turn, when passing through a heading of 135-100 degrees BLUE 1 saw a flight of F-105s (GREEN Flight) paralleling BLUE Flight's course about a mile out and below. BLUE Flight was at 9-10,000 feet at the time, and GREEN Flight (one of the strike flights with BLUE Flights) was at about 6,000 feet. BLUE 1 also observed two gray MIG-17s at 1-2 o'clock, which were chasing the GREEN Flight. The MIGs were at about 4,000 ft altitude at GREEN's 4-5 o'clock position about 2 miles behind GREEN Flight.

Blue Flight was going faster than GREEN Flight and by the time BLUE Flight set up the switches for missiles air and jettisoned ordnance, the MIGs were at 5 o'clock. BLUE Flight turned to the left to come back on the MIGs but BLUE 4 turned right. By the time the remaining three members of BLUE Flight had joined, the MIGs and F-105s were lost from view.

BLUE Flight (BLUE 1, 2, 3) then returned to the target area to provide coverage for possible separated aircraft, while BLUE 4 exited. BLUE Flight made two 360 degree turns before exiting.

At approximately 1610H (it is not known whether BLUE Flight was orbiting or egressing at this time) when at 21°25'N/106°30'E, heading 075° at 8,000 ft altitude and 500 kt, BLUE 3 saw six gray MIG-17s immediately below the flight in a left hand race-track orbit at 3,000 ft altitude. At the same time, BLUE 2 saw two silver MIG-21s at 4,000 ft altitude heading 210 degrees. All of the flights with BLUE Flight jettisoned ordnance without striking the target. However, one other flight of another group did hit the target.



[redacted]

[redacted]

Event II-139

Aircraft Involved: Four F-105s vs one MIG-21

Result: Sighting only

Vicinity of Encounter: 20 miles from 21°18'N/105°26'E (approximately 21°05'N/105°05'E)

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 January 1967/0844H

Four F-105s (BLUE Flight) in a pod formation were to strike the Viet Tri RR yard (21°18'N/105°26'E). BLUE Flight was part of the strike force consisting of the aircraft in Events II-136, II-141, II-139, and II-137. There was a MIGCAP for this mission.

2. MISSION ROUTE

Departed Korat and refueled, then direct to Channel 97, and from there direct to the target.

3. AIRCRAFT CONFIGURATIONS

BLUE 1, 2, 3, 4

1 - 61mm gun (1,029 rounds)
2 - 450 gal tanks
1 - AIM-9B
Unknown bomb stores (probably six 750 lb)

MIG

Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Overcast with minimal visibility.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 15,000 ft |
| Heading: | 062° |
| Speed: | Unknown |
| Fuel State: | Unknown |
| Flight Formation: | Unknown |

5. INITIAL DETECTION

The MIG was seen at 9 o'clock by BLUE Flight at 35,000 ft displaced out to the side a 1-2 miles. The MIG was seen only by BLUE 1 who saw a MIG-21 high, in a descending split S, but immediately lost the MIG against the sky background.

6. ACTION INITIATED

BLUE Flight continued on until MIGs rolled in and went below flight. Flight then jettisoned ordnance when the other members of the formation jettisoned and turned to south.

7. SITUATION DEVELOPED

Flight egressed without further incident.

8. ORDNANCE

None

9. EQUIPMENT PROBLEMS

None

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 1 | Unknown | 150 | 67 |
| BLUE 3 | 2800 | 175 | Unknown |

Comments on This Encounter

BLUE 3: Apparently the MIGs knew we always seem to go up to the targets this way, and they were up there that day and waiting for us. I think they were so steep that they couldn't have fired at this point. The MIGs made a very aggressive attack.

[redacted]

10. AIR CREW COMMENTS (Continued)

Comments from Overall Experience

BLUE 4: On break-up flights flew through each other, causing some confusion.

11. DATA SOURCES

Project Interviews: BLUE 1, 18 Feb 68; BLUE 3, 16 Feb 68
Messages:

388 TFW OPREP-4 ROLLING THUNDER 034 21 Jan 67

12. NARRATIVE DESCRIPTION

The flights in Events II-136, II-137, II-139, and II-141 were proceeding to the target in a box formation. Each flight was in a pod formation, and the box formation had two flights in the lead, line abreast, followed by two more flights, line abreast, about one mile to the rear and about 1000 feet higher. The flights flying line abreast were 1500 to 2000 feet apart, with the aircraft in Event II-136 (the mission commander) on the right front, and those of Event II-141 on the left front. Following were the aircraft in Events II-137 and II-139, with the aircraft of Event II-139 on the right. The placement of elements within each flight is unknown.

At least two flights of MIG-21s (probably 3 to 4 aircraft each) made a pass on the formation; one descended from 9 o'clock and very high, passing through the formation in a steep dive, between the lead and following flights. The other MIGs were able to attack the lead two flights closing to within 1/2 mile.

The action occurred at some time between 0840H and 0894H and lasted about 1.5 minutes. When first attacked the formation was in the general vicinity of 21°07'N/105°05'E. (There are minor differences in the OPREP sources as to time and place, depending on the flight.)

While the action was restricted in time and place, the accounts are such that correlation of sightings cannot be accomplished precisely. Moreover, the flights did not maintain continuous visual contact with each other; therefore, the reconstruction of the action of each flight has been documented separately.

Flight was inbound to the target when someone called out MIGs at 9 o'clock high to BLUE Flight who was heading 062°. BLUE 3 looked up and saw a flight of F-4s go by on a reciprocal heading, slightly high. BLUE 1 saw them also but looked up higher to see some MIG-21s in a split-S maneuver from 35,000 ft but then lost them in the blue. BLUE Flight never saw them but it is thought that the MIGs rolled out beneath BLUE Flight and pulled up in front of them and fired at the lead flight in front of BLUE Flight. BLUE Flight jettisoned it's ordnance when it was called by the mission commander. The lead flight (who had made a 180° turn) flew through BLUE 1's formation. [illegible] Flight then turned to the south, asking the lead flight for DF steer but could not see the MIGs though BLUE Flight was behind the flight being hounded by MIGs. BLUE Flight then made a few 360° turns, during the first of which BLUE 3 and 4, become separated from all BLUE 1 and 2.

Event II-140

Aircraft Involved: Four F-105s vs two MIG-17s

Result: No damage

Vicinity of Encounter: approximately 21°15'N/106°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 January 1967/Approximately 1525H

Mission was a flak suppression by four F-105s (BLUE Flight) preceded by an IRON HAND Flight (Event II-144)

2. MISSION ROUTE

Departed Takhli for the Gulf of Tonkin for air refueling, then westward to target and returned same route. BLUE Flight was refueled both inbound and outbound.

3. AIRCRAFT CONFIGURATIONS

| BLUE 1 and 3 | BLUE 1, 2, 3, 4 |
|---|---|
| 1 - QRC-160 | 5 - CBU-24s |
| 1 - AIM-9B | 2 - 450 gal tanks |
| BLUE 4 had a QRC-160 pod radar standby, TACON-on IFF-on (lead only) Doppler-on BLUE 1, 3, 4 had QRC-160 pods | 1 - gun (1,029 rounds) |

MIGs - unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather:

Undercast, scattered to broken above 20,000 ft; 5 miles visibility in haze.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 6,000 ft |
| Heading: | Westerly (270°) |
| A/S: | 525 - 550 KCAS |
| Fuel: | 10,000 lb |
| Flight Formation: | Pod |

5. INITIAL DETECTION

Flight was heading westerly when BLUE 2 observed 2 MIG-17s heading easterly, co-altitude, 1 to 1-1/2 miles out, 80° off the right wing (about 2-2:30 o'clock).

6. ACTION INITIATED

As MIGs were line abreast, they dropped their tanks and turned into BLUE Flight. BLUE Flight dropped their tanks and increased airspeed to 575 knots. The MIGs were positively identified when they jettisoned their tanks, and started to turn into BLUE Flight's 6 o'clock position.

7. SITUATION DEVELOPMENT

BLUE Flight continued on and the MIGs were lost from sight.

8. ORDNANCE

None.

9. EQUIPMENT PROBLEMS

None.

10. AIRCREW COMMENTS

| Experience | Total | F-105s | Combat |
|---|---|---|---|
| BLUE 2 | 1,100 | 700 | 30 |

Comments on This Encounter

BLUE 2: It looked like they still had a lot of fuel in their tanks for they marked real well when they got rid of them. Didn't appear to be GCI controlled.

Comments on Overall Experience

BLUE 2: If we see a MIG carrying an IR missile we drop it down and get out of his envelope in the ground noise. If we see him in time we can out run him. If you see the MIG first, press a high speed attack, hit him, and get out.

11. DATA SOURCE

Project Interview - BLUE 2 (3 Feb 67)

BLUE 3 and 4 interviewed on 4 Feb 67 but could not add to the data on this event.

12. NARRATIVE DESCRIPTION

BLUE Flight was inbound to the target at 6,000' on westerly heading at 525 to 550 kt. BLUE 2 then saw 2 MIGs (either 15 or 17s) 80° off his right wing heading easterly - 1-1/2 miles out, at approximately the same altitude. BLUE 2 called it to the other members of BLUE Flight, and saw the MIGs fly to the line abreast, when they then dropped their tanks and turned into BLUE Flight. BLUE Flight then dropped their tanks and increased their airspeed to 575 KCAS. MIGs dropped back at BLUE's 4:30 position and BLUE Flight just outran them. BLUE Flight then hit target and on egress from area never did see MIGs again. All aircraft returned safely to home base.

Shortly after crossing the coast line BLUE Flight heard the IRON HAND Flight (Event II-144) encounter MIGs and although the radio transmissions were monitored inbound and outbound the flight never saw the aircraft involved.

[redacted]

Event II-141

Aircraft Involved: Four F-105Ds vs nine or ten MIG-21s

Result: No damage

Vicinity of Encounter: 21°07'N/105°05'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 January 1967/0840H

This was a strike mission on the Viet Tri RR yard (21°17'56"N/105°26'10"E) by 4 F-105s (BLUE Flight). The flights in Events II-136, -141, -139, and -137 were also part of the strike force. There was MIGCAP for this mission.

2. MISSION ROUTE

Departed for air refueling on White Anchor, then to 20°28'N/10[illegible]°43'E, then direct to target. Reverse route for egress.

3. AIRCRAFT CONFIGURATION

BLUE 1, 2, 3, 4

6 - 750-lb bombs
2 - 450-gal tanks
1 - QRC-160
1 - AIM-9B
1 - 20mm cannon (1,029 rounds)

MIG-21

Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 12,000 ft bases; tops 16,000 ft overcast with breaks in the overcast, visibility unlimited above clouds.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 16,000 ft |
| Heading: | 060° |
| Airspeed: | 480 KTAS |
| Fuel: | Unknown |
| Flight formation: | Pod formation with 1,000 ft vertical and horizontal separation. |

5. INITIAL DETECTION

BLUE 2 and 3 simultaneously saw and called out three MIG-21s at the flight's 8 o'clock position. The MIGs were at approximately 35,000 feet, and 2 miles behind BLUE Flight, turning into the flight's 6 o'clock position. Simultaneously BLUE 3 and 4 also saw a flight of MIG-21s at 9-10 o'clock, 30-35,000 ft altitude, 1 mile away, making a diving right turn into the strike force formation. Both flights of MIGs were in fluid formations.

6. ACTION INITIATED

BLUE Flight waited until the MIGs were committed and then made a shallow turn to the left, concentrating on the flight at 8 o'clock, which had about 100-knot overtake.

7. SITUATION DEVELOPMENT

Someone then called MIGs at 3 o'clock and BLUE Flight went into a right turn. BLUE Flight then reversed the turn, and saw the MIGs which were at the 6 o'clock position to down below the flight. Tanks were jettisoned, and when someone called "they're coming up from below," BLUE Flight went into left turn and dropped ordnance.

9. EQUIPMENT PROBLEMS

BLUE 3 couldn't jettison bombs normally so had to jettison MER rack also to get rid of them.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 2 | 3,500 | 110 approx. | 15 |

[redacted]

Comments on this Encounter

BLUE 2: The MIG appeared unable to track during his attack and did not attempt to salvage his run by turning into BLUE Flight.

Comments on Overall Experience

BLUE 2: We have a good system (F-105) as it is right now if we had a better power-to-weight ratio.

11. DATA SOURCE

Project Interview: BLUE 2, 17 Jan 67
Messages: 388TFW OPREP-3 210525Z Jan 67 DOI 0206

12. NARRATIVE DESCRIPTION

The flights in Events II-136, II-137, II-139, and II-141 were proceeding to the target in a box formation. Each flight was in a pod formation, and the box formation had 2 flights in the lead, line abreast, followed by 2 more flights, line abreast, about one mile to the rear and about 1000 feet higher. The flights flying line abreast were 150 to 2000 feet apart, with the aircraft in Event II-136 (the mission commander) on the right front and those of Event II-141 on the left front. Following were the aircraft in Events II-137 and II-139 with the aircraft of Event II-139 on the right. The placement of the elements within each flight is unknown.

At least two flights of MIG-21s (probably 3-4 aircraft each) made a pass on the formation, one descended from 9 o'clock and very high, passing through the formation in a steep dive, between the lead and following flights. The other MIGs were able to attack the lead two flights closing to within 1/2 mile.

The action occurred at some time between 0840H and 0844H[1] and lasted about 1.5 minutes. When first attacked the formation was in the general vicinity of 21°07'N/105°05'E.[1]

While the action was restricted in time and place, the accounts are such that correlation of sightings cannot be accomplished precisely. Moreover, the flights did not maintain continuous visual contact with each other, therefore, the reconstruction of the action of each flight had been documented separately.

BLUE Flight was inbound to the target at 16,000 ft heading 060° at 480 kt when BLUE 2 and 3 saw a flight of aircraft at their 8 o'clock position at 35,000 ft altitude 2 nmi out. At first, BLUE 2 thought they were F-4s but then they dove on the flight and someone called out "they're MIG-21s." Lead then went into a shallow left turn. BLUE 3 and 4 called out MIGs at 3 o'clock high and lead turned to the right. MIGs at 8 o'clock were now 1 nmi behind, however, the MIGs on the right appeared to be diving on another flight and Lead reversed back to the left, descending in time for BLUE 2 to see MIGs dive below the flight's 6 o'clock position 1/2 nmi out and low. These MIGs were not seen again.

As BLUE Flight reversed, BLUE 2 heard other flights call MIGs at 6 o'clock and shooting. BLUE Flight then saw the other flights jettison their tanks and they did the same. Then someone from another flight called out "they're coming up from 6 o'clock low." At this point everyone started a hard turn to the left in afterburner at which time BLUE 1 called for jettisoning of the ordnance in the vicinity of 21°12'N/105°12'.[2]

BLUE Flight was now at 12,000 ft 420 KTAS, heading 010° at 21°12'N/105°12'E, 0841H, in a left turn and descending through a cloud layer. While descending BLUE 3 observed 3 more MIG-21s immediately below them at 3,000 ft altitude heading approximately 180°. BLUE Flight continued in left turn to the west and egressed the area. Flight returned safely home.

During ingress BLUE Flight experienced moderate flak exploding about 1,000 feet below them, starting about 30 miles out from the target. After the flight's 180° turn, and during egress, very little flak was seen, and it was not in their immediate vicinity.

[1] There are minor differences in the OPREP sources as to time and place, depending on the particular flight.

[2] Of the 24 bombs in BLUE Flight 18 were dropped armed. BLUE 3 jettisoned safe due to failure of normal release.

[redacted]

Event II-142

Aircraft Involved: Four F-105Ds vs five MIG-17s

Result: No damage

Vicinity of Encounter: 21°11'N/106°46'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 January 1967/1522H

Four F-105s (BLUE Flight) were on a strike mission against target JCS 18.23. There were B-66 and IRON HAND support aircraft in the area.

2. MISSION ROUTE

Aircraft left Takhli for Gulf of Tonkin for refueling with Brown Anchor then direct to 21°07'N/107°38'E direct to 21°14'N/106°27'E direct to 21°14'N/106°12'E to target. Egress was the reverse of inbound route.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 3

2 - 3,000 lb bombs
1 - QRC-160
1 - 650 gal tanks
1 - gun (1,029 rounds)

F-105 BLUE 2, 4

6 - 750 lb bombs
1 - QRC-160
2 - 450 gal tanks
1 - gun (1,029 rounds)

MIG-17 MIG 1, 2, 3, 4, 5

Silver in color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clouds 1200 ft scattered to broken; visibility 3 miles in haze at 6000 ft.

| | BLUE 1 2 3 4 |
|---|---|
| Altitude: | ---1500 ft AGL-- |
| Heading: | ------276°------ |
| Speed: | ----Unknown----- |
| Fuel State: | ----Unknown----- |

Flight Formation: Tactical

5. INITIAL DETECTION

BLUE Flight had been warned of airborne MIGs by BIG EYE. Contact was made visually by BLUE 4 at his 3 o'clock position. BLUE Flight was at 1500 ft altitude heading 276° and MIGs were low, on the deck.

6. ACTION INITIATED

When MIGs turned into 6 o'clock of BLUE 1, two and one-half miles back, BLUE Flight lit afterburner and accelerated away.

7. SITUATION DEVELOPMENT

BLUE Flight hit the target and on egress again saw MIGs, this time at 10 o'clock but again out ran them.

9. EQUIPMENT PROBLEMS

| | |
|---|---|
| BLUE 2, 3, 4 | QRC Pod didn't work |
| BLUE 4 | Had a compressor stall and had to divert into Danang. Unable to refuel also. |
| BLUE 1 | Overload on battery -- had to shut it down. |

10. AIRCREW PROBLEMS

Experience: BLUE 4 about his 52 mission.

Comments on this Encounter:

BLUE 4: I don't believe the MIGs saw BLUE 3 or 4. The MIGs must have been under GCI control because of the haze layer.

[redacted]

[redacted]

Event II-144

Aircraft Involved: Four F-105s vs five to eight MIG-17s

Results: One F-105 damaged

Vicinity of Encounter: 21°13'N/106°24'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 January 1967/approximately 1620H

Four F-105s on a SAM suppression mission in support of a strike in the Hanoi Delta region. The strike force was to hit the Bac Giang railroad and highway bridge (JCS 18.23).

2. MISSION ROUTE

Takhli to air refueling over the Gulf of Tonkin, then north to the coast at 21°00'N/107°21'E. Direct to 21°13'N/106°24'E. The egress route was the reverse.

3. AIRCRAFT CONFIGURATIONS

F-105F BLUE 1 and 3

2 - AGM-45
2 - CBU-24
2 - 450-gal tanks
1029 rounds 20mm ammo

F-105D BLUE 2 and 4

6 - 500-lb bombs
2 - 450-gal wing tanks
1029 rounds 20mm ammo
All aircraft camouflaged

MIG-17

Dull silver with Red Star
Armament unknown
Had afterburners
Drop tanks were seen as they were jettisoned

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear 3 to 5 miles visibility below 7000 ft.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 2500 ft |
| Heading: | 090° |
| Speed: | 500 KTAS |
| Fuel State: | 10,000 lb |

Flight Formation

The flight had just fired a SHRIKE at an altitude of 6000 ft on a heading of about 300 degrees and had completed a right diving turn to a heading of east. BLUE 1 in front and BLUE 3 and 4 off to his left 2-3000 ft out. BLUE 2 was inside the turn and 6-7000 ft back. BLUE 2's burner went out in the turn.

5. INITIAL DETECTION

MIG warnings had been received by the flight prior to entering the target area from BIG EYE. But none were received for this specific encounter.

BLUE Flight heading east, 2500 ft altitude, and 500 knots. BLUE 4 called two MIG-17s at 10 o'clock, 500 to 1500 ft high and parallel to the flight's direction, about 1 mile away. Three to four seconds later BLUE 2 called MIGs at 3 o'clock high. The MIGs at 3 o'clock were at close range, but opening on BLUE 2.

6. ACTION INITIATED

BLUE Flight jettisoned tanks and ordnance; lit afterburners and attempted to outrun the MIGs.

7. SITUATION DEVELOPMENT

The MIGs at 10 o'clock attacked BLUE 3 and 4 causing them to break left and separate from the rest of the flight. The MIGs inflicted two hits on BLUE 4 before BLUE 3 and 4 were able to accelerate away from them.

The MIGs called at 3 o'clock, dropped in on BLUE 1's 6 o'clock position and fired at BLUE 1. BLUE 2 called a break and fired at the MIGs. The MIGs broke left as BLUE 1 broke right. Then two other MIGs attacked BLUE 2 and chased him for several miles firing several rounds of ammo. BLUE 2's afterburner was inoperative consequently he was unable to outrun or maneuver away from the MIGs. Finally the MIGs broke off and BLUE 2 egressed the area.

[redacted]

8. ORDNANCE

| | | |
|---|---|---|
| BLUE 1, 3, and 4 | None | |
| BLUE 2 | 310 rounds 20mm in 3 bursts | Damage unknown |
| MIGs | At least four MIGs fired at the flight | |
| MIG 2(one of the about 4) | 23mm hits in BLUE 4's aircraft | |

9. EQUIPMENT PROBLEMS

BLUE 2's afterburner went out and wound not relight. His gun did not fire after the second burst for a few seconds. He pulled the trigger several times before it began to operate. The two mirrors in the F-105 do not offer real good coverage of the 6 o'clock position. There is also a lot of reflection with the double canopy and at some angles you can't see through the canopy at all. He was not able to change switch settings from ground to air attack in time, consequently did not have a sight.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | |
|---|---|---|---|---|
| BLUE 2 | 400 | 200 | 20 | BLUE 2, after completing flight school, attended F-105 gunnery at Nellis AFB direct to SEA. |
| BLUE 4 | 3800 | 1000 | Unknown | Has flight experience in the F-84F, F-101, and F-105B/D. |

BLUE 2 had problems switching from a ground attack mode to air-to-air; recommend a switch on the throttle to switch over. Also the mirror is inadequate due to the reflection of light through the double canopy. BLUE 2 felt the only reason he was not hit was because he was so close to the ground the MIGs could not track. He felt the speed capability of the F-105 was excellent under normal conditions but since his burner did not work he was not able to get any air speed.

BLUE 4 felt he was able to outrun the MIGs quite easily and this is the reason they broke off the attack.

11. DATA SOURCES

Project Interviews: BLUE 2, 17 March 1967; and BLUE 4, 8 February 1967
Messages, Reports: 355 TFW, 211410Z, Jan 67 OPREP 3 DOTO-0-10264

12. NARRATIVE DESCRIPTION

BLUE Flight had just rolled out on a heading of east, after launching a SHRIKE missile at a Fansong radar. Speed and altitude were 500 KTAS and 3000 ft. BLUE 2 was 6-7000 ft back and inside the turn, and his afterburner went out when he applied g's in the turn, as a consequence he was not able to keep up with the flight.

BLUE 4 called MIGs at 10 o'clock, BLUE 2 called MIGs at 3 o'clock. (Five to 8 MIGs were sighted, things happened too fast from this point on for the flight members to recall how many aircraft were involved.) BLUE 1, 3 and 4 went afterburner and BLUE 1 called for the flight to jettison stores. All members of the flight jettisoned tanks and ordnance (BLUE 2 still did not have an operational afterburner.)

The MIGs at the 10 o'clock position made a left diving pursuit curve on BLUE 3 and 4 inflicting two 23mm hits on BLUE 4 one hit the left wing and the other the left flap. BLUE 3 and 4 broke left into the MIGs and becoming separated from BLUE 1 and 2, accelerated, outrunning the MIGs and egressed the area.

The MIGs that were called out at the 3 o'clock position made a pass on BLUE 1. BLUE 2 called for BLUE 1 to break right and fired at the MIG between him and BLUE 1. At this time BLUE 2 was at 400 knots and 3-4000 ft altitude and 6000 to 7000 feet behind BLUE 1. The MIG was pulling high, opening, and the angle off was high since BLUE 2 had a good planform view of the MIG. The MIG broke off left as BLUE 1 broke hard right. At firing BLUE 2 was approximately 3000 ft or better behind the MIG when he fired. He did not observe any hits. He did not have time to switch from ground to guns air and consequently still had a fixed 108 mil depression in the sight. He fired primarily to scare the MIG off realizing he did not stand much chance of hitting without a sight. He fired three bursts. On the third burst the gun wouldn't fire until after he had pulled the trigger several times.

BLUE 2 cut off BLUE 1 in the right turn so then they were almost abreast and heading south. BLUE 1's EWO in the backseat called, "break". BLUE 2 broke hard left and down as 37mm cannonshells went by the canopy. The MIG started shooting again and BLUE 2 reversed turn to the right descending to within 20-50 ft above the ground as the bullets went by the canopy. BLUE 2 could see the shells hitting the ground in front of the aircraft, BLUE 2 then lost track of BLUE 1 while at 370 knots heading south. He turned back to the east and BLUE 2's airspeed was now about 350 knots. He was right on the deck with two MIGs on his tail; one on each side about 3000 ft back and slightly high. The MIGs fired

BLUE 4: The QRC Pods are good. The MIGs are a lot less threat than the SAMs and the AAA.

11. DATA SOURCE

Project Interviews: BLUE 4, 4 Feb 1967.
Messages, Reports:

366 TFW DMG FASTEL 552 OPREP-3 211244Z Jan 67

12. NARRATIVE DESCRIPTION

BLUE Flight inbound to the target at an altitude of 1500 ft AGL heading 276° where BLUE 4 sighted four MIG-17s at his 3 o'clock position. The MIGs were three miles out, and at about ground level (about 1000 ft below the flight). The MIGs turned into the flight and went around the back to BLUE 4's 8 o'clock position, 6 o'clock to BLUE 1 about two and one-half miles behind BLUE 1. BLUE 4 then called them out to Lead who went afterburner and accelerated away.

BLUE Flight then dropped ordnance on their assigned target. On egress about halfway out along the ridge, at 21°25'N/106°36'E, BLUE 4 saw one MIG-17 at his 10 o'clock position, low, 3 - 4 miles out, heading approximately 90° from BLUE Flight who were at 2500 ft, heading 096°. The MIG turned and paralled BLUE Flight's path. The MIG turned to a reciprocal heading, about 1 mile north of BLUE Flight and went by, disappearing behind and below. BLUE Flight continued on and egressed the area for an air-to-air refueling.

BLUE 1, 2, and 3 returned home safely but BLUE 4 diverted into Danang because he was unable to refuel and because of an engine compressor stall. No aircraft received damage.

[redacted]

Event II-143

Aircraft Involved: Four F-105Ds vs two MIG-19s

Result: No damage

Vicinity of Encounter: 21 14'N/106 18'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 January 1967/1621H

Four F-105D aircraft (BLUE Flight) were the last strike flight attacking JCS 18.23. They were part of a larger strike force which included, as support, a flight of F-4Cs which was at an unknown location near BLUE Flight during the encounter.

2. MISSION ROUTE

BLUE Flight was from Takhli but the route is unknown.

3. AIRCRAFT CONFIGURATION

| F-105D | BLUE 1, 2, 3, 4 |
|---|---|
| | 2 - 3,000 lb bombs |

The other stores are unknown but probably included a QRC-160 pod and a centerline tank.

11. DATA SOURCES

355TFW 211400Z Jan 67 OPREP-3 DOTO-O 0265

12. NARRATIVE DESCRIPTION

At 0820Z while BLUE 4 was in the vicinity of 21°14'N/106°18'E at 6,000 feet he saw 2 MIG-19s under the flight approximately 2,000 feet below on a heading of 150 degrees.

As BLUE 4 continued on the MIGs rolled around behind BLUE 4 and made a left hand climbing turn under the flight.

As the flight rolled in on the target, (at 0821Z) BLUE 4 went into his divebomb pass with the MIGs now at 3 o'clock waiting for BLUE 4 to come out of his bomb run. BLUE 4 released his ordnance on the target and then started up and to the left, then turned to the right at which time the MIGs attacked at 1,000 feet. As BLUE 4 began to turn into the MIGs the MIGs attempted one pass. BLUE 4 then went to afterburner and left the MIGs in a right descending turn about 30 seconds after leaving the target.

BLUE 4 was the only flight member involved with the MIGs.

[redacted]

and BLUE 2 jinked left and right, attempting to turn into each attack as the MIG turned in to fire. The MIG's fire passed to either side of him. This situation lasted for 5 or 6 miles; the MIGs shooting and BLUE 2 dodging bullets, and staying low. Finally the MIGs either got too far from Kep or ran out of ammunition, since they quit firing and broke off to the right and BLUE 2 turned left toward the coast.

BLUE 1, on egress, heard the calls of BLUE 2 and started to turn back to help BLUE 2, but by then the MIGs had broken off so BLUE 1 turned to an exit heading.

While alone on egress, BLUE 4, at 5000 ft altitude and 600 knots saw one MIG-17 at 12 o'clock low, 1-1/2 to 2 miles away. The MIG was at 500 ft altitude on a reciprocal course. No action was taken by either the MIG or BLUE 4, and BLUE 4 continued to egress to the tanker.

[redacted]

Event II-145

Aircraft Involved: Four F-105s vs four MIG-17s

Result: No damage

Vicinity of Encounter: 21°17'N/105°53'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 January 1967/0936H

Four F-105s were on a strike mission. The target was a group of railroad tracks at Thang Quang siding. The flight was one of four in a gaggle formation and was last flight in on target.

2. MISSION ROUTE

Departed Korat and refueled. Then proceeded NE to the upper end of Thud Ridge to pick up F-4 escort. Then down SE to target. Came off target in southerly heading and went into right turn to proceed up Thud Ridge.

3. AIRCRAFT CONFIGURATION

F-105 BLUE 1, 2, 3, 4

6 - 750 lb GP bombs
2 - 450 gal tanks
1 - QRC - 160 POD
1 - SIDEWINDER (AIM-9)
TACAN - Rec. only; Radar, Stby, IFF/Stby, Pod/On, Doppler/Off

MIG-17 MIG 1, 2, 3, 4

Armament unknown
Silver color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Broken variable scatter, tops at 5,000 ft. Visibility 10 mi in haze.

| | BLUE 1 & 2 | 3 & 4 |
|---|---|---|
| Altitude: | 7,000 ft | 4,000 ft |
| Heading: | 290° | Unknown |
| Speed: | 550 kt | |
| Fuel State: | Unknown | |

5. INITIAL DETECTION

MIGs first seen by BLUE 1 while in a left turn at his 8 o'clock position 5-6,000 ft out at 4,000 ft altitude at 0936H.

6. ACTION INITIATED

BLUE 1 stayed in his slight left turn and continued ahead. He was already in front of MIGs and his speed was up. BLUE 2 went high. BLUE 3 and 4 turned and closed on MIGs.

7. SITUATION DEVELOPED

BLUE 3 and 4 closed in on MIG 1 and 2. BLUE 3 went after MIG 1 who never got any closer than 3,000 ft on BLUE 1. BLUE 3 fired his missile which seemed to be at good range whereupon BLUE 1 broke hard right and downward and MIG 1 broke very hard left and desceded very rapidly. Missile did not appear to guide due to high g load. All aircraft continued up Thud Ridge.

8. ORDNANCE

| | No. fired/No. hits SIDEWINDER AIM-9B | Remarks |
|---|---|---|
| BLUE 1, 2, 4 | None | |
| BLUE 3 | 1/0 | Did not guide. |
| MIG 1, 2, 3, 4 | | Unknown |

[redacted]



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9. EQUIPMENT PROBLEMS

BLUE 3 had two bombs hung up and also a missile that appeared not to guide during MIG high g turn.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 3 | 2600 | 70 | 50 |

Comments on This Encounter:

BLUE 1 MIGs possibly just came out of Phuc Yen taking off to the SE and making a 180° turn to the left. They already had the speed advantage and didn't want to slow down. Didn't feel it was wise to chase them down to the middle of Hanoi.

BLUE 2 Missiles did not perform the g load required to take it.

BLUE 3 As he set up for the missile, he thought that he heard the missile tone and everything appeared perfect. The visibility was bad that day and so it could have been that because of the haze layer that the SIDEWINDER did not track properly. MIGs made no attempt to follow the BLUE Flight.

Comments from Overall Experience:

BLUE 1 The F-105 system is an air-to-ground weapon system. Therefore, it is not as agile as a pure fighter system. It should not be required to do so much maneuvering in order to defend itself in the air superiority role. The F-105 should have a weapon system that can work around the clock.

BLUE 2 This is probably the first firing of a missile from a Thud so it might have surprised the MIGs quite a bit.

BLUE 3 To go from a bombing mode to an air-to-air mode requires at least four steps in the fire control system. Need more SIDEWINDER firings in training.

11. DATA SOURCES

Project Interviews:

BLUE 1, 2 and 3, 16 Feb 67

Messages, Reports:

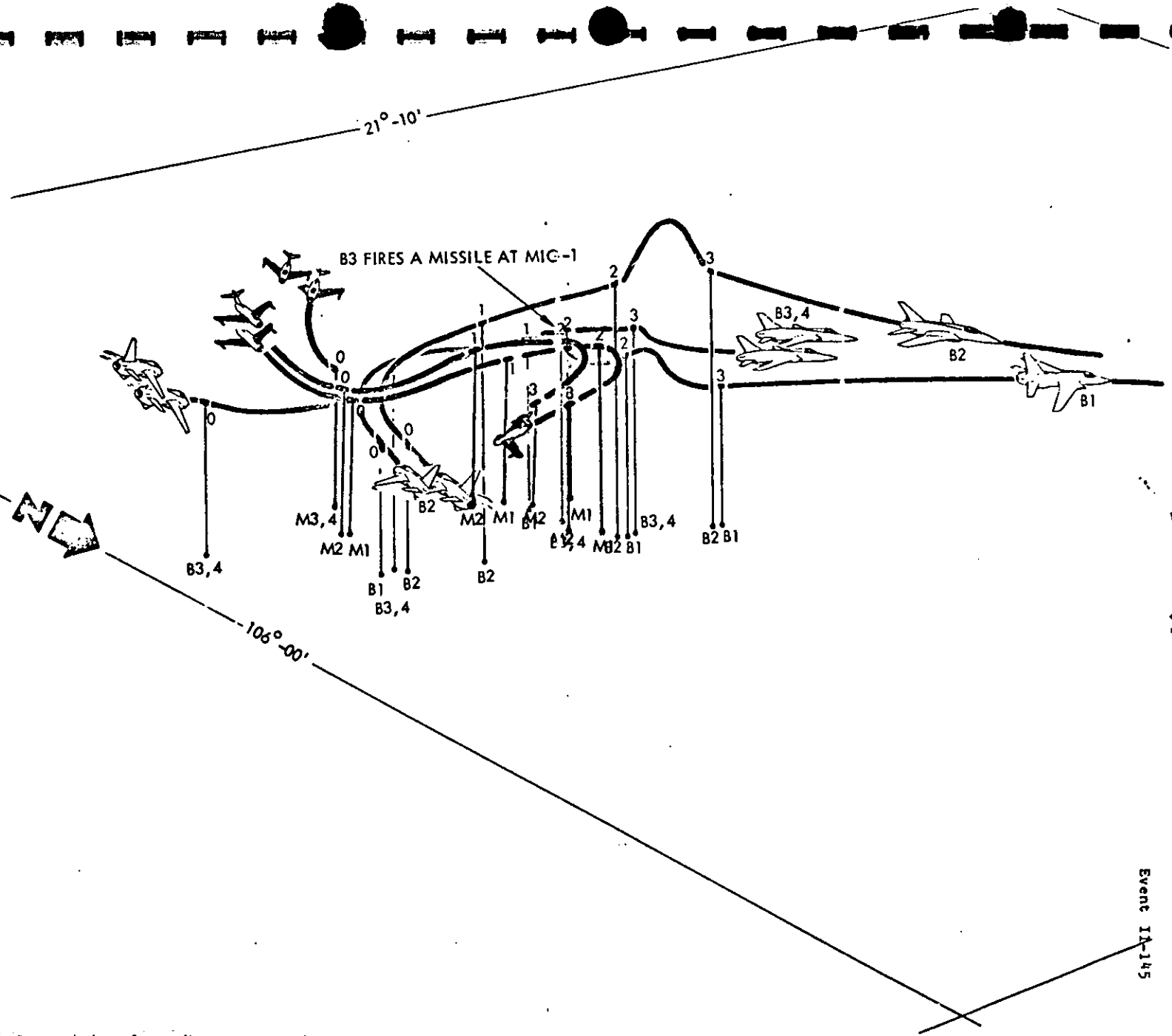
388TFW 220600 Jan 67, OPREP 3, DOI 1225

12. NARRATIVE DESCRIPTION

The flight came off the target in a right turn through a southerly heading. BLUE 2 was joining on BLUE 1 who had gone into a left shallow turn and was 2,000 ft back. BLUE 3 did some S-turns off so that he and BLUE 4 could rejoin as BLUE 3 had hung ordnance and wanted it confirmed by BLUE 4. BLUE 3 jettisoned the ordnance armed in the vicinity of 31°30'N/105°10'E after the encounter. BLUE 1 heading 290°, 7000 ft altitude, and 550 kts CAS observed four MIGs at his 8 o'clock position climbing in a left 10° bank turn out of 4,000 ft in an element of two, heading 300°. He called the MIGs out to the rest of the flight at which time he observed the MIGs turning into him and closing to within 3,000 ft. This is as close as the two MIGs ever got. No one else in the formation ever saw MIG 3 and 4 and BLUE 1 lost sight of them after the initial sighting. Meanwhile, BLUE 2 high speed yo-yo'ed on the MIGs in an attempt to get into the 6 o'clock. BLUE 3 and 4 also saw the MIGs at their 9 o'clock, turned into them to engage, rolling out at their 6 o'clock 7,000 ft behind with a positive overtake. BLUE 1 then called for the flight to set up their missile switches which BLUE 2 and 3 acknowledged. BLUE 1 then saw the MIGs approaching the 6 o'clock and began jinking. The MIGs stayed with them. By this time BLUE 2 is line abreast with the MIGs and is about to turn into them when BLUE 3 calls that he is about to launch the missile. BLUE 2 then calls out that he will stay out of the way and BLUE 3 closes to within 3,000 ft of MIG 1. MIG 2 meantime, is on the left wing of his leader following him and BLUE 4 is on the right of BLUE 3. BLUE 3 then calls missile away, Alt 7,000 ft, speed 550 kt and BLUE 1 goes into a hard turn to the right and down. MIG 1 simultaneously goes into a very hard, steep descending turn to the left after the missile is fired. Missile seems as though it is unable to keep up with the g loads of the MIG. BLUE 3 at this point cannot see MIG 2 since he has overflown him and is under his aircraft's nose. So BLUE 3 does an S-turn to the right and BLUE 1 performs a turn to the left. Both see the two MIGs in a descending turn to the south towards Hanoi. BLUE 2 then rejoins with BLUE 1, with BLUE 3 and 4 3 to 5 miles behind, and all four aircraft fly up the ridge and head home. They do not follow the MIGs due to a high SAM threat in Hanoi area.

RED BARON EVENT II-145 SUMMARY

| Time Mark | Action Aircraft (BLUE 1, 3, 4) | | Other Friendly | Communications | Enemy Actions (MIG 1,2) | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| $T_0$ | Alt: 7,000 ft climbing<br>Speed: 550 kt<br>Head: 290° | B1 sees MIGs at 8 o'clock 5-6,000 ft back 4,000 ft alt at approximately 450 kt. | B3 & 4 had re-joined off target as B3 had hung ordnance and had to jettison them. B3 sees MIGs at 9 o'clock. | B1 called out 4 MIGs at 8 o'clock. B3 calls B4 "Those are MIGs." B4 "Roger". | MIGs in left turn 10° head 300°. Sees B1 roll right to engage. | MIG appear to be in traffic pattern and just taking off from Phuc Yen.<br>B3 jettisoned the ordnance after the encounter. |
| $T_1$ | Alt: 7,500 ft<br>Speed: 550 kt | B1 begins scissors. Calls B3 to set up switches B2 goes high trying to get behind MIGs | B3 & 4 turn into MIGs and roll out 7,000 ft behind MIG 1's 6 o'clock. B4 on wing of 3. | B1 calls B3 to set up switches. B3 calls setting up switches as does B2. B3 in afterburner.<br>B3 calls ready to fire missile. | MIG close to within 3,000 ft of B1's 6 o'clock position and Jinx with B1. | |
| $T_2$ | Alt: Descending<br>Speed: Increasing | B1 breaks downward to the right. B2 line abreast with MIGs and stays high and out of the way. | B3 fires missile at 3,000 ft. Loses sight of MIG 2. Begins an S-turn to to the right. | B3 calls missile away. B2 calls staying out of way and high. | MIGs break hard to the left and down. After being in a right 20° break to the right when missile fired. | Missile appears to track at first but doesn't seem to be able to withstand high g's forced on it by MIGs tight turn. |
| $T_3$ | | B1 goes into left turn and sees MIG descending left. | B3 sees MIGs in descending left turn. | | | |
| | | | | | | |




Event II-145



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Event II-146

Aircraft Involved: Four F-105s vs four MIG-17s

Result: No Damage

Vicinity of Encounter: Approximately 21°10'N/ 106°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 27 January 1967/Unknown

Four F-105s on a strike mission against a railroad yard northeast of Kep.

2. MISSION ROUTE

Departed Korat RTAFB for the Gulf of Tonkin for air refueling, then direct to 20°08'N/107°43'E, direct to 21°10'N/107°34'E, directly west to target.

3. AIRCRAFT CONFIGURATIONS

F-105s BLUE 1, 2, 3, 4

1 - AIM-9B (SIDEWINDER)
1 - Gun (1,029 rounds)
Other armament unknown

MIG-17s

Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Overcast with tops at 5,000 ft. Visibility was good above the clouds. Target only area open. Area south of target cloud covered.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 15,000 ft |
| Heading: | Westerly |
| Speed: | 500-520 KTAS |
| Fuel State: | Unknown |
| Flight Formation: | Pod |

5. INITIAL CONTACT

BLUE 3 initially sighted the MIGs at 10 o'clock position, low and climbing at about 12 miles. Clear silhouette of MIG-17s.

6. ACTION INITIATED

When MIGs turned into flight, BLUE Flight turned left into MIGs.

7. SITUATION DEVELOPMENT

MIGs broke off and continued reciprocal heading. No engagement.

8. ORDNANCE

None expended.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 3 | 1200 | 700 | 67 |
| BLUE 1 | 4300 | 100 | 20 |
| BLUE 2 and 4 | Not interviewed | | |

Comments on This Encounter

BLUE 3 - MIGs were probably GCI controlled.

Comments from Overall Experience

BLUE 3 - F-105 needs more wing area and more power. One improvement to our training would be to practice against other aircraft, such as an F-102 which is highly maneuverable. Enough information is displayed for the guns out range should be digital readouts and not analogue. "Terrible visibility from the 4 to 8 o'clock position" in the F-105 and mirrors are useless for other than watching wingman during taxiing. Seems that MIG pilots aren't very experienced.

[redacted]



PRECEDING PAGE BLANK

11. DATA SOURCES

Project Interviews: BLUE 1 and BLUE 3

12. NARRATIVE DESCRIPTION

BLUE Flight was inbound to the target at 15,000 ft, heading westerly at 500 to 520 knots when BLUE 3 spotted two MIG-17s at 10 o'clock position and low. (Other members of flight reported total of four MIGs.) It appeared as though the MIGs had just taken off. The MIGs turned into the flight as if to engage, and BLUE flight turned left into them. The MIGs then broke off the engagement and continued in an easterly direction and climbing. After 30° of turn, BLUE Flight headed toward the target, dropped ordnance and egressed the area returning safely to home station. No damage or encounter logged.

[redacted]

[redacted] Event IL-147

Aircraft Involved: Four F-105Ds vs three MIG-21s

Result: No damage

Vicinity of Encounter: Approximately 21°20'N/ 106°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 29 January 1967/Unknown

Four F-105Ds (BLUE Flight) were on a strike mission against the Northeast Railroad.

11. DATA SOURCES

Project Interview: Member of BLUE Flight, 15 Feb 67

12. NARRATIVE DESCRIPTION

BLUE Flight was on a strike against the Northeast Railroad. They ingressed to the target over the water route and the weather en route was poor. BLUE Flight was the flak supression flight and was leading the strike force. There was only one other strike flight due to aborts but there were MIGCAP F-4s in the area, which were heard on the radio.

BLUE Flight was heading roughly west over the mountains, and before they got to the Delta a bogey was seen far out at 9 o'clock slightly high and he turned into BLUE Flight and dived below as if to make a 90 degree beam attack. As the bogey approached, it was identified as a MIG-21 and then two more were seen. The three MIG-21s were all in trail about 3 to 5000 feet apart, all on the same attack path. The MIGs were originally on an opposite heading to BLUE Flight. The MIGs turned north towards BLUE Flight, and when 1-1/2 to 2 miles out, turned off to the east and disappeared. The other F-105 flight turned into the MIGs, but did not follow them and both flights then went over to hit the target.

[redacted]

Event II-148

Aircraft Involved: Four F-105s vs four MIG-21s

Result: Sighting only

Vicinity of Encounter: 22°00'N/105°35'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 February 1967/0848H

Prior to reaching the primary target, the strike group was diverted due to unsatisfactory weather in the target area.

2. MISSION ROUTE

Unknown

3. AIRCRAFT CONFIGURATIONS

Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

| | BLUE 1, 2, 3, 4 | MIG 1, 2 | MIG 3, 4 |
|---|---|---|---|
| Altitude: | 14,000 ft | 25,000 ft | 28,000 ft |
| Heading: | 270° | 110° | 080° |

5. INITIAL DETECTION

Details of the initial detection are unknown. Four MIG-21 airplanes were sighted in flights of two airplanes each. Both flights quickly disappeared to the southeast. Closest approach of the MIGs was estimated to be five miles.

6. ACTION INITIATED

No action by either side.

7. SITUATION DEVELOPMENT

None. Sighting only.

8. ORDNANCE

None

9. EQUIPMENT PROBLEMS

None reported.

10. AIRCREW COMMENTS

No data.

11. DATA SOURCES

Messages: 388TFW OPREP-3 040355Z Feb 67 FASTEL DOI 156 Feb 67
388TFW OPREP-3 0405 0Z Feb 67 DOI 0357 Feb 67

12. NARRATIVE DESCRIPTION

Details of the initial detection are unknown. Four MIG-21 airplanes were sighted in flights of two airplanes each. Both flights quickly disappeared to the southeast. Closest approach of the MIGs was estimated to be five miles.

[redacted]

Event II-149

Aircraft Involved: Four F-105s vs six MIG-21s

Result: Sighting only

Vicinity of Encounter: 21°15'N/104°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 February 1967/0730H

2. MISSION ROUTE

Unknown

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4 (Ordnance load estimated from limited available data)

1 - AIM-9B

4 - CBU-24 pods

2 - 450 gal external fuel tanks

1 - M-61 gun (1029 rd ammo)

MIGs - Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 18,000 ft |
| Heading: | Unknown |
| Speed: | 400 KIAS |

5. INITIAL DETECTION

BLUE 2 first sighted two MIGs at 2 o'clock, high, at three miles.

6. ACTION INITIATED

F-105s engaged afterburner and maneuvered mildly to keep the MIGs in sight.

7. SITUATION DEVELOPMENT

Two MIGs were approaching head-on with two additional MIGs approximately 6,000 ft in trail. The first two MIGs pulled up into a steep wingover and dropped in at 5 o'clock; then the MIGs broke away.

8. ORDNANCE

None expended.

9. EQUIPMENT PROBLEMS

None reported.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 2 | 450 | 200 | 20 |

BLUE 2 was very impressed with the turning ability of the MIG-21.

11. DATA SOURCE

Project Interviews: BLUE 2, 6 Feb 1967.

12. NARRATIVE DESCRIPTION

BLUE Flight was enroute to the target, at 18,000 ft, 400 KIAS, when BLUE 2 sighted two MIGs at 2 o'clock, high, at approximately three miles. BLUE 1 (lead) then saw two more MIGs approach head-on, co-altitude. BLUE 3 saw another section of MIGs about 6,000 ft, low, in-trail, with this lead section. As the MIGs passed head-on they pulled up into a steep wing-over and dropped into the 5 o'clock position on BLUE Flight. The MIGs suddenly broke away and disappeared. No ordnance was fired.

[redacted]

[redacted]

Event II-150

Aircraft Involved: Four F-105s vs three unidentified aircraft

Result: Sighting only

Vicinity of Encounter: 21°20'N/104°50'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 February 1967/0859H

Four F-105 airplanes were a part of a larger strike group. The group had been diverted from the primary target due to adverse weather in the area.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4

2 - 3,000-lb bombs
1 - AIM-9B SIDEWINDER
1 - M-61 Gun (full 20mm ammo)

5. INITIAL DETECTION

The flight observed three unidentified aircraft. One silver aircraft closed to within one n mi of the flight in the 6 o'clock position.

6. ACTION INITIATED

The flight jettisoned bombs.

11. DATA SOURCES

Messages:

388TFW/OPREP-3/0403552 Feb 67/DOI 156 Feb 67.

Other:

RED BARON MIG Incident Summary.

[redacted]

[redacted]

Event II-151

Aircraft Involved: Four F-105s vs two MIG-17s

Result: No damage

Vicinity of Encounter: 20°26'N/105°45'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 February 1967/1600H

Four F-105 airplanes had completed an attack and were departing the target area.

2. MISSION ROUTE

Unknown

3. AIRCRAFT CONFIGURATIONS

F-105 B1, 2, 3, 4

1 - M-61 gun
1 - SIDEWINDER (AIM-9B)

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Visibility less than five miles in haze and smoke.

5. INITIAL DETECTION

BLUE 3 sighted two MIG-17 airplanes on a heading of 220° in a descending, right turn. The MIGs leveled off approximately 1/2 to 1 n mi, 20° to the right of the nose of BLUE 3, and 500 ft above BLUE Flight.

6. ACTION INITIATED

The MIGs immediately pulled up into a steep, climbing, right turn and disappeared into the haze.

7. SITUATION DEVELOPMENT

Just before the MIGs disappeared BLUE 3 launched a SIDEWINDER that appeared to follow the MIGs into the haze. No detonation of the missile was observed. BLUE 3 engaged afterburner in an attempt to regain contact with the MIGs.

8. ORDNANCE

| | (No. fired/No. hits) SIDEWINDER AIM-9B | Remarks |
|---|---|---|
| BLUE 3 | 1/0 | Results unobserved. Lost sight of the missile and the MIG in the haze. |

9. EQUIPMENT PROBLEMS

None reported.

10. AIRCREW COMMENTS

No data.

11. DATA SOURCES

Message:

355TFW/OPREP-3/0[illegible]1320Z Feb 1967 DOTO-0-10436 Feb 67.

12. NARRATIVE DESCRIPTION

BLUE Flight had completed an attack and was egressing from the area when BLUE 3 sighted two MIG-17 airplanes. No previous MIG warning had been received when BLUE 3 called a warning. The MIGs were on a heading of 220° in a descending, right turn. After leveling off approximately 1/2 to 1 n mi, 20° to the right of BLUE 2, and 500 ft above BLUE Flight, the MIGs pulled up into a steep, climbing, right turn. Just before the MIGs disappeared into the haze, BLUE 3 launched a SIDEWINDER toward the MIGs. The missiles appeared to track but no detonation was observed. BLUE 3 engaged afterburner in an attempt to regain contact with the MIGs. There were no further MIG sightings as BLUE Flight returned to base undamaged.

[redacted]

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WSEG REPORT 116

# AIR-TO-AIR ENCOUNTERS IN SOUTHEAST ASIA (U)

## Volume III: Events from 1 March 1967 to 1 August 1967 and Miscellaneous Events

February 1969

Comprising
IDA REPORT R-125

John S. Attinello, *Project Leader*

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~~REPORT~~ R-123-101-3

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# AIR-TO-AIR ENCOUNTERS IN SOUTHEAST ASIA

Volume III: Events from 1 March 1967 to 1 August 1967 and Miscellaneous Events (11). (8)

February 1969

(2) 402-p

This report has been prepared by the Systems Evaluation Division of the Institute for Defense Analyses in response to the Weapons Systems Evaluation Group Task Order SD-DAHC15 67 C 0012-T-104A dated 6 December 1966.

(15) [illegible] -67-C 0012

In the work under this Task Order, the Institute has been assisted by military personnel assigned by WSEG.

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## FOREWORD

This report is a product of the Systems Evaluation Division of the Institute for Defense Analyses in conjunction with the Weapons Systems Evaluation Group in response to WSEG Task Order SD-35-T-104, as modified in a memorandum for Director, WSED, from Director, WSEG, dated 4 August 1966. The memorandum resulted from a request by the Deputy Director, Tactical Warfare Programs, ODDR&E. The Task was coordinated with the Joint Chiefs of Staff, (J-3 and J-5).

The RED BARON Project produced four volumes. Those members who made primary contribution to Volume II were as follows:

| | |
|---|---|
| John S. Attinello | Howard K. Hostler, Maj., USA |
| Velma M. Archer | Ralph L. Kuster, Jr., Maj., USAF |
| Douglas N. Beatty | Richard C. Stewart, Capt., USN |
| John W. Rubino | John W. Walden, Cdr., USN |
| Charles W. Gardner | David D. Young, LCol., USAF |
| Earl A. Thomas | Charles R. Shaw, Col., USA |

At its inception (October 1966) the RED BARON Project team consisted of:

John S. Attinello, Project Leader
Douglas N. Beatty, Ass't Project Leader
John W. Walden, Cdr., USN, Senior Navy
Malcolm J. Agnew, LCol., USAF, Senior Air Force

Phillip J. Conley, Jr., LCol., USAF, and Thomas J. Hughes, Capt., USN, also worked part time on the project from its inception, primarily acting as an interview-debrief team. LCol. Agnew and Cdr. Walden were the other team.

In November John Rubino, Charles Tiffin, William Eason, Capt., USN, and Charles R. Shaw, Col., USA, joined the project.

In December, Robert J. Lynch, Jr., Col., USMC, joined, and Philip Brooks, Col., USAF, became Senior Air Force representative. Richard C. Stewart, Capt., USN, was assigned in February 1967. These later military arrivals shared their time with other WSEG projects.

While developing interview methods and techniques, the project was valuably assisted by two psychologists from IDA/RESD, W. Sinaiko and W. Richard Kite.

For interviews in the U.S., teams consisting of military and civilian project members supplemented the two teams designated initially to collect data in the combat theater. In the SEA theater, two Navy-Air Force teams (Conley-Hughes and Agnew-Walden) conducted the interviews. LCol. Agnew and Cdr. Walden also interviewed SEA returnees at European bases.

As interviews were conducted, it became apparent that much more data were being collected than had been initially estimated from official reports. Therefore, a rapid increase in qualified personnel was needed to collate the data for publication.

Roy G. Anderson, Rear Admiral, USN, Senior Navy Member of WSEG, through appropriate channels, obtained the services of four Navy fighter pilots for a period of two weeks. The assistance to the RED BARON Project of the following Navy pilots is acknowledged:

Dennis E. Becker, Lt., USN
Benjamin Cloud, LCdr., USN
Samuel C. Flynn, LCdr., USN
William D. Kiper, LCdr., USN

A. J. Beck, Major General, USAF, Senior Air Force Member of WSEG, with the cooperation of Headquarters, USAF, obtained the services of nine tactical fighter pilots for a thirty-day period. The assistance to the RED BARON Project of the following Air Force pilots is acknowledged:

Thomas H. Curtis, Maj., USAF
Leslie C. Long, Capt., USAF
Robert S. Maxwell, Capt., USAF
R. P. Moore, Maj., USAF
Sam P. Morgan, Jr., Capt., USAF
Michael G. Pennacchio, Capt., USAF
William P. Robinson, Maj., USAF
Ronald W. Scott, Capt., USAF
Ronald J. Ward, Maj., USAF

The project also acknowledges the assistance of the following individuals who assisted the interview teams in the data collection phase:

J. J. Berkow, Col., USAF, ARPA R&D Field Unit, Bangkok, Thailand
R. Hiller, Assistant for Operations Analysis, CINCPACAF Staff
E. Kapos, OEG Representative, CINCPACFLT Staff
G. Koyiades, COMNAVOCEANO
R. Linsenmeyer, Chief, Scientific Research Advisory Group, CINCPAC Staff
J. V. Patterson, Col., USAF, ARPA R&D Field Unit, Saigon, Vietnam
B. Powers, OEG Representative, CINCPACFLT Staff
H. L. Wood, Col., USAF, Headquarters, 7th AF
D. G. Lynch, LCol, USMC, OPNAV

The commands, whose cooperation made it possible to reach the participants of air-to-air engagements, are also acknowledged.

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Commander, 81st TFW RAF, Bentwaters, England

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Commander, 50th TFW, Hahn AB, Germany

Commander, Naval Air Forces, U.S. Pacific Fleet

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Commander, 831st Air Division (TAC), George AFB, California

Commander, 835th Air Division, McConnell AFB, Kansas

Commander, 3525th PTW, Williams AFB, Arizona

Commander, 4531st TFW, Homestead AFB, Florida

Commander, 4453rd Combat Crew Training Wing, Davis-Monthan AFB, Arizona

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# I. INTRODUCTION

At the request of the Director of Defense Research and Engineering, the Weapons Systems Evaluation Group has undertaken a study of air-to-air encounters in Southeast Asia. The project code name is RED BARON. Data that have been collected on approximately 400 such encounters through 1 August 1967 will be analyzed primarily to assist in the selection of suitable research and development programs for future high-performance fighter aircraft. A secondary purpose of the study was to provide data for use by the military services and of the scientific community. This volume is a partial documentation for the secondary purpose.

## A. DATA SOURCES

Data contained in this report were taken from two sources: the official reporting media and personal interviews with participants. Past IDA/WSEG experience in collecting combat data[1,2] has shown that the official reporting media, which are designed primarily for military operational and statistical needs, are inadequate for many analytic purposes. The project groups conducting these earlier studies found that personal interviews with participants were necessary for R&D analyses. In Project RED BARON, interviews were considered the primary data source, supplemented, where available, by official reports.

---

[1]WSEG Staff Study 134, Adequacy of Data from Southeast Asia Combat Air Operations for Research and Development Analyses of Aircraft Losses and Damages (U), SECRET, February 1967.

[2]WSEG Report 101, Requirements of Defense R&D Agencies for Data from Combat Air Operations in Southeast Asia, SECRET, August 1966.

For purposes of this study, encounters that were investigated were defined to include the following types:

- Sighting of enemy aircraft (either visually or by radar),
- Either U.S. or enemy aircraft initiating hostile or evasive maneuvers,
- Either U.S. or enemy aircraft expending ordnance, and
- Loss or damage in combat of either U.S. or enemy aircraft.

During the data collection phase, an effort was made to assure the exhaustiveness of the information contained in this report. However, it was established that certain aspects of air-to-air combat could not be included. For example, during the conduct of CAP and escort missions, frequently it was necessary for the fighter force to intercept radar contacts which proved to be friendly aircraft. Also, during the course of missions, aircraft sighted were initially identified and called as enemy, only to be recognized later as friendly. These occurrances were not reported and therefore are not documented in this volume.

While numerous sightings of enemy aircraft are contained in this volume, it is believed that there are many other sightings which were not documented (and therefore not included). This is partially substantiated by the numerous instances which were mentioned during interviews for which no date or location was recalled and which were not correlated with reported sightings.

The first type was considered in detail only if the sighting was of R&D interest, e.g., if a U.S. aircraft made no attempt to engage enemy aircraft because of inferior or malfunctioning U.S. equipment. Where no R&D implications were indicated, sightings were noted to record the information collected for potential use for other analyses.

[redacted]

Since "test type" instrumentation does not exist on most combat aircraft, the validity and quality of data are limited to the tolerances of human senses and recollections (aided where possible by official and personal records, notes, tapes, etc.). A detailed account of the precautions taken to insure the validity and quality of data gathered in such interviews is presented in Section II.

Originally the data sample consisted of 248 encounters through 1 March 1967. However, from this date through 22 May, 65 more encounters were identified (not including "sightings"). In the 23-month period from first encounter to 1 March, 47 "confirmed plus probable" MIG kills were reported. In the six-week period in April-May 1967, the 65 engagements resulted in 37 "confirmed plus probable" MIG kills.[1]

## B. DATA PRESENTATION

Though the analyses to be conducted in the RED BARON study were to be limited to exposing problems for R&D considerations, interest in the basic data was expressed in many areas of the military and scientific communities. To satisfy these needs the data have been formalized and are published in three volumes as follows:

Volume I: Account of F-4 and F-8 Events Prior to 1 March 1967 (U) (WSEG Log No. 126571)

| U.S. Aircraft Involved | No. of Encounters to 1 March 1967 |
|---|---|
| F-4B | 13 |
| F-4C | 55 |
| F-8 | 8 |
| F-104 | 1 |
| U-2 | 1 |
| Total Events Reported Volume I | 78 |

[1]Concurrently, there was a shift in targeting policy (NVN airfields were bombed by U.S. aircraft from 23 April) and the introduction of new equipment (e.g., SUU-16A guns installed in some F-4C aircraft). Because of these factors the additional engagements were included in the RED BARON data base.

[redacted]

[redacted]

Volume II: Account of F-105 Events Prior to 1 March 1967 (U)

| U.S. Aircraft Involved | No. of Encounters to 1 March 1967 |
|---|---|
| F-105 | 151 |

Volume III: Account of Air-to-Air Events from 1 March 1967 to 1 August 1967, and All Miscellaneous Events (U). Total number of events, 316.

For ease of study and analysis, the available information has been summarized under the following headings:

- Primary Mission and Tactical Situation
- Mission Route
- Aircraft Configurations
- Flight Conditions Prior to Encounter
- Initial Detection
- Action Initiated
- Situation Development
- Ordnance
- Equipment Problems
- Aircrew Comments
- Data Sources

Following the above, an edited narrative is presented which integrates all the information sources pertaining to the designated air-to-air engagement.

The names and official call signs of the participants have been replaced by standardized nomenclature to give anonymity to the interviewees. This precaution was followed throughout to encourage frank and honest answers to all questions posed by the interview teams.



[redacted]

## II. DATA DEFINITION AND COLLECTION

### A. BACKGROUND - GOALS AND LIMITATIONS

The broad goal formulated for the data definition/collection effort was to obtain sufficient data to enable reconstruction of the various air-to-air encounters in appropriate detail with maximum accuracy and completeness ("reconstruction" being the key word).

The scope and degree of detail was not simply defined. It revolved around the needs of the R&D community and the limitations of the available data. The primary limitation was human ability to sense and recall. There were no recording devices in U.S. aircraft, and, therefore, with few exceptions (such as taped communications and photographs), all data had to be extracted from the minds of participants and observers.

There was also the question of the adequacy, for event reconstruction, of data reported from Southeast Asia through the standard reporting systems. IDA/WSEG experience[1] showed that while these systems offered certain worthwhile information for R&D purposes, they were far from adequate for the purposes of this specific study.

It was decided that IDA/WSEG would interview participants in air-to-air encounters as the principal source of data.

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[1] WSEG Report 101, Requirements of Defense R&D Agencies for Data from Combat Air Operations in Southeast Asia (U), July 1966, (SECRET). WSEG Staff Study 134, Adequacy of Data from Southeast Asia Combat Air Operations for Research and Development Analyses of Aircraft Loss and Damage (U), February 1967, (SECRET).

## B. APPROACH

The data collection program involved several interrelated areas of operations. They were:

1. Identification of air-to-air encounters and the participants.

2. Development of more specific data needs and resolution of needs with limitations.

3. Collection of appropriate documentary information on Southeast Asia air-to-air encounters.

4. Development of optimum interview techniques.

5. Location of and arrangements for interviewing participants.

These operations were not necessarily sequential and were continued throughout the data collection phase.

Items 1 and 3 initially were interrelated, i.e., the means of identifying encounters was through search of existing documentation -- various formally and informally maintained "box scores" and other files.

Early information was gained from the Office of the Chief of Naval Operations and the USAF Air Staff. Additional basic documentation came from the USAF Tactical Fighter Weapons Center, CINCPACFLT, CINCPACAF, COMNAVAIRPAC, and the Commander, 7th Air Force. It was quickly determined that the various "box scores" did not agree. This was attributed to a variance in definition of what constituted an air-to-air encounter/engagement and possibly administrative or communications failures within the commands.

Additionally, early in the study, the CNO and the Chief of Staff, USAF, were advised of Project RED BARON and requested to provide reference to appropriate documentation. Numerous replies were received from various offices within the Services.

Gradually, sources of documented information were increased until they included: standard reporting system (OPREPs, COACT, Navy 3480 Reports, Guided Missile Performance Reports); various reports of associated studies made by OEG representatives and other analytical groups; letters from pilots who could not be interviewed; various records kept at all levels of command; gun-camera films; tapes of communications made by pilots; and miscellaneous message traffic among military commands.

Identification of participants was a particular problem since there is no existing mechanism for providing this information. With a relatively few exceptions, names of participants were not included in reports. However, names were gradually acquired through informal communications with USN and USAF pilots and, as the interview program proceeded, other persons were identified by the interviewees.

Some specific items of data desired were defined by visits to various Service R&D and training organizations and through meetings with representatives of various industrial organizations concerned with components of U.S. fighter weapons systems. (These visits and conferences also provided information on the technical and operational aspects of the weapons systems concerned.) Eventually, a categorized list of data specifically desired from each encounter was formulated.

Having established the data requirements, an interview program was desired which would:

- Allow the greatest number of interviews, while
- Maximizing the quality, depth, and scope of information obtained from each interview.

There were uncertainties about the interview program, however. They involved such considerations as the human ability to recall stressful incidents and the effect of elapsed time between the event and attempt to recount it. Large numbers

of people throughout the world had to be interviewed, great quantities of interview data had to be reduced, and time and manpower had to be considered.

With the assistance of IDA psychologists, H. W. Sinaiko and W. R. Kite, basic interview concepts were delineated. These concepts stressed unhurried informality, anonymity of the interviewee, a chronological approach to the entire flight in question (not just the air-to-air encounter period of it), and much use of visual aids -- maps, sketches, airplane models -- to reconstruct events.

A systematic program was developed to interview a maximum number of participants in the combat theater and throughout CONUS and Europe. There was little chance to control the elapsed time between events and interview. As a result, the elapsed time varied from days to more than one year.

Efficiency of operation was approached in various ways. Several levels of encounter were defined according to their complexity and intensity,[1] and the basic interview procedure was somewhat expanded or abbreviated according to the level of encounter and the knowledge of the interviewee. Data formats were devised which attempted to facilitate the recording (and subsequent reduction) of information while stimulating the memory of the interviewee.

A total of ten persons were trained as interviewers. Where it was possible to communicate with a participant but not practical or possible to interview him, he was contacted by mail.

While there was the desire to interview a maximum number of pilots, it was superseded by a desire to maximize coverage over the largest number of encounters. Consequently, where a

[1] Sighting only (visual or radar); either side taking hostile or evasive action; expenditure of ordnance by either side; loss or damage by either side.

choice had to be made as to whom to interview, breadth of coverage was the first consideration.

At the start, various test interviews were conducted, their results evaluated, and improvements made before a large scale program was undertaken. Minor changes in procedure were made throughout the program.

## C. DESCRIPTION OF INTERVIEW PROCEDURE[1]

In spite of the small changes that evolved and flexibility included to accommodate each situation, the basic interview procedure remained largely constant after the early test cases.

Ideally, the interviewee was given advance notice and a general idea of what would be discussed. The interview team consisted of two persons, one a military pilot with a significant amount of flying experience and the second person a military officer or civilian. The team would meet with one crewman at a time in a closed room, with minimum distraction, and with what was intended to be more than ample time allotted for the meeting. The team attempted to create an air of relaxed informality.

The interviewee was given an explanation of the study, how it came about, what it hoped to accomplish, and what his role was. It was emphasized that his name would not appear in print and that, in general, attempts would be made to preserve the anonymity of the persons interviewed. This was done to encourage frank and honest answers. The complete interview procedure was explained in detail.

Next, the pilot was asked to give an uninterrupted narrative of the encounter in question. He was asked to start from planning for the mission and discuss all aspects through the flight's return to base. He was first given examples of the kind of detail desired. Early in the project it became standard for the interviewers to use a tape recorder for the

[1]A more detailed discussion is presented in Volume IV of this report.

narrative phase. This, of course, depended upon the interviewee's consent and he was always free to go back and erase anything he wished from the tape. He was assured that the tape was only for the use of the interviewers in gaining complete, accurate information from the meeting and its use was limited to the project.

Next, depending on the intensity and complexity of the encounter, a sketch of the action was made. Again, the sketch covered a greater part of the mission than just the air-to-air encounter, dealing with ingress and egress as well. The technique was to put a transparent paper overlay on a large scale map and trace the paths, in plan view, of the various aircraft known to have been present (as they were believed to be) relative to known geographical points. The third dimension to the picture was introduced by means of a keyed time-sequence vs. altitude plot at the top of the overlay.

With regard to time, early in the study it became clear that the air-to-air combatant rarely had any reasonable concept of the time duration of events or phases of the combat. He could, however, recall well the sequence of events. This caused the injecting of time-sequences into the interview process. The procedure was for the interviewer to "stop the action" at a point where something significant was occurring and try to elicit a detailed account of the scene at that instant -- the location and altitude of each participant; status of the interviewee's aircraft in the way of speed, g's, fuel state, avionics modes, etc.; action by the individual and his reasons therefor; communications which took place; enemy actions; etc.

After such a stop the description would continue until the next significant event occurred at which point the action would be stopped again. These stops correspond with the "T" (or "Time") marks in events and pictures. While one team member

worked with the pilot in making the sketch, the other kept notes on a specially designed note pad.

Upon completion of this step-by-step microscopic phase, the interviewers consulted their checklist on data items and asked specific questions about points which had not come out.

Finally, the interviewee was encouraged to comment on the whole range of considerations which might be of interest to the study -- comments derived from his experience in this specific encounter as well as from his overall experience.

The duration of an interview was from minutes to several hours, depending on the significance and complexity of the encounter and the knowledge of the interviewee.

## D. GENERAL COMMENTS ON DATA

The Project identified 248 air-to-air encounters that occurred prior to 1 March 1967. Participants in 164 of these encounters were interviewed, with a total of 331 interviews conducted.[1] In addition, 37 written accounts of engagements were received. In general, priority was given to the more complex encounters; events for which no interviews were conducted were usually a sighting only, with no R&D significance.

The study group found that human ability to recall the details of incidents stressful to them is sometimes quite remarkable. With regard to the validity of recall, various comparisons were made between OPREP reports of the encounter and interviews and between interviews of various participants in the same encounter. There was generally good agreement. Where significant discrepancies appeared, they could usually be traced to the confusion of a fast moving, complex situation

[1] If an individual was interviewed in connection with two or more different encounters, this would be considered as two or more interviews.

rather than memory failure or some psychological phenomena. (Discrepancies between various accounts of the same event did cause some difficulty in the final reconstruction process. In almost all cases, discrepancies were resolved through repeated study of the data, use of logical deductions, and/or reinterview.)

Intuitively, it might appear that the best information would be obtained by minimizing the time lapse between encounter and interview. However, there are opinions and illustrations which counter this. The thought cannot be proved or disproved at this time. As noted earlier, elapsed time between encounter and interview ran from a period of days to more than a year. Dates of events and interviews have been included in the published data.

The interview techniques, in general, were highly regarded by interviewees for effectiveness in stimulating accurate, detailed recall. In some cases, through the procedures used, interviewees were able to correct and clarify their conceptions of events.

## E. EVENT RECONSTRUCTIONS

The account of each event is presented in at least two basic parts: (1) An outline which gives an abbreviated presentation of the highlights of the event, and (2) A narrative of the encounter.

All of the events contained in this Volume are summarized in the following tabulation. A Glossary of Terms was developed to aid in the interpretation of the events. The glossary also contains descriptions and illustrations of the more common aircraft maneuvers.

The events in Volume III describe encounters with enemy aircraft which occurred during the period 1 March 1967 to 1 August 1967. In addition, other encounters which occurred

in the time period covered by Volume I and Volume II are also described. These events, involving aircraft which rarely encountered MIGs or about which little is known, are included since a knowledge of their occurrence is important for a complete picture of the air-to-air war. For this same reason, also included are those events with suspected MIGs, whose presence was only surmised from electronic contacts. It is felt that this comprehensive coverage is prerequisite for total understanding of the air-to-air operations in Southeast Asia.

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# LIST OF EVENTS

| Event | Date/Time | Aircraft Involved No.-Type U.S. | Aircraft Involved No.-Type Enemy | Results Lost/Damaged U.S. | Results Lost/Damaged Enemy |
|---|---|---|---|---|---|
| III-1 | 3 Apr'65/1110H | 4 A-4C | 1 MIG-17 | 0/0 | 0/0 |
| III-2 | 4 Apr'65/1150H | 4 F-1000 | 1 MIG-17 | 0/0 | 1/0? |
| III-3 | 4 Apr'65/1150H | 4 F-1000 | ? MIG-17 | 1/0 | 0/0 |
| III-4 | 14 May'65/unknown | ? F-104 | ? MIG | 0/0 | 0/0 |
| III-5 | 20 May'65/1235H | 1 RB-66 | 1 MIG | Sighting | |
| III-6 | 20 May'65/1300H | MIGCAP | 2 MIG | 0/0 | 0/0 |
| III-7 | 20 Jun'65/1835H | 4 A-1H | 2 MIG-17 | 0/0 | 1/0 |
| III-8 | 12 Oct'65/day | 2 RF-101 | 2 MIG-17 | 0/0 | 0/0 |
| III-9 | 15 Nov'65/1445H | 2 RF-101 | 2 MIG | 0/0 | 0/0 |
| III-10 | 16 Nov'65/1638H | 2 RF-101 | 2 MIG | Sighting | |
| III-11 | 25 Nov'65/1448H | 6 A-4E<br>2 A-4C | 3 MIG-17? | 0/0 | 0/0 |
| III-12 | 25 Nov'65/1510H | 2 RF-8A | 2 MIG-19 | Sighting | |
| III-13 | 26 Nov'65/1123H | 2 RF-101 | 4-6 MIG | 0/0 | 0/0 |
| III-14 | 15 Jan'66/1200H | 1 RF-8A<br>1 F-8C | 1 MIG-21 | Sighting | |
| III-15 | 19 Jan'66/0950H | 2 F-4B<br>1 EA-3B | | Radar | |
| III-16 | 19 Jan'66/0953H | 1 EA-3B | | Radar | |
| III-17 | 20 Jan'66/0832H | 1 F-4B<br>1 EA-3B | | Radar | |
| III-18 | 8 Feb'66/1000H | 1 F-4B | 2 Unidentified | Radar | |
| III-19 | 10 Feb'66/1349H | 1 EA-3B | 3 Unidentified | Sighting | |
| III-20 | 12 Feb'66/1440H | 2 RF-101 | 2 Unidentified | Sighting | |
| III-21 | 20 Feb'66/Unknown | 1 EA-3B<br>1 F-4B | 1 MIG-17D (Poss) | Radar | |
| III-22 | 15 Mar'66/1121H | 2 RF-101 | 1 MIG | Sighting | |
| III-23 | 17 Mar'66/1222H | 2 RF-101 | 8 MIG | Sighting | |
| III-24 | 8 Apr'66/0906H | 2 F-4C | 1 MIG ? | 0/0 | 0/0 |
| III-25 | 12 Apr'66/Unknown | KA-3B | MIGs | 1/0 | 0/0 |
| III-26 | 27 Apr'66/Unknown | 2 F-4C | ? Unidentified | Radar | |
| III-27 | 28 Apr'66/1405H | 2 F-4B | 1 Unidentified | Radar | |
| III-28 | 29 Apr'66/1745H | 1 A-1E | 1 MIG | 1/0 | 0/0 |
| III-29 | 12 Jul'66/1135H | 2 A-4C<br>1 A-4E | 1 MIG-15<br>1 MIG-15/17 | Sighting | |
| III-30 | 24 Jul'66/1805H | 1 EC-121M | 1 MIG-21 | Radar | |
| III-31 | 29 Jul'66/1610H | 1 RC-47 | MIGs | 1/0 | 0/0 |
| III-32 | 16 Aug'66/--56H | 4 A-4 | 2 MIG-17 | 0/0 | 0/0 |
| III-33 | 23 Aug'66/1135H | 2 A-4 | 3 MIG-17 | Sighting | |
| III-34 | 10 Sep'66/0830H | EC-121 | 1 MIG-17 | 0/0 | 0/0 |
| III-35 | 10 Sep'66/0941H | 1 EB-66B<br>4 F-4C | 2 MIG-21 | Sighting | |
| III-36 | 10 Sep'66/2020H | 2 F-4B | MIGs | Radar | |
| III-37 | 24 Sep'66/2020H | 2 F-4B | 1 Unidentified | Radar | |
| III-38 | 5 Oct'66/0235H | 1 F-4B | Unidentified | Radar | |
| III-39 | 6 Oct'66/0026H | 1 E-1B | Unidentified | Radar | |
| III-40 | 9 Oct'66/1013H | 4 A-1H | 4 MIG-17 | 0/0 | 1/1 |
| III-41 | 10 Oct'66/Unknown | EA-3B | Unidentified | Radar | |
| III-42 | 10 Oct'66/1450H | 4 R-4C | Unidentified | Radar | |
| III-43 | Nov'66/Unknown | 2 RF-101 | 2 MIG-19 | Sighting | |
| III-44 | 28 Nov'66/1155H | 2 F-8E | MIG (Poss) | Radar | |
| III-45 | 28 Nov'66/1412H | 4 F-4C<br>1 EB-66C | MIG (Poss) | Radar | |
| III-46 | 2 Dec'66/1420H | 4 F-4B | Unidentified | Radar | |
| III-47 | 4 Dec'66/0818H | EB-66C | 2 MIG-21 | Sighting | |
| III-48 | 4 Dec'66/1130H | 2 F-4C | 2 Unidentified | Radar | |
| III-49 | 5 Dec'66/1057H | 2 EB-66 | 1 MIG-21 | 0/0 | 0/0 |
| III-50 | 14 Dec'66/1602H | USN A/C | 1 MIG-21 (Poss) | Sighting | |
| III-51 | 1 Jan'67/1545H | 2 RF-101 | MIGs | Radar | |
| III-52 | 2 Jan'67/1315H | 1 RF-4C | 2 Unidentified | Sighting | |
| III-53 | 3 Jan'67/0734H | 1 RF-4C | 1 Unidentified | Radar | |
| III-54 | 6 Jan'67/0919H | 2 EB-66 | 2 MIG | 0/0 | 0/0 |
| III-55 | 15 Jan'67/0905H | 1 C-135 | 1 MIG-17 | Sighting | |
| III-56 | 16 Jan'67/1035H | 1 RF-101 | 1 MIG (Poss) | Sighting | |
| III-57 | 16 Jan'67/1555H | 1 EB-66 | 2 MIG-17 | Sighting | |
| III-58 | 16 Jan'67/1855H | 1 RF-4C | 2 MIG | 0/0 | 0/0 |
| III-59 | 17 Jan'67/1539H | 1 EB-66B | 1 MIG-21 | Sighting | |

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# LIST OF EVENTS

| Event | Date/Time | Aircraft Involved No.-Type U.S. | Aircraft Involved No.-Type Enemy | Results Lost/Damaged U.S. | Results Lost/Damaged Enemy |
|---|---|---|---|---|---|
| III-60 | 17 Jan'67/1540H | 2 RF-101 | 2 Unidentified | Sighting | |
| III-61 | 20 Jan'67/0955H | 4 F-105 | 2 MIG-17 | Sighting | |
| III-62 | 21 Jan'67/0825H | 2 F-4C | 2 MIG-21 | Sighting | |
| III-63 | 21 Jan'67/1613H | 3 F-4C | 2 Unidentified | 0/0 | 0/0 |
| III-64 | 21 Jan'67/1620H | 4 F-103 | 1 MIG-17 | Sighting | |
| III-65 | 22 Jan'67/1600H | 2 F-102 | 4 Unidentified | Sighting | |
| III-66 | 22 Jan'67/1130H | 1 B-66 | 1 MIG-17 | 0/0 | 0/0 |
| III-67 | 28 Jan'67/1620H | 2 RF-101 | 2 MIG-17 | Sighting | |
| III-68 | 28 Jan'67/1629H | 4 F-105 | 3 MIG-21 | Sighting | |
| III-69 | 28 Jan'67/1632H | 4 F-105 | 4 MIG-17 | 0/0 | 0/0 |
| III-70 | 4 Feb'67/Unknown | 3 F-105 | 2 MIG-21 | 0/0 | 0/0 |
| III-71 | 5 Feb'67/1154H | 3 F-4C | 1 Unidentified | 0/0 | 0/0 |
| III-72 | 10 Feb'67/1418H | 2 RF-101<br>1 IL-14 | 1 MIG-19/21<br>1 MIG-6 | Sighting | |
| III-73 | 16 Feb'67/1624H | 4 F-105<br>4 F-4C | 2 MIG ? | Sighting | |
| III-74 | 19 Feb'67/0859H | 3 F-105 | 3 Unidentified | Sighting | |
| III-75 | 19 Feb'67/0902H | 4 F-4C | 2 MIG ? | 0/0 | 0/0 |
| III-76 | 22 Feb'67/1624H | 4 F-105 | 4 MIG-21 | Sighting | |
| III-77 | 23 Feb'67/1500H | 2 RF-4C | 2 MIGs | Sighting | |
| III-78 | 23 Feb'67/1532H | 4 F-105 | 1 MIG-21 | Sighting | |
| III-79 | 25 Feb'67/0948H | 1 RF-101 | 2 Unidentified | 0/0 | 0/0 |
| III-80 | 25 Feb'67/1105H | 1 RF-4C | 2 Unidentified | 0/0 | 0/0 |
| III-81 | 5 Mar'67/0703H | 1 RF-4C | ? MIG | 0/0 | 0/0 |
| III-82 | 5 Mar'67/1615H | 4 F-105 | 1 MIG-15 | Sighting | |
| III-83 | 7 Mar'67/1618H | 2 RF-4C | 2 MIG-17 (Poss) | Sighting | |
| III-84 | 8 Mar'67/1400H | 2 RF-4C | 1 MIG-17<br>4 Unidentified | 0/0 | 0/0 |
| III-85 | 8 Mar'67/1603H | 4 F-105 | 2 MIG-21 | 0/0 | 0/0 |
| III-86 | 9 Mar'67/0351H | 1 RF-4C | 1 MIG (Poss) | Radar | |
| III-87 | 10 Mar'67/1553H | 4 F-4C<br>4 F-105 | 1 MIG-21 | 0/0 | 0/0 |
| III-88 | 10 Mar'67/1556H | 4 F-105 | 3 MIG-17 | Sighting | |
| III-89 | 10 Mar'67/1556H | 12 F-105 | 2 MIG-21<br>4 MIG-17D | 0/0 | 2/1 |
| III-90 | 10 Mar'67/Afternoon | 2 F-105 | 4 MIG-21 | 0/0 | 0/0 |
| III-91 | 10 Mar'67/1558H | 4 F-105 | 1 MIG-17 | 0/0 | 0/0 |
| III-92 | 11 Mar'67/Unknown | 4 F-105 | 1 MIG-17 | Sighting | |
| III-93 | 12 Mar'67/ | 4 F-4C | 1 MIG | Sighting | |
| III-94 | 16 Mar'67/1650H | 2 RF-4C | 2 MIG-17 | Sighting | |
| III-95 | 26 Mar'67/1616H | 4 F-105 | 1 MIG-17 | Sighting | |
| III-96 | 26 Mar'67/1613H | 4 F-105 | 4 MIG-17<br>1 MIG-21 | 0/0 | 1/0 |
| III-97 | 26 Mar'67/1017H | 4 F-105 | 1 MIG-17 | Sighting | |
| III-98 | 26 Mar'67/1620H | 1 B-66 | 2 Unidentified | Sighting | |
| III-99 | 26 Mar'67/1645H | 2 RF-4C | 1 MIG-21 | 0/0 | 0/0 |
| III-100 | 26 Mar'67/1620H | 4 F-105 | 1 MIG-17 | 0/0 | 0/0 |
| III-101 | 26 Mar'67/Unknown | 4 F-4C | 3 MIG-17 | 0/0 | 0/0 |
| III-102 | 26 Mar'67/1615H | 3 F-4C | 8 MIG-17 | 0/0 | 0/0 |
| III-103 | 27 Mar'67/1617H | 1 B-66 | 1 MIG-21 | Sighting | |
| III-104 | 29 Mar'67/1641H | 4 F-105 | 2 Unidentified | Sighting | |
| III-105 | 29 Mar'67/Unknown | 4 F-4C | Unidentified | 0/0 | 0/0 |
| III-106 | 30 Mar'67/0945H | 4 F-105 | 3 MIG-21 | Sighting | |
| III-107 | 30 Mar'67/1641H | 4 F-105 | 2 MIG-21 | Sighting | |
| III-108 | 8 Apr'67/1610H | 2 RF-4C | 2 MIG-21 | 0/0 | 0/0 |
| III-109 | 8 Apr'67/1635H | 4 F-105 | 2 MIG-21 | Sighting | |
| III-110 | 11 Apr'67/1325H | 2 F-104 | 1 MIG | Sighting | |
| III-111 | 11 Apr'67/1615H | 4 F-105D | 3 MIG-21 | 0/0 | 0/0 |
| III-112 | 12 Apr'67/1239H | 4 F-105 | 2 Unidentified | Sighting | |
| III-113 | 13 Apr'67/1415H | 2 F-4B | 1 MIG | 0/0 | 0/0 |
| III-114 | 19 Apr'67/1655H | 4 F-105 | 8-10 MIG-17 | 1/0 (Prob) | 1/0 |
| III-115 | 19 Apr'67/Unknown | 2 RF-4C | 2 MIG | 0/0 | 0/0 |
| III-116 | 19 Apr'67/1658H | 4 F-105 | 11 MIG-17 | 0/1 | 2/0 |
| III-117 | 19 Apr'67/1702H | 4 F-105D<br>2 A-1E | 11 MIG-17 | 1/0 | 1/4 |
| III-118 | 19 Apr'67/1700H | 4 F-105D | 2 MIG-17 | 0/0 | 0/0 |

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# LIST OF EVENTS

| Event | Date/Time | Aircraft Involved No.-Type U.S. | Aircraft Involved No.-Type Enemy | Results Lost/Damaged U.S. | Results Lost/Damaged Enemy |
|---|---|---|---|---|---|
| III-119 | 19 Apr'67/1700H | 4 F-105D | 7 MIG-17 | 0/0 | 0/0 |
| III-120 | 19 Apr'67/1703H | 4 F-4C<br>4 F-4C<br>4 F-4C | 4 MIG-17 (Poss)<br>2 MIG-17<br>2 MIG-17 | 0/0 | 0/0 |
| III-121 | 20 Apr'67/0856H | 4 F-105 | 3 MIG-17 | 0/0 | 0/0 |
| III-122 | 20 Apr'67/0913H | 4 F-105 | 1 MIG-21 | 0/0 | 0/0 |
| III-123 | 21 Apr'67/1629H | 4 F-105 | 2 MIG ?<br>2 MIG-17<br>1 MIG-21 | Sighting | |
| III-124 | 21 Apr'67/1653H | 4 F-105 | 2 MIG-17 | Sighting | |
| III-125 | 22 Apr'67/1534H | 4 F-105 | 6 MIG-17 | 0/0 | 0/0 |
| III-126 | 22 Apr'67/1635H | 2 RF-4C | 1 MIG-21 | 0/0 | 0/0 |
| III-127 | 22 Apr'67/1542H | 4 F-105 | 4 MIG-17 | 0/0 | 0/0 |
| III-128 | 22 Apr'67/1635H | 4 F-105 | 2 Unidentified | Sighting | |
| III-129 | 22 Apr'67/1638H | 4 F-105 | 1 MIG-21 | Sighting | |
| III-130 | 23 Apr'67/1622H | 4 F-105 | 2 MIG-21 | 0/0 | 0/0 |
| III-131 | 23 Apr'67/1623H | 8 F-105 | 6 MIG-21<br>3 Unidentified | 0/0 | 0/0 |
| III-132 | 23 Apr'67/1655H | 3 F-4C | 4 MIG-21 | 0/0 | 0/0 |
| III-133 | 23 Apr'67/1652H | 4 F-4C | 1 MIG-17 | 0/0 | 0/0 |
| III-134 | 24 Apr'67/0945H | 1 F-4C | 1 MIG-21 | 0/0 | 0/0 |
| III-135 | 24 Apr'67/1615H | 4 F-105 | 1 MIG-17<br>6 MIG-21 | Sighting | |
| III-136 | 24 Apr'67/1612H | 2 F-105D<br>2 F-105F | 4 MIG-17 | 0/0 | 0/0 |
| III-137 | 24 Apr'67/1645H | 2 F-4B | 7 MIG-17 | 0/0 | 2/0 (Prob) |
| III-138 | 24 Apr'67/1619H | 4 F-105 | 6 MIG-21<br>1 MIG-17 | Sighting | |
| III-139 | 24 Apr'67/1700H | 4 F-4C | 3 MIG-17 | Sighting | |
| III-140 | 24 Apr'67/1700H | 1 A-6A | 1 MIG | 0/0 | 0/0 |
| III-141 | 25 Apr'67/1002H | 4 F-105 | 10 MIG-17<br>2 MIG-21 | 0/0 | 0/0 |
| III-142 | 25 Apr'67/1005H | 4 F-105 | 1 MIG-17 | Sighting | |
| III-143 | 25 Apr'67/1002H | 4 F-105 | 1 MIG-17 | 0/0 | 0/0 |
| III-144 | 25 Apr'67/1000H | 4 F-105 | MIGs | Sighting | |
| III-145 | 25 Apr'67/1005H | 3 F-105 | 3 MIG-17 | 0/0 | 0/0 |
| III-146 | 25 Apr'67/1005H | 4 F-105 | 2 MIG-17 | Sighting | |
| III-147 | 25 Apr'67/1109H | 2 F-8E | 2 MIG-17D | 0/0 | 0/1 (Poss) |
| III-148 | 25 Apr'67/1000H | 4 F-105 | 3 MIG-17 | 0/0 | 0/0 |
| III-149 | 25 Apr'67/1017H | 2 EB-622<br>2 RF-4C | 3 MIG-21 | 0/0 | 0/0 |
| III-150 | 25 Apr'67/1112H | 2 A-4C | 2 MIG-17 | 1/0 | 0/0 |
| III-151 | 25 Apr'67/1006H | 4 F-105D | 4 MIG-17 | Sighting | |
| III-152 | 26 Apr'67/1616H | 4 F-105 | 4 MIG-17 | Sighting | |
| III-153 | 26 Apr'67/1617H | 4 F-105 | 8 MIG-17<br>1 MIG-21 | 0/0 | 0/0 |
| III-154 | 26 Apr'67/1620H | 4 F-105D | 8 MIG-17 | 0/0 | 0/0 |
| III-155 | 26 Apr 67/1620H | 4 F-105 | 2 MIG-21 | 0/0 | 0/0 |
| III-156 | 26 Apr'67/1620H | 4 F-105D | 2 MIG-21 | Sighting | |
| III-157 | 26 Apr'67/1624H | 4 F-4C | 10 MIG-21 | 0/0 | 1/0 |
| III-158 | 28 Apr'67/1640H | 4 F-4C | 2 MIG-21 | Sighting | |
| III-159 | 28 Apr'67/1630H | 4 F-105 | 8 MIG-17 | Sighting | |
| III-160 | 28 Apr'67/1653H | 4 F-105 | 2 MIG-17 | 0/0 | 0/0 |
| III-161 | 28 Apr'67/1630H | 4 F-105 | 8 MIG-17 | 0/0 | 0/0 |
| III-162 | 28 Apr'67/1635H | 2 F-105D | 9 MIG-17 | 0/0 | 1/0 |
| III-163 | 28 Apr'67/1636H | 4 F-105D | 1 MIG-17 | 0/0 | 1/0 |
| III-164 | 28 Apr'67/1636H | 4 F-105 | 1 MIG-17 | 0/0 | 0/0 |
| III-165 | 28 Apr'67/1648H | 2 F-105F<br>2 F-105D | 5 MIG-17 | 0/0 | 0/0 |
| III-166 | 28 Apr'67/Unknown | 4 F-105 | 1 MIG-17 | Sighting | |
| III-167 | 28 Apr'67/1653H | 4 F-105 | 1 MIG-17 | 0/0 | 0/0 |
| III-168 | 28 Apr'67/1700H | 4 F-105 | 1 MIG-17 | Sighting | |
| III-169 | 29 Apr'67/1110H | 1 RF-101 | 1 MIG-21 | Sighting | |
| III-170 | 29 Apr'67/1615H | 4 F-105 | 2 MIG-21<br>2 MIG-17 | Sighting | |
| III-171 | 29 Apr'67/1615H | 4 F-105 | 1 MIG-17 | Sighting | |
| III-172 | 29 Apr'67/1615H | 4 F-105 | 1 MIG-17 | Sighting | |

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| Event | Date/Time | Aircraft Involved No.-Type U.S. | Aircraft Involved No.-Type Enemy | Results Lost/Damaged U.S. | Results Lost/Damaged Enemy |
|---|---|---|---|---|---|
| III-173 | 29 Apr'67/1612H | 4 F-4C | 13 MIG-17 | 0/0 | 1/0 |
| III-174 | 29 Apr'67/1700H | 2 F-105<br>2 F-105 | 2 MIG-17<br>1 MIG-21 | 1/1 | 0/0 |
| III-175 | 29 Apr'67/1615H | 4 F-105 | 1 MIG-17 | 0/0 | 0/0 |
| III-176 | 30 Apr'67/0226H | 1 RF-4C | 1 MIG | Radar | |
| III-177 | 30 Apr'67/0900H | 4 F-105 | 4 MIG-17 | Sighting | |
| III-178 | 30 Apr'67/0900H | 4 F-105 | 2 MIG | Sighting | |
| III-179 | 30 Apr'67/0905H | 3 F-4C | 12 MIGs | 0/0 | 0/0 |
| III-180 | 30 Apr'67/0906H | 1 F-105 | 2 MIG-17 | 0/0 | 1/0 |
| III-181 | 30 Apr'67/0923H | 4 F-105 | 1 Unidentified | Sighting | |
| III-182 | 30 Apr'67/1521H | 2 RF-4C | 2 MIG | 0/0 | 0/0 |
| III-183 | 30 Apr'67/1648H | 4 F-105 | 2 Unidentified | Sighting | |
| III-184 | 30 Apr'67/1624H | 2 F-105 | MIGs | 2/0 | 0/0 |
| III-185 | 30 Apr'67/1715H | 4 F-105 | 2 MIG-21 | 1/0 | 0/0 |
| III-186 | 30 Apr'67/1713H | 4 F-105 | 2 MIG-21 | 0/0 | 0/0 |
| III-187 | 1 May'67/1015H | 4 F-105 | 6-8 MIG-17 | 0/0 | 0/0 |
| III-188 | 1 May'67/1250H | 1 F-48 | 2 MIG-17 | 0/0 | 0/0 |
| III-189 | 1 May'67/1008H | 4 F-4C | 8 MIG-17 | Sighting | |
| III-190 | 1 May'67/1021H | 4 F-4C | 8 MIG-17 | 0/0 | 1/0 |
| III-191 | 1 May'67/1011H | 4 F-105 | 8 MIG-17 | 0/0 | 0/0 |
| III-192 | 1 May'67/Unknown | 4 F-105 | 4 MIG-17 | 0/0 | 0/0 |
| III-193 | 1 May'67/Unknown | 4 F-105 | 2 MIG-17 | 0/0 | 0/0 |
| III-194 | 1 May'67/1245H | 2 F-8E | 4 MIG-17 | 0/0 | 1/1 |
| III-195 | 1 May'67/1248H | 4 F-8C | 2 MIG-17 | 0/0 | 0/0 |
| III-196 | 1 May'67/1256H | 3 A-4C | MIG-17s | 0/0 | 0/0 |
| III-197 | 1 May'67/1255H | 2 A-4C | 2 MIG-17 | 0/0 | 1/0 |
| III-198 | 1 May'67/1244H | 4 A-4E | 3 MIG-17 | 0/0 | 0/0 |
| III-199 | 1 May'67/1710H | 2 R-4C | 2 Unidentified | Sighting | |
| III-200 | 1 May'67/1718H | 8 F-105 | 3 MIG-17 | Sighting | |
| III-201 | 1 May'67/Unknown | ? F-4 | ? MIGs | Sighting | |
| III-202 | 1 May'67/1725H | 4 F-4C | 1 MIG-17 | 0/0 | 0/0 |
| III-203 | 2 May'67/0951H | 4 F-105 | 1 MIG-21 (Poss) | Sighting | |
| III-204 | 2 May'67/0917H | 4 F-105 | 2 MIG-17 | 0/0 | 0/0 |
| III-205 | 3 May'67/1630H | 2 RF-101 | 1 MIG | 0/0 | 0/0 |
| III-206 | 3 May'67/1705H | 3 RF-4C | 1 MIG-21 | 0/0 | 0/0 |
| III-207 | 3 May'67/1435H | 4 F-4C | 2 MIG-21<br>5 MIG-17 | 0/0 | 1/0 |
| III-208 | 3 May'67/1710H | 4 F-4C | 2-3 Unidentified | 0/0 | 0/0 |
| III-209 | 4 May'67/1425H | 4 F-4C | 2 Unidentified | Sighting | |
| III-210 | 4 May'67/1433H | 4 F-4C | 4 MIG-17<br>4 MIG-21 | Sighting | |
| III-211 | 4 May'67/1435H | 4 F-105 | 1 MIG-21<br>2 MIG-17 | 0/0 | 0/0 |
| III-212 | 4 May'67/1435H | 4 F-105 | 1 MIG-21 | 0/0 | 0/0 |
| III-213 | 4 May'67/1615H | 2 RF-4C | 2 MIG-17 | Sighting | |
| III-214 | 4 May'67/1441H | 4 F-105 | 1 MIG-21 | Sighting | |
| III-215 | 4 May'67/1453H | 1 EB-66C | 1 Unidentified | 0/0 | 0/0 |
| III-216 | 5 May'67/1730H | 4 F-105 | 2 MIG-21 | Sighting | |
| III-217 | 4 May'67/1453H | 8 F-105 | 1 MIG-21 | 0/0 | 0/0 |
| III-218 | 5 May'67/Unknown | 8 F-105 | 2 MIG-21 | Sighting | |
| III-219 | 8 May'67/0343H | 1 RF-4C | Unidentified | 0/0 | 0/0 |
| III-220 | 12 May'67/1638H | 4 F-4C | 2 MIG-21 | Sighting | |
| III-221 | 12 May'67/1638H | 12 F-105 | 2 MIG-21<br>5 MIG-17 | Sighting | |
| III-222 | 12 May'67/1644H | 4 F-4C | 5 MIG-17 | 1/0 | 0/0 |
| III-223 | 12 May'67/1642H | 4 F-105 | 5 MIG-17 | 0/0 | 0/0 |
| III-224 | 12 May'67/1642H | 4 F-105 | 7 MIG-17 | 0/0 | 0/0 |
| III-225 | 12 May'67/1643H | 4 F-105 | 4 MIG-17 | 0/0 | 1/0 |
| III-226 | 12 May'67/1645H | 4 F-105 | 2 MIG-17 | Sighting | |
| III-227 | 12 May'67/1755H | 2 F-105 | 1 MIG-21 | 0/0 | 0/0 |
| III-228 | 12 May'67/1618H | 4 F-105 | 6 MIG-17 | 0/0 | 0/0 |
| III-229 | 13 May'67/1610H | 2 RF-4C | 1 MIG-21 | 0/0 | 0/0 |
| III-230 | 12 May'67/1623H | 1 F-105 | 1 MIG-17 | 0/0 | 1/0 |
| III-231 | 13 May'67/1623H | 4 F-105 | 4 MIG-17 | [illegible] | 0/0 |
| III-232 | 13 May'67/1610H | 4 F-4C | 9 MIG-17 | [illegible] | 0/0 |
| III-233 | 13 May'67/1620H | F-105 | 3 MIG-17 | 0/0 | 2/0 |
| III-234 | 13 May'67/1621H | 4 F-4C | 10 MIG-17 | 0/0 | 2/0 |



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| Event | Date/Time | Aircraft Involved No.-Type U.S. | Aircraft Involved No.-Type Enemy | Results Lost/Damaged U.S. | Results Lost/Damaged Enemy |
|---|---|---|---|---|---|
| III-235 | 13 May'67/1621H | 4 F-105 | 5 MIG-17 | 0/0 | 0/0 |
| III-236 | 13 May'67/1622H | 4 F-105 | 3 MIG-17 | 0/0 | 2/0 |
| III-237 | 13 May'67/1617H | 3 F-105D | 6 MIG-17 | 0/0 | 0/2 |
| III-238 | 13 May'67/1623H | 4 F-105 | 7 MIG-17 | 0/0 | 0/0 |
| III-239 | 14 May'67/1605H | 4 F-4C | 16 MIG-17 | 0/0 | 2/0 |
| III-240 | 14 May'67/1611H | 4 F-4C | 10 MIG-17 | 0/0 | 1/0 |
| III-241 | 14 May'67/1600H | 4 F-105D | 2 MIG-17 | 0/0 | 0/0 |
| III-242 | 14 May'67/1600H | 4 F-105D | 6 MIG-17 | Sighting | |
| III-243 | 14 May'67/1511H | 4 F-105D | 2 MIG-21<br>4 MIG-17 | Sighting | |
| III-244 | 14 May'67/1614H | 1 F-105F<br>3 F-105D | 4-5 MIG-17 | 0/0 | 0/0 |
| III-245 | 19 May'67/Unknown | 2 F-8E | 2 MIG-17 | 0/0 | 2/0 |
| III-246 | 19 May'67/Unknown | 4 F-8C | 1 MIG-17 | 0/0 | 1/0 |
| III-247 | 19 May'67/A.M. | 2 F-8C | 2 MIG-17 | 0/0 | 1/0 |
| III-248 | 19 May'67/1140H | 2 A-6A | 3 MIG-21 | 0/0 | 0/0 |
| III-249 | 19 May'67/1530H | 2 A-4C | 5 MIGs | Sighting | |
| III-250 | 19 May'67/1630H | 3 F-4C | 1 Unidentified | Sighting | |
| III-251 | 19 May'67/1641H | 4 F-105 | 4 MIG-17 | Sighting | |
| III-252 | 20 May'67/1629H | 8 F-4C | 12-15 MIG-17 | 1/0 | 4/0 |
| III-253 | 20 May'67/1610H | 3 F-4C<br>2 EB-66 | 1 Unidentified | Sighting | |
| III-254 | 20 May'67/1630H | 3 F-105 | 7 MIG-17 | 0/0 | 0/0 |
| III-255 | 20 May'67/1630H | 4 F-4C | 1 MIG<br>1 Unidentified | Sighting | |
| III-256 | 20 May'67/1630H | 4 F-105D | 2 MIG-17 | 0/0 | 0/0 |
| III-257 | 20 May'67/1630H | 4 F-105D | 8 MIG-17 | 0/0 | 0/0 |
| III-258 | 20 May'67/1625H | 4 F-4C | 4-5 MIG-21 | 0/0 | 2/0 |
| III-259 | 20 May'67/1628H | 2 F-105<br>2 F-105D | 3 MIG-21 | 0/0 | 0/0 |
| III-260 | 20 May'67/1630H | 4 F-105 | 1 MIG-17 | 0/0 | 0/0 |
| III-261 | 21 May'67/0853H | 4 F-4C | 1 Unidentified | Sighting | |
| III-262 | 21 May'67/0856H | 8 F-105 | 1 MIG-17<br>2 Unidentified | Sighting | |
| III-263 | 21 May'67/0900H | 4 F-4C | 2 Unidentified | Sighting | |
| III-264 | 21 May'67/0905H | 4 F-105 | 2 Unidentified | 0/0 | 0/0 |
| III-265 | 21 May'67/1420H | 2 RF-4C | Unidentified | 0/0 | 0/0 |
| III-266 | 21 May'67/1616H | 3 F-105 | 2 MIG-17 | Sighting | |
| III-267 | 21 May'67/1620H | 2 F-4C | 2 MIG-17 | Sighting | |
| III-268 | 21 May'67/1034H | 3 EB-66 | 1 MIG | Sighting | |
| III-269 | 21 May'67/Unknown | 4 A-4 | 3 Unidentified | Sighting | |
| III-270 | 22 May'67/0903H | 4 F-4C | 3 MIG-17 | 0/0 | 0/0 |
| III-271 | 22 May'67/1351H | 2 RF-101 | 2 MIG (Prob) | Sighting | |
| III-272 | 21 May'67/1500H | 4 A-4E | 2 MIG ?<br>1 MIG-17 | 0/0 | 0/0 |
| III-273 | 22 May'67/1445H | 2 RF-4C | 3 Unidentified | Sighting | |
| III-274 | 22 May'67/1527H | 4 F-105 | 2 MIG-17 | 0/0 | 0/0 |
| III-275 | 22 May'67/1527H | 4 F-4C | 2 MIG-17 | 0/0 | 0/0 |
| III-276 | 22 May'67/1605H | 4 F-105 | 1 MIG-21<br>1 MIG ? | Sighting | |
| III-277 | 22 May'67/1605H | 4 F-4C | 4 MIG-21D | 0/0 | 2/0 |
| III-278 | 22 May'67/1606H | 4 F-105 | 2 MIG-21 | 0/0 | 0/0 |
| III-279 | 22 May'67/1611H | 4 F-105 | 2 MIG-21 | Sighting | |
| III-280 | 22 May'67/Unknown | 4 F-105 | 1 MIG-21 | 0/0 | 0/0 |
| III-281 | 24 May'67/1715H | 4 F-105 | 1 MIG-17 | Sighting | |
| III-282 | 25 May'67/0858H | 3 F-4C | 1 Unidentified | Sighting | |
| III-283 | 30 May'67/1610H | 6 F-4C | 2 Unidentified | Sighting | |
| III-284 | 30 May'67/1516H | 4 F-105 | 4 MIG-17 | 0/0 | 0/0 |
| III-285 | 30 May'67/1612H | 4 F-105 | 4 MIG-17 | 0/0 | 0/0 |
| III-286 | 20 May'67/1616H | 4 F-105 | 4 MIG-17 | Sighting | |
| III-287 | 30 May'67/1616H | 2 F-105 | 4 MIG-17 | 0/0 | 0/0 |
| III-288 | 30 May'67/1616H | 4 F-105 | 1 MIG-17 | 0/0 | 0/0 |
| III-289 | 30 May'67/1635H | 4 F-4C | 7 Unidentified | Sighting | |
| III-290 | 30 May'67/1656H | 4 F-4C | 6 MIG-17<br>3 MIG-21 | 0/0 | 0/0 |
| III-291 | 31 May'67/1551H | 4 F-4C | 4 MIG-17 | 1/0 | 0/0 |
| III-292 | 31 May'67/1610H | 4 F-4C | 1 MIG-17 | 0/0 | 0/0 |

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| Event | Date/Time | Aircraft Involved No.-Type U.S. | Aircraft Involved No.-Type Enemy | Results Lost/Damaged U.S. | Results Lost/Damaged Enemy |
|---|---|---|---|---|---|
| III-293 | 31 May'67/1648H | 3 F-105 | 2 MIG-21 | 0/0 | 0/0 |
| III-294 | 31 May'67/1650H | 4 F-105 | 4 MIG-17 | Sighting | |
| III-295 | 31 May'67/1650H | 4 F-105 | 2 MIG-17 | Sighting | |
| III-296 | 31 May'67/1650H | 4 F-105 | 6 MIG-17 | Sighting | |
| III-297 | 31 May'67/1700H | 4 F-4C | 1 MIG-17 (Poss) | Sighting | |
| III-298 | 2 Jun'67/0930H | 4 F-105 | 2 MIG-21 | 0/0 | 0/0 |
| III-299 | 2 Jun'67/1528H | 4 F-4 | 8-10 MIG-17 | 0/0 | 3/0 ? |
| III-300 | 2 Jun'67/1015H | 8 F-105 | 2 MIG-21 | Sighting | |
| III-301 | 2 Jun'67/1630H | 4 F-4C | 1 MIG-17 | Sighting | |
| III-302 | 2 Jun'67/1633H | 2 F-105 | 4 MIG-17 | 0/0 | 0/0 |
| III-303 | 2 Jun'67/1628H | 4 F-4 | 8-10 MIG-17 | 0/0 | 0/0 |
| III-304 | 3 Jun'67/1640H | 2 F-4D<br>2 F-4C | 5 MIG-17 | 0/0 | 0/0 |
| III-305 | 3 Jun'67/1650H | 2 F-4C<br>2 F-4D | 2 MIG-17<br>1 MIG-21 | Sighting | |
| III-306 | 3 Jun'67/1651H | 2 F-105 | 2 MIG-17 | Sighting | |
| III-307 | 3 Jun'67/1653H | 4 F-105 | 2 MIG-21<br>1 MIG-17 | Sighting | |
| III-308 | 3 Jun'67/1652H | 3 F-105 | 3 MIG-17 | 0/0 | 2/0 |
| III-309 | 5 Jun'67/1638H | 4 F-105 | 5 MIG-17<br>3 MIG-21 | 0/0 | 0/0 |
| III-310 | 5 Jun'67/1643H | 4 F-105 | 6 MIG-21 | Sighting | |
| III-311 | 5 Jun'67/1646H | 4 F-105 | 3 MIG-21<br>6 MIG-17 | Sighting | |
| III-312 | 5 Jun'67/1742H | 2 F-4C<br>2 F-4D | 6-7 MIG-17 | 0/0 | 1/0 |
| III-313 | 5 Jun'67/1545H | 4 F-4C | 4 MIG-17 | 0/0 | 1/0 |
| III-314 | 5 Jun'67/1535H | 2 F-4D<br>2 F-4C | 8-12 MIG-17 | 0/0 | 1/0 |
| III-315 | 6 Jun'67/0412H | 1 RF-4C | 1 MIG (Poss) | Radar | |
| III-316 | 6 Jun'67/1540H | 4 F-105 | 1 MIG-17 | Sighting | |
| III-317 | 7 Jun'67/2137H | 1 F-105F | 1 Unidentified | 0/0 | 0/0 |
| III-318 | 11 Jun'67/0900H | 4 F-105 | 1 MIG-21 | 0/0 | 0/0 |
| III-319 | 10 Jun'67/1312H | 2 RF-4C | 1 MIG-21 | 0/0 | 0/0 |
| III-320 | 11 Jun'67/0909H | 1 F-105 | 2 MIG | Sighting | |
| III-321 | 11 Jun'67/0915 | 4 F-105 | 2 MIG-17<br>2 MIG-21 | Sighting | |
| III-322 | 11 Jun'67/0930H | 1 RF-101 | 1 MIG-21 | 0/0 | 0/0 |
| III-323 | 11 Jun'67/1645H | 4 F-105 | 3 Unidentified | 0/0 | 0/0 |
| III-324 | 11 Jun'67/1634H | 3 F-105 | 2 MIG-17 | Sighting | |
| III-325 | 11 Jun'67/1658H | 2 F-105 | 2 Unidentified | Sighting | |
| III-326 | 12 Jun'67/1604H | 4 F-105 | 1 MIG-21 | Sighting | |
| III-327 | 13 Jun'67/1636H | 4 F-105 | ? MIG | Sighting | |
| III-328 | 13 Jun'67/1639H | 8 F-105 | 10-11 MIG-21 | Sighting | |
| III-329 | 16 Jun'67/1615H | 2 RF-4C | 1 MIG-17 | Sighting | |
| III-330 | 18 Jun'67/0902H | 4 F-105 | 1 MIG-21 | Sighting | |
| III-331 | 19 Jun'67/0931H | 4 F-105 | 2 MIG-21 | Sighting | |
| III-332 | 20 Jun'67/1635H | 4 F-4C | 2 Unidentified | Sighting | |
| III-333 | 21 Jun'67/0900H | 4 F-105 | 2 MIG | Sighting | |
| III-334 | 23 Jun'67/0050H | 1 F-105 | 1 MIG | Sighting | |
| III-335 | 23 Jun'67/0050H | 4 F-105 | 1 Unidentified | 0/0 | 0/0 |
| III-336 | 27 Jun'67/0915H | 3 F-4C | 1 MIG-21<br>1 Unidentified | Sighting | |
| III-337 | 26 Jun'67/1732H | 1 F-4C | 2 MIG-17 | 1/0 | 0/0 |
| III-338 | 27 Jun'67/0920H | ? F-105<br>? F-4C-D | 2 MIG-17 | Sighting | |
| III-339 | 29 Jun'67/1710H | 2 EA-1F | 2 Unidentified | 0/0 | 0/0 |
| III-340 | 11 Jul'67/0838H | 4 A-4 | 5 MIG-21 | 0/0 | 0/0 |
| III-341 | 17 Jul'67/0900H | 4 F-8<br>1 A-4E | 2 MIG-21 | 0/0 | 0/0 |
| III-342 | 18 Jul'67/1402H | 4 A-4E | 4 MIG-21 | 0/0 | 0/0 |
| III-343 | 19 Jul'67/1650Z | 4 F-4D | 8 MIG-17 | 0/0 | 0/0 |
| III-344 | 20 Jul'67/1652H | 4 F-4C | 1 MIG-21 | 0/0 | 0/0 |
| III-345 | 21 Jul'67/1519H | 1 A-4C<br>4 F-8C | 8 MIG-17D | 0/2 | 1/2 |
| III-346 | 27 Jul'67/1600H | 2 F-4C | 2 MIG-21 | 0/0 | 1/0 |

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GLOSSARY OF TERMS
(All Terms Unclassified Unless Otherwise Stated)

AA - air-to-air weapon

AAA - antiaircraft artillery

AAM - air-to-air missile

AAWC - Anti-Air-Warfare Commander

AB - afterburner

ACM - air combat maneuvering

ACT - air combat tactics

ADF - automatic direction finder

AEW - airborne early warning

AGL - above ground level

AIM-7 (D&E models) (SPARROW) - semiactive radar type, air-to-air missile

AIM-9 (B&D models) (SIDEWINDER) - passive IR type, air-to-air missile

AIM-9C (SIDEWINDER) - Radar guided air-to-air missile

AI radar - airborne intercept radar

Aircraft commander - a pilot designated pilot-in-command of a given aircraft (Air Force name for front seater in F-4)

ALKALI - Soviet air-to-air missile - radar beam rider type

ALQ-51 - Broadband deception ECM system

ALQ-71 - Noise jamming ECM pod (production model of QRC-160-1)

ANCHOR (Various colors) - see Figure 9 on page 34 - code names for specific refueling tracks

AN/APA-157 - CW radar illuminator and fire control computer for SPARROW missile system

Angle-off - angular position off the tail of the reference aircraft

APQ-72 - airborne intercept radar in F-4B aircraft

APQ-94 - airborne intercept radar in F-8E aircraft

APQ-100/109 - airborne intercept radar in F-4C/D aircraft

APR-25 - vector homing and warning system - providing 360° directional warning of threat signals in certain bands with instantaneous bearing to radiating source.

APR-26 - crystal video airborne warning receiver to detect SA-2 guidance signals

APR-27 - airborne radar warning receiver

armed reconnaissance - an air mission flown with the primary purpose of locating and attacking targets of opportunity, i.e., enemy materiel, personnel, and facilities in assigned general areas or along assigned ground communications routes, and not for the purpose of attacking specific briefed targets.

ASE circle - allowable steering error - circle on radar display provided by fire control computer.

ATOLL - Soviet air-to-air missile, infrared seeker type

autotrack - automatic tracking in which a servo mechanism keeps the radar beam trained on the target.

Back - the individual occupying the back seat of the F-4; in Navy called RIO, in Air Force called pilot or GIB.

BARCAP - Barrier combat air patrol - a MIGSCREEN for one or more missions

barrel roll - See Figure 2 (page 27) - a 360° rolling maneuver in which the flight path of the aircraft describes a helix about the intended direction of the flight.

BDA - bomb damage assessment

BINGO (fuel) - minimum fuel quantity reserve established for a given geographical point to permit aircraft to return safely to home base or aerial refueling point.

bogey - unidentified aircraft

boresight mode - in the boresight mode the radar antenna is aligned and locked to the roll axis of the aircraft.

break - an emergency turn in which maximum performance is desired instantly to destroy an attackers tracking solution.

break X - minimum range indication for missile launch. X appears in the radar scope at minimum range.

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CAP - combat air patrol - an aircraft patrol provided over an objective area, over the force protected, over the critical area of a combat zone, or over an air defense area, for the purpose of intercepting and destroying hostile aircraft before they reach their target.

(NAVY) Condition I CAP (Standby): aircraft ready for immediate (maximum delay of two (2) minutes) takeoff. Aircraft with engine not running (starter batteries plugged in) will be positioned for take-off. Pilots in cockpit and deck drew on alert.

CAS - calibrated air speed (knots)

CBU-24 - canister dispensed air-to-ground bomblet type munition; the canister is carried externally on the aircraft and opens after release at a preset altitude.

centerline tank - a fuel tank carried externally on centerline of aircraft.

chaff - a type of confusion reflector, which consist of thin, narrow metallic strips of various lengths to provide different responses, used to create false signals on radarscope.

Channel 97 - A TACAN station located during the period of the study at 20°27'N/103°43'E used for navigational aids. (SECRET)

chandelle - a maximum performance climbing turn in which speed is converted to altitude while reversing direction.

CMR-312 (Little Ears) - aural radar warning receiver

CROWN - call-sign for rescue force commander

CRT - Combat Rated Thrust - maximum augmented thrust condition of engine

DF - direction finder

DME - distance measuring equipment

dot - (aim dot, steering dot) - electronic dot appearing in radar scope when radar is locked on providing computed steering vector information

element - Air Force term for the basic fighting unit (two aircraft)

EWO - electronic warfare officer

FANSONG - tracking radar for Soviet SA-2 surface-to-air missile system (CONFIDENTIAL)

fighting (wing) position - an area for the wingman in which optimum coverage and maneuverability is achieved in maximum performance maneuvers.

finger-four formation - see Figure 6 (page 29) - also fingertip formation - a four-plane formation in

[redacted]

which the aircraft occupy positions suggested by the four finger tips of either hand, the fingers being held together in a horizontal plane.

flak - antiaircraft fire

fluid element - the second or supporting element in fluid four formation, flying in a high or low element position.

fluid-four - see Figure 5 (page 29) - a tactical formation having the second element spread in both the vertical and horizontal planes to enhance maneuverability, mutual support and look-out ability.

fragged - mission directed by fragmentary operational order from higher headquarters.

Front - the individual in the front seat in the F-4 aircraft; in the Navy called the pilot, in the Air Force called the aircraft commander.

g - unit of acceleration (32.2 ft/sec$^2$)

gaggle - slang for a number of aircraft operating in close proximity, not necessarily in any semblance of formation.

GAM-83 - BULLPUP; air-to-ground guided missile

GEOREF - See Figure 11

GCI - ground control intercept

GUARD - emergency UHF radio channel usually monitored by all aircraft and ground stations as a secondary frequency.

Hard turn - a planned turn in which the intensity of the turn is governed by the angle-off and range of the attacking aircraft.

HEAT - armament switch setting for using infrared missiles

hot mike intercom - intercommunication system continuously active (hot)

IAS - indicated air speed

ICS - intercommunication system

ID - identification; to make identification

IFF - identification, friend or foe; aircraft transponding beacon received by radar distinguishing friend from foe.

Immelmann - see Figure 8 (page 30) - maneuver in which the aircraft completes the first half of a loop and then rolls over to an upright position thus changing direction 180° with a simultaneous gain in altitude.

IMN - indicated Mach number

IP - initial point; a well-defined point, easily distinguishable visually and/or by radar, used as a starting point for a bomb run to the target.

IR missile - an infrared or heat-seeking missile

IRON HAND - a code name for a flight with special ordnance and avionics equipment whose mission is to seek and destroy enemy surface-to-air missile sites.

JCS target - a target appearing on the JCS target list

jinking - constant maneuvering in both the horizontal and vertical planes to present difficult target to enemy defenses by spoiling the tracking solution. Bank, pitch and velocity are all simultaneously changed in this maneuver.

karst - a limestone outcropping or ridge

KIAS - knots indicated air speed

kt - abbreviation for knot (nautical miles/hour)

KTAS - knots true air speed

LAU-3 - a rocket launcher adaptable to external bomb racks holding 19 2.75 inch air-to-ground folding fin rockets

LAU-17 adapters - stub pylon on F-4

loose deuce - a term to describe fighter tactics in which two to four airplanes maneuver to provide mutual support and increased fire power.

Lufberry circle - a circular tail chase, ascending or descending

M - abbreviation for Mach number

MER - multiple ejection rack

mi - nautical mile, as used in this report

MIGCAP - combat air patrol mission whose actions are directed against MIG aircraft

MIG SCREEN - mission wherein protecting fighters are placed between the threat and the protected force in a specific area

military power - maximum unaugmented thrust condition of engine

missile free - authority is granted to fire unless target is identified as friendly

missile tone - audio signal indicating AIM-9 is locked on to an IR source

MRT - military rated thrust - see military power

MSL - altitude referenced to mean sea level

OPREP - message report in joint operational reporting system

PANAMA - call sign for GCI site located near Danang

pipper - aircraft weapon sight indicator (a dot of light within a lighted ring)

PIRAZ - positive identification radar zone

Pod formation - A flight formation configured to maximize the jamming of Fansong radar. Slight alteration is made to provide for better defense under MIG threat. (See Fig. 9)

PRF - pulse recurrence frequency

QRC-160 - noise jamming ECM pod

RAG - replacement air group

ready light - light which indicates a particular avionics/munitions system is operating and available for use

RED CROWN - voice call for USS LONG BEACH (CLN-9)

RESCAP - rescue combat air patrol

RHAW - radar homing and warning

RIO - radar intercept officer

RO - abbreviated form of RIO

road interdiction - to prevent or hinder, by aerial means, enemy use of a road or route

ROLLING THUNDER - code name for air strikes against North Vietnam

Route Package - see Figure 9 - geographical division of North Vietnam for purposes of air strike targeting

rudder reversal - a climbing aircraft maneuver in which direction is changed by rotation around the aircraft's vertical axis

SA-2 - Soviet surface-to-air missile system

SAM - surface-to-air missile

SAR - search and rescue

scissors - See Figure 1 (page 27) - a defensive maneuver in which a series of turn reversals are executed in an attempt to achieve offensive after an overshoot by the attacker.

SCAN-ODD - MIG airborne intercept radar (CONFIDENTIAL)

section - a Navy term for a tactical element of two or more aircraft (usually two)/an Air Force term for two flights of four

SHRIKE (AGM-45) - air-to-surface radar seeking missile

SIDEWINDER - see AIM-9

SIDEWINDER tone - see missile tone

SIF - selective identification feature - electronic device with variable codes for identification

SILVER DAWN - a code name for an intelligence collecting aircraft (SECRET)

"S" maneuver - a weave in a horizontal plane

Snap-up - a rapid pullup to establish a climb in order to launch a weapon

SPARROW - see AIM-7

"Split-S" maneuver - see Figure 7 (page 30) - 180° rotation about the aircraft longitudinal axis followed by a 180° change of heading in a vertical plane (half loop starting from top)

STBY - standby

steering dot - see dot

Switchology - a coined word addressing the human engineering considerations of switch arrangements

TACAN - tactical air navigation - an active electronic navigational system which locates the aircraft with respect to another installation

TARCAP - target combat air patrol - aircraft assigned the air-to-air defense role in the target area

TAS - true air speed in knots

TCA - track crossing angle - the angle between flight paths measured from the tail of the reference aircraft

Thud Ridge - A nickname given to a prominent geographical feature in North Vietnam. It is a ridge running in a general NW-SE direction from 21°40'N/105°25E to 21°20'N/105°48'E.

TOT - time over target

TRACK (various colors) - see Figure 9 - code names for specific refueling tracks

TROJAN HORSE - a code name of a U-2 air reconnaissance program (SECRET)

unit (of turn) - divisions on an angle-of-attack indicator on F-4 aircraft

UHT - unit horizontal tail (applied to F-8 aircraft) - a tail design whereby the whole surface rotates about a pivot point

unloading - decreasing g's

$V_c$ - closing velocity (relative)

vector box - see APR-25

WILD WEASEL - F-105F specially equipped for locating and attacking SA-2 sites (employed on IRON HAND missions)

[redacted]

yo-yo - See Figures 3 and 4 (page 29)
High speed - an offensive tactic in which the attacker maneuvers through both vertical and horizontal planes to prevent an overshoot in the plane of the defender's turn.
Low speed - a dive for airspeed and a pull up for position closure.

ZUNI - five inch air-to-ground unguided rocket.

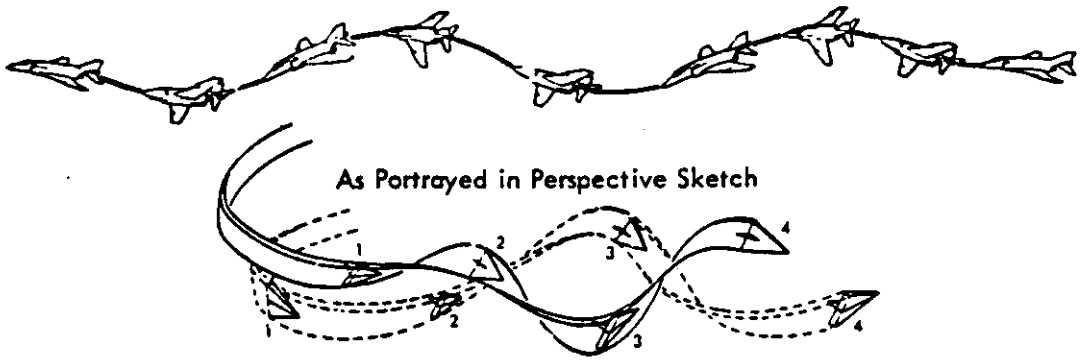
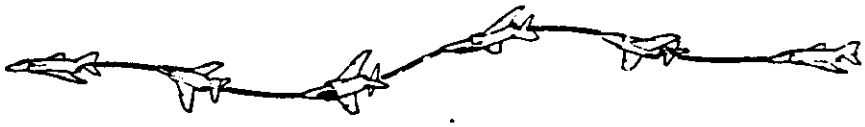



FIGURE 1. Scissors



As Portrayed in Perspective Sketch

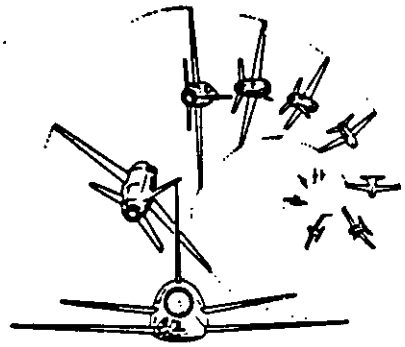


FIGURE 2. Barrel Roll

[redacted]

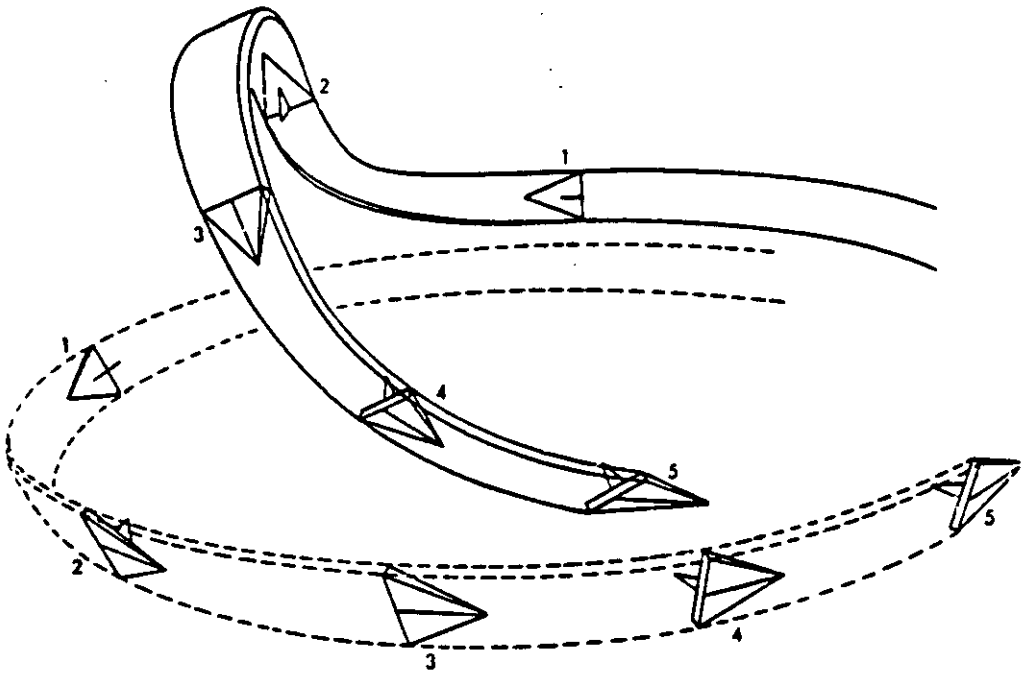



FIGURE 3. High-Speed Yo-Yo

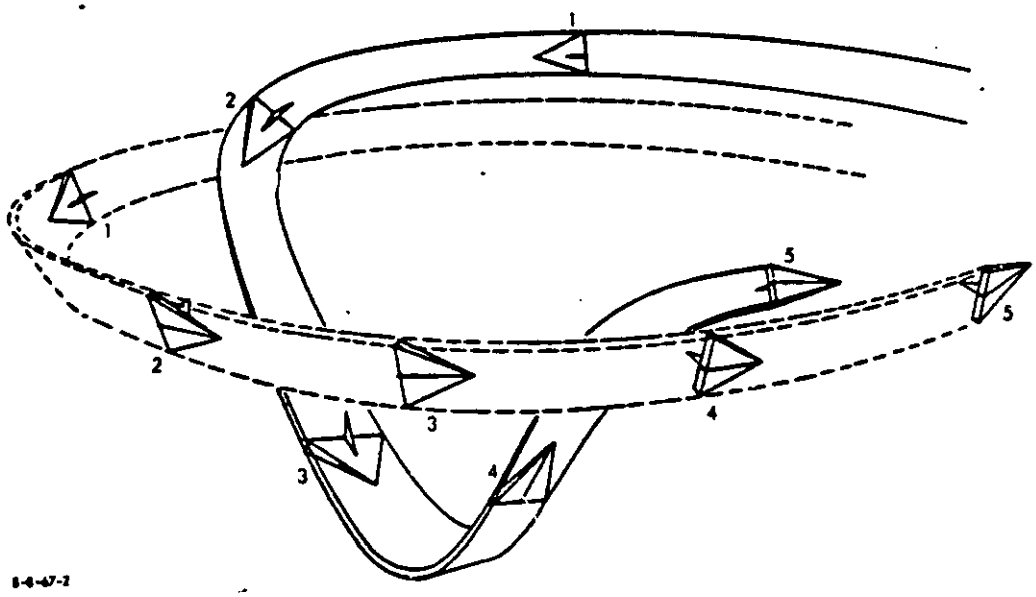



FIGURE 4. Low-Speed Yo-Yo

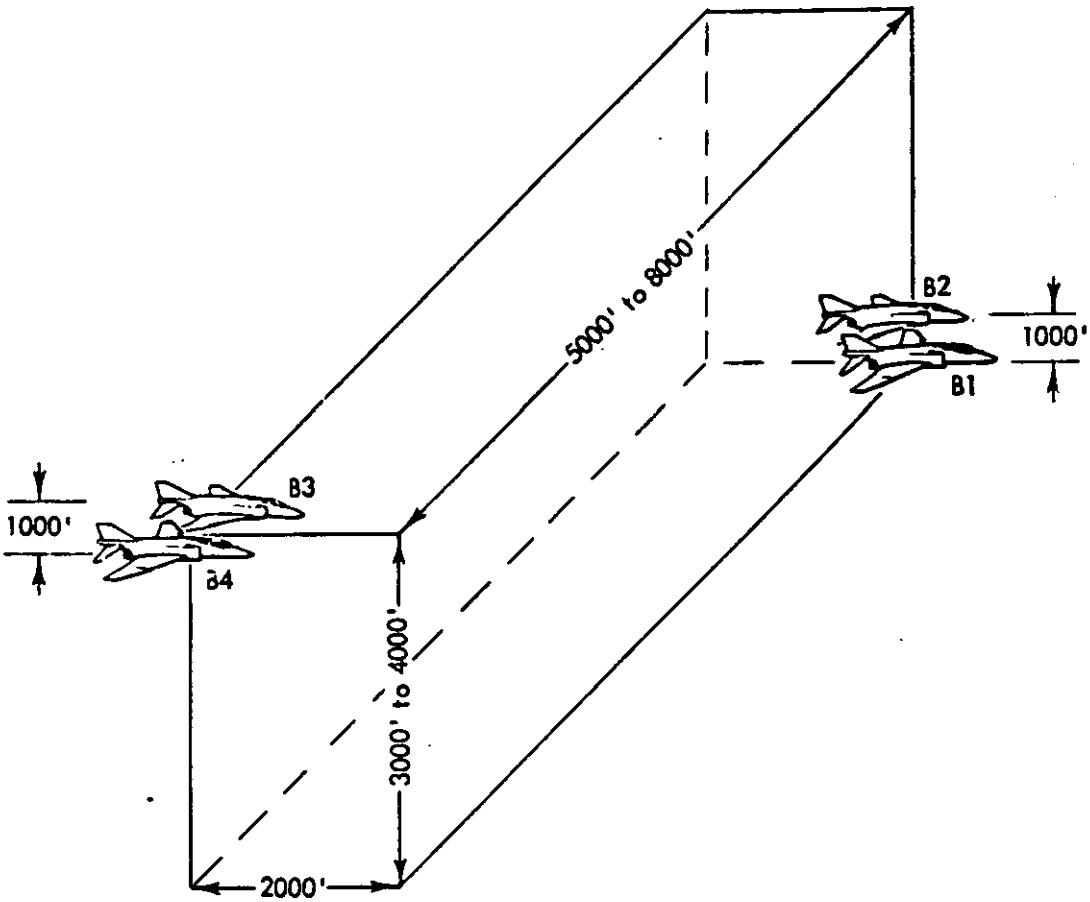



FIGURE 5. Fluid Four

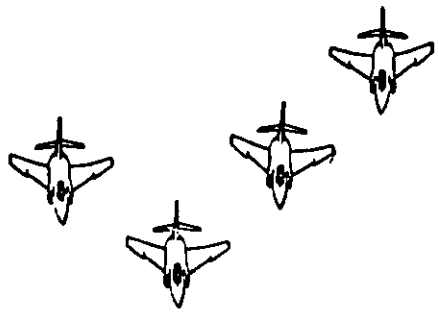


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FIGURE 6. Fingertip or Finger Four (All at Same Elevation)

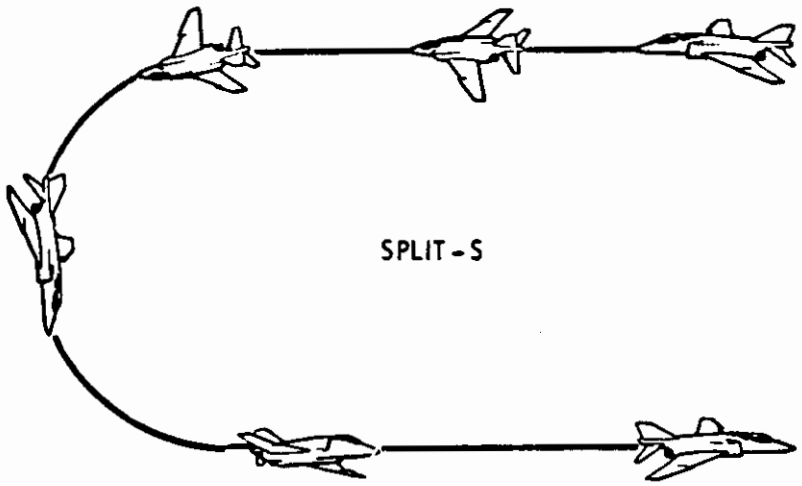



FIGURE 7. Split-S

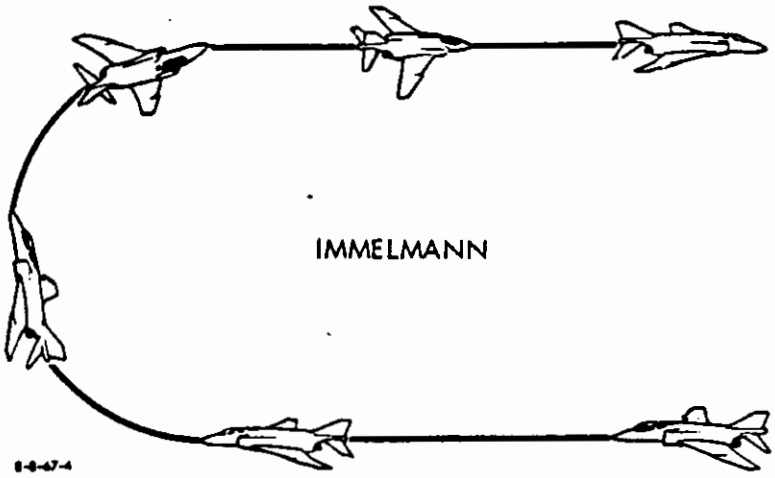



FIGURE 8. Immelmann

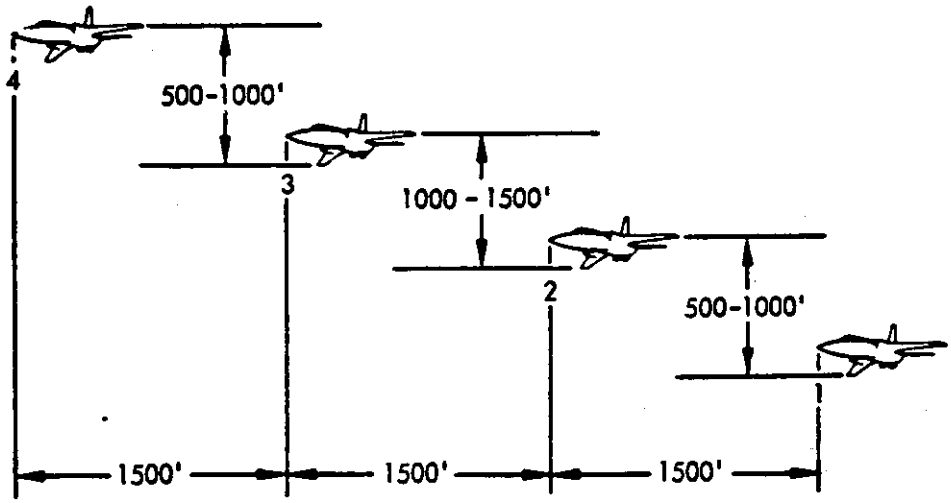



FIGURE 9. Pod Formation*
*Element may be on Left or Right

[redacted]

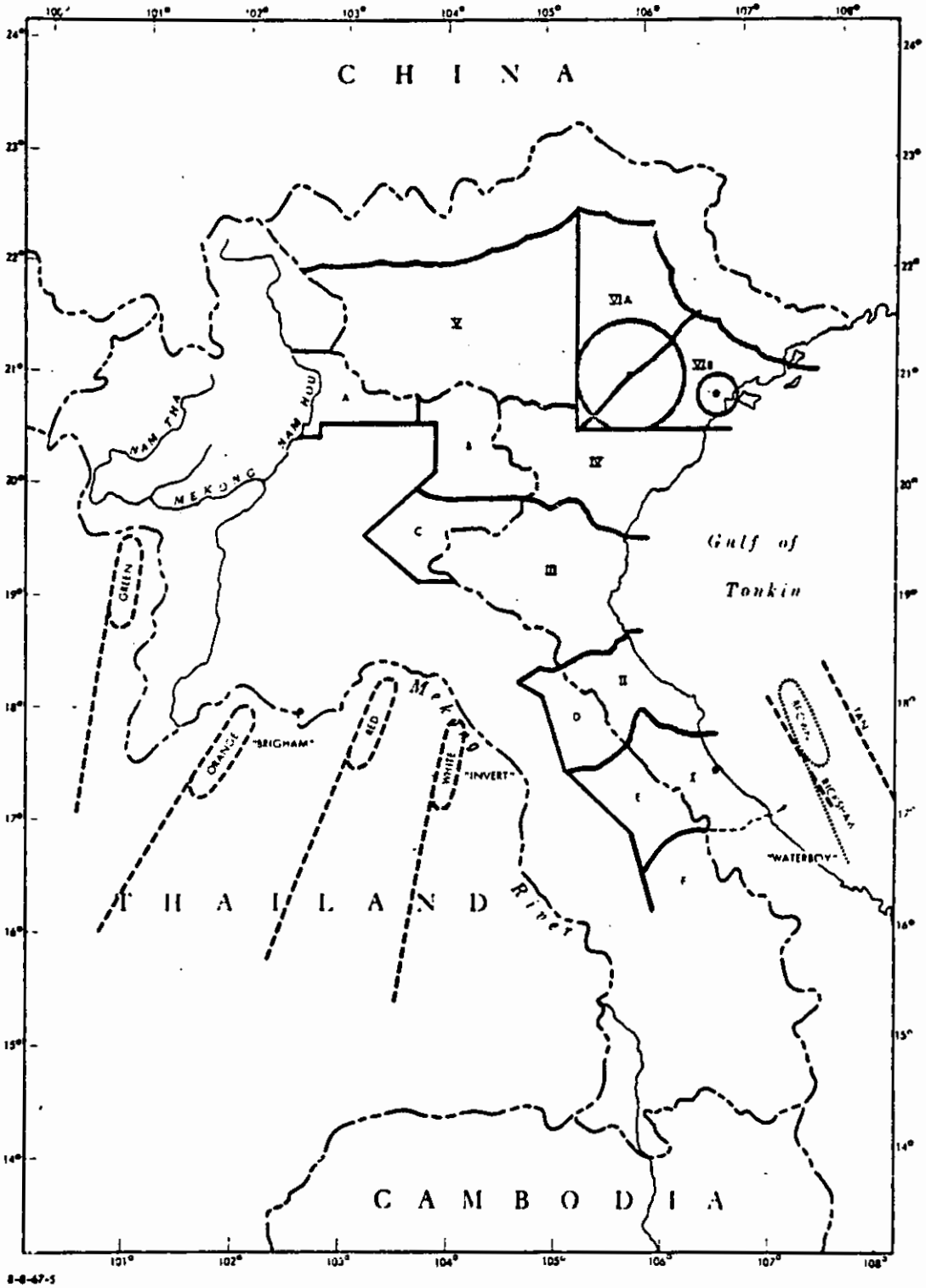



FIGURE 10. Location of Route Packages and Tanker Refuel Tracks

[redacted]

[redacted]

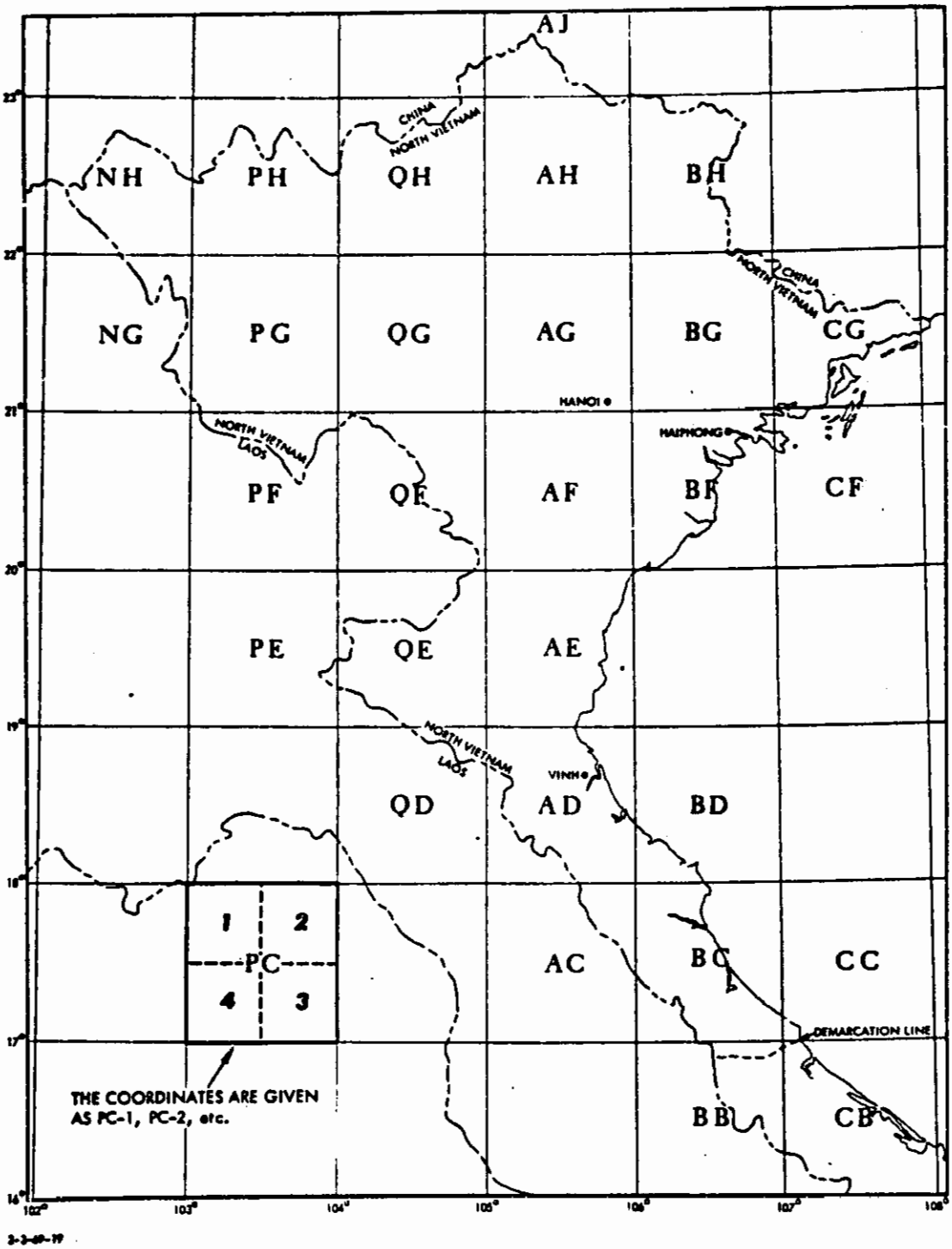



FIGURE 11. Map of North Vietnam Showing GEOREF Coordinates

[redacted]

[redacted]

Event III-1

Aircraft Involved: Four A-4Cs vs one MIG-17

Result: No damage

Vicinity of Encounter: 19°58'N/105°51'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 3 April 1965/1110H

Two elements of A-4Cs (BLUE Flight) were part of a strike force (nine A-4Es, ten A-4Cs and eight F-8Es) attacking the Thanh Hoa Bridge. Part of the support was by a flight of F-8s (See Event I-1) included in the above eight and four F-4Bs. The F-4Bs were to provide TARCAP and were armed with two SPARROWs and two SIDEWINDERs. At the time of the event, the F-4Bs were in the target area.

2. MISSION ROUTE

BLUE Flight departed the aircraft carrier HANCOCK at 0855H at Yankee Station (17°N/109°E) and proceeded to Hon Me Island (19°23'N/105°56'E) at 25,000 feet altitude. At Hon Me, the elements headed 005° and let down to 6000 feet for the run into the target.

3. AIRCRAFT CONFIGURATIONS

Unknown

4. CONDITIONS PRIOR TO ENCOUNTER

Weather: 2/10 cloud cover with bases at 1000 feet. The visibility was 3 miles in haze. The haze layer extended to 12,000 feet altitude with visibility at the 5000 to 9000 feet levels at times reduced to a mile.

| | BLUE 1, 2 | BLUE 3 |
|---|---|---|
| Altitude: | 10,000 ft | 15,000 ft |
| Heading: | 080-090° | about 090° |

5. INITIAL DETECTION

While egressing ten miles east of the target BLUE 2 saw and immediately identified one MIG-17 closing from 7:30, two miles away in a level pursuit, turning toward BLUE 1's 6 o'clock.

6. ACTION INITIATED

BLUE 2 called the MIG and both BLUE 1 and 2 started to break.

7. SITUATION DEVELOPMENT

BLUE 1 and 2 turned and the MIG closed, shooting. After turning almost 120° the MIG broke off.

BLUE 3 heard the MIG call and on looking back saw the MIG attack and fire on BLUE 1 and 2. BLUE 3 broke left into the MIG but before BLUE 3 could attain a firing position, the MIG broke off.

8. ORDNANCE

| | No. fired/No. hit |
|---|---|
| | Cannon |
| MIG-17 | 1/0 |

11. DATA SOURCES

Messages, Reports: Air Combat Report 3480 from the USS HANCOCK
Pilots' statements, BLUE 2 and BLUE 3
CINCPACFLT Staff Study 3-67
CTG 77.7 OPREP 4 031451Z April 65
CTG 77.7 MSG 040202Z April 65
CTG 77.7 MSG 040221Z April 65

12. NARRATIVE DESCRIPTION

The strike force from the HANCOCK followed a strike by a force from the Coral Sea, who attacked the target at 1035H.

The HANCOCK attack elements (19 A-4Cs including the BLUE elements) cruised in a tactical formation with the F-8E (aircraft of Event I-1) elements split on either side and approximately 5000 feet above in order to provide intermediate cover. All F-8Es utilized their AI radar in the search mode to provide early warning. The retiring Coral

[redacted]

Sea strike elements were detected about 10 degrees left of track and 30 miles ahead on AI radar and were initially called as bogeys but later identified as friendlies.

The HANCOCK strike force attacked the target commencing at 1042H and retired from the target by divisions, on a heading of 130 degrees, climbing to 32,000 feet for return. Fifteen A-4 (BLUE elements) remained over the target completing the final bombing run. BLUE 1 was the strike leader. Four F-8E aircraft (Event I-1) preceded them for flak suppression.

BLUE elements struck the target and rejoined as separate elements.

When the F-8 of Event I-1 reported being hit (at this time it was not determined to be by MIGs) his call was received by the BLUE elements and the A-4s proceeded outbound to rendezvous with him.

Since BLUE 1 and 2 were separated from BLUE 3 and 4, the actions of each element will be described separately.

BLUE 1 and 2

BLUE 1 and 2 were unaware of MIGs in the area and on hearing the report of the F-8 being damaged, they joined at 2000 feet and turned to rendezvous, climbing out on a 080-090 degree heading. BLUE 2 was flying tactical wing to the right (500 feet at 5 o'clock from BLUE 1).

They were climbing through about 10,000 feet, still in the haze layer as they crossed the coast. BLUE 2 saw two contrails coming from the south over the coast at 3 o'clock, and also saw two A-4Cs in a left turn at 10 o'clock, 3 miles away and slightly higher.

As BLUE 2 looked back he saw a single MIG-17 at 7:30 o'clock going to 6 o'clock two miles away, level, and closing in a pursuit turn. BLUE 2 called "MIG at 6, BLUE 1 break left now." This was the first time that any call had been made concerning enemy aircraft.

BLUE 2 jettisoned his tanks as BLUE 1 and 2 started to break left and down. After about 120 degrees of turn BLUE 2 saw tracers off of his right wing and could hear cannon fire. As the turn continued and BLUE 1 and 2 passed through a heading toward Hanoi, the MIG broke off.

BLUE 1 also observed the attack and breakoff. He called the MIG disengaging and BLUE 2 saw the MIG going from 4:30 to 6 o'clock with distance increasing.

BLUE 1 and 2 then rolled out on a heading of 130 degrees and egressed.

BLUE 3 and 4

After their last bombing run, when about two miles south of the target, BLUE 3 heard the F-8s call that he had been hit, and was proceeding outbound. BLUE 3 then decided to follow immediately in an effort to join, as the F-8 indicated he was alone.

A short time later, BLUE 3 heard BLUE 2 make the call of a MIG on BLUE 1 and 2's tail.

BLUE 3 continued toward the F-8 and as he crossed the coastline east of the target, he saw three aircraft at 10:30 o'clock about 3 to 4 miles away and below him 2000 to 3000 feet. BLUE 3 was at about 15,000 feet altitude at this time.

At first BLUE 3 thought they were A-4Cs; however, as the group closed, he realized that the last aircraft was a MIG-17. About at this point, the MIG was observed to fire (as evidenced by smoke puffs). BLUE 3, with a full load of 20mm, was two miles abeam at this point and broke left into the MIG. Before he could obtain a firing position, the MIG broke off and headed north, climbing. BLUE 3 called the MIG breaking off, but only BLUE 2 heard it.

BLUE 3 then proceeded to the carrier on heading of 130 degrees.

All of the foregoing events took place in a period of about 3 to 4 minutes.

The F-4 TARCAP from the Coral Sea were assigned an altitude of 25,000 feet. The TARCAP leader checked in with BLUE 1 just prior to the HANCOCK attack on the target, and indicated he was back overhead. (The F-4s had provided TARCAP for the Coral Sea strike and had retired some 70 miles for aerial refueling.) All MIG action occurred after the target was attacked and occurred below 16,000 feet altitude. After the MIG action had broken off, BLUE 1 advised the TARCAP that there was a reported MIG in the area that was possibly an A-4, that HANCOCK forces were clear of the area, and TARCAP was cleared to retire.

[redacted]

Event III-2

Aircraft Involved: Four F-100Ds vs. MIG-17
Result: One MIG-17 probably destroyed
Vicinity of Encounter: 19°00'N/105°48'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 April 1965/1150H

GREEN flight (four F-100Ds) was fragged to fly Rescue Combat Air Patrol in support of a large force of F-105Ds attacking the Than Hoa Bridge at 19°50'N/105°48'E. GREEN flight was instructed to orbit just off shore southeast of the Than Hoa Bridge, and to monitor the primary mission frequency until needed for RESCAP and then to work with Search and Rescue. The flight was in a left-hand orbit at 18,500 ft altitude, 325 KCAS, with the westernmost portion of the flight path 2-3 mi off shore. Some of the F-105 flights were in orbit nearby waiting to be called in to bomb the target. The flights were briefed by intelligence to expect MIG activity because this was the day after the first MIG encounter in Southeast Asia.

## 2. MISSION ROUTE

Departed Danang Air Base, SVN, and proceeded directly to the pre-strike tankers for a full load of fuel and then direct to the orbit point in the vicinity of 19°00'N/106°00'E. GREEN flight left the orbit after the MIG engagement to refuel and RESCAP a downed F-105 aircrewman and then returned directly to Danang AB.

## 3. AIRCRAFT CONFIGURATION

F-100D GREEN 1, 2, 3, 4

- 2 - 335 gal ext fuel tanks
- 2 - LAU-3 2.75 FFAR PODS (19 Rocket Pods)
- 4 - M-39 20mm cannons, 200 rds HEI each
- 2 - empty inboard pylons
- Empty centerline pylon (on 2 and 4 only)

MIG-17s

- Guns
- No external stores
- Chicom marking

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 3000 scattered layer, 15,000 thin broke layer, 20,000 ft thin overcast cirrus layer. Haze from surface to about 12,000 ft with 3-5 mi vis slant range. Could see water and coast line.

| | F-100Ds 1 2 3 4 | MIG-17 |
|---|---|---|
| Altitude: | 18,500 ft | Slightly high |
| Heading: | Left orbit passing through west | East |
| Airspeed: | 300-325 KCAS | Unknown |
| Fuel State: | Full internal + 1500 # in ext tanks | Unknown |
| Flight Formation: | Fluid four with 3&4 just under the overcast | Element of two |

## 5. INITIAL DETECTION

GREEN flight had just completed the first orbit when they heard TAN flight (Event III-3) call MIGs. At almost the same time as the lead element passed through a westerly heading, GREEN 2 saw an aircraft at the 12:30 to 1 o'clock position about 2-1/2 to 3 mi out on a near reciprocal heading and closing fast.

## 6. ACTION INITIATED

At least two flight members called the bogey and the whole flight saw it about the same time since they were looking in the direction of the forewarned MIG activity. The bogey came out of the haze, flashed across the nose of the lead element, and whipped into a 70°-80° nose low turn to come in behind the flight.

## 7. SITUATION DEVELOPMENT

GREEN 1 and 2 broke hard left and up into the MIG-17 and jettisoned external stores. MIG 1 attacked GREEN 3 and 4, who also broke left, and fired at GREEN 3 from 90° angle off and then settled on GREEN 4 who accelerated away from the MIG. Right after the initial break, GREEN Lead called GREEN 2 to break hard because MIG 2 was on his tail. GREEN 2 pulled max "g" and forced the MIG to overshoot. After the MIG passed behind GREEN 2, Lead called that the MIG was now on him. GREEN 2 reversed and fired a burst of 20mm out

[redacted]

of range at MIG 2 who promptly split-S straight down. GREEN 2 followed him, firing a second burst and then at 10,000 ft fired a long burst and noted a hit on the right horizontal stabilizer of MIG 2. GREEN 2 started his pullout at 7000 ft, pulling enough "g" to "grey out" and recovered just above the wave tops. Other sources indicate a MIG loss on this date, most probably the MIG described above.

GREEN 2 and 3 rendezvoused, refueled, and flew search and RESCAP in company with an HU-17 helicopter for one of the downed F-105 aircrew (see Event II-1) until almost out of fuel. They recovered at Danang.

## 8. ORDNANCE EXPENDED

GREEN 1, 3, 4 - No attempt
GREEN 2 - 400-500 rounds 20mm

MIG 1 - One burst at GREEN 3
Other burst at GREEN 1 and 4 likely

## 9. EQUIPMENT PROBLEMS

GREEN 3 - Both LAU-3 rocket pods failed to jettison electrically on first attempt. (Did jettison manually under fire)
GREEN 4 - Could not jettison stores.
GREEN 2 - Film pack had stripped sprocket holes - did not obtain film of incident.

## 10. AIRCREW COMMENTS

Experience

This squadron had one of the highest levels of tactical aircraft experience in SEA. All pilots had many F-100 hours (up to 2,500) and about 20 combat missions in SEA (escort and RVN close air support).

Comments:

F-100 could not match MIG turn. Flight members were expecting MIG activity since they had talked to the F-8 pilot who had been hit by MIGs the previous day and had examined his aircraft.

GREEN 2 - The haze complicated join up. Found GREEN 3 quickly. GREEN 4 exited area with all stores and GREEN Lead attempted to find and accompany 4.

## 11. DATA SOURCES

Project Interviews: GREEN 2, 4 November 1968
Aircrew Letters: GREEN 2, 19 February 1968
Messages, Reports:

2AD 060740Z April 1965
2AD 041437Z April 1965
2AD ZODC-CP-00946 April 1965

## 12. NARRATIVE DESCRIPTION

GREEN flight (four F-100Ds) was fragged to fly rescue air patrol for a force of F-105s attacking the Than Hoa Bridge at 19°50'N/105°48'E. A second flight of F-100Ds was on MIGCAP for the same force (see Event 2B). On the day previous a Navy F-8 Crusader was attacked and damaged by MIG action, the first MIG action of the Southeast Asian conflict. The members of both of the F-100 flights had an opportunity to view the resultant damage to the F-8 and to talk to the pilot after his recovery at Danang. Thus, the F-100 aircrews were expecting MIG activity as they pointed their aircraft toward North Vietnam on this date.

GREEN flight departed Danang AB in South Vietnam at 1045H and flew out the 335° radial of the Danang TACAN for 40 mi to rendezvous with the KC-135 tankers at 1102H and took on a full load of fuel before proceeding up the coastline to their orbit position. The instruction to GREEN flight was to orbit just off shore on the F-105 egress route and to monitor the strike frequency until needed, at which time they were to switch to the rescue frequency and aid in any rescue attempt with search for the aircrew and CAP for the rescue aircraft. The southwestern anchor point of the orbit was at 19°00'N/105°48'E, with the flight passing about 3 mi off shore on the western side of the left-hand orbit. Orbit altitude was 18,500 ft for the lead element and about 20,000 ft for the second element which was flying just below a 20,000 ft thin cirrus overcast. The flight was at loiter speed of 300-350 KCAS and attempted to fly a fluid four formation as much as possible within the confines imposed by the orbit.

The weather in the area was generally hazy with 3-5 mi visibility in the haze layer which extended from the surface up to 12,000 ft. A broken layer at 3,000 ft and a thin layer at 12,000 and 20,000 ft completed the picture, but the aircrews reported that they could see the water and the shoreline through the haze.

When GREEN flight switched over to strike frequency, they noticed a great deal of radio chatter. About 70 aircraft were on the frequency including both Air Force and Navy mission and direct mission support aircraft.

GREEN flight was just entering the second orbit at about 1150H when they heard the F-100 MIGCAP flight (see Event III-3) call MIGs and the ensuing calls confirming that the MIGs were in fact MIGs. At almost the same time as the lead element of GREEN flight passed through a westerly heading, the flight saw a bogey at Lead's 1230 position about 2 1/2 to 3 mi range, slightly high, and closing almost head-on. Two of the flight members called the bogey as it flashed out of the haze and passed in front of the lead element. The bogey was definitely identified as a MIG-17 by GREEN 2 as he observed the MIG roll into a 70°-80° left bank turn into the flight from his, GREEN 2's, 9 o'clock position. The MIG was turning slightly nose low, so GREEN Lead and 2 tightened the left turn, entered a shallow climb, and jettisoned the fuel tanks (with about 1500 lbs of fuel in each), rocket pods and empty pylons. The first MIG swung in behind the second element while a second MIG-17 swung in behind the lead element, attacking GREEN 2.

GREEN Lead saw MIG 2 on GREEN 2's tail and called, "GREEN 2 break; there's one on your tail." GREEN 2 lit afterburner and pulled the F-100 into maximum "g", blanking out GREEN Lead, and he saw the second MIG about 2000 ft at his 7 o'clock position. The second MIG was nose low on GREEN 2, so GREEN 2 raised his nose more and held the "g" to insure what was already an overshoot. The MIG overshot GREEN 2 and slid in behind GREEN Lead as GREEN 2 changed his mode selector from manual sight to radar and then started a nose high rudder reversal. At that time GREEN Lead called, "The MIG's on me now." GREEN 2 noted an airspeed of 250 KCAS as he lowered his nose and observed the MIG at 2,000-3,000 ft below him, 5,000 ft range, and about 2,000 ft behind GREEN Lead in good firing position. As GREEN 2's airspeed was building, he uncaged the sight and set the wingspan lever at 32 ft. Then GREEN 2, realizing that he did not have enough time to close on the MIG, pulled his nose up to show belly to the MIG and fired a burst of 20mm cannon hoping that the MIG would see the guns flashing and break off his attack on GREEN Lead.

The ruse was successful because the MIG reacted immediately by reversing from the left pursuit curve to a 45° right bank. GREEN 2 was still outside of effective gun range, noticed that his airspeed had built to 450 KCAS, came out of afterburner, and eased back on the power as he called, "Robin Lead reverse, 2's on the MIG now." But GREEN Lead did not hear GREEN 2's call and, noting that his airspeed was about 250 KCAS during the initial break, had lowered his nose to accelerate as the MIG approached him. As the MIG approached him, he continued to accelerate and go for separation as MIG 2 broke off.

As soon as MIG 2 saw that GREEN 2 had matched his turn from left to right, he reversed back to the right in a modified split "S" and headed straight down from an estimated 14,000 ft. GREEN 2, wary of an overshoot, went into a nose high roll to the left, looked for lead, and called a second time that he was on the MIG. (GREEN Lead did not receive the call. This was occuring at the same time that the F-100 MIGCAP and F-105s were engaged by MIGs). GREEN 2 could not locate GREEN Lead in the haze but did complete his roll to the vertical straight down attitude and added power to close on the MIG. GREEN 2 attempted to track the MIG from straight above at zero "g"; but being unable to do so, electrically caged the sight and fired a burst with no observed results. He then checked the altimeter passing through 10,000 ft, put the pipper on the MIG's tailpipe, and fired a long burst to 7,000 ft where he observed a flash on the MIG's right horizontal stabilizer and started his pullout.

The pullout was begun aggressively, causing almost a complete loss of vision (although GREEN 2 did not black out). GREEN 2 pulled the power to idle, threw out the speed brakes, held maximum "g" just short of blacking out, and pulled out of the dive on a southerly heading at "wave top level". The F-100 was overstressed as a result of the pullout. GREEN 2 stated that he had an impression of the MIG starting his pullout to the west. GREEN 2 recovered just southeast of the town of Than Hoa, about 1 1/2 mi off shore. (Other sources list a probably MIG-17 kill due to 20mm cannon fire at this time and date and is most likely the result of this encounter).

Meanwhile, the first MIG overshot GREEN Lead and 2 and attacked GREEN 3 and 4. GREEN 3 and 4 also broke hard left into the attack and attempted to clear off their aircraft but were unable to electrically jettison their external stores. GREEN 3 was able to manually jettison his external stores as the MIG fired at him from a 90° angle off deflection. The MIG then pulled in behind GREEN 4 who could not jettison his stores. GREEN 4 broke harder and was able to dive away from the MIG and accelerate away from him in afterburner.

The flight attempted to rejoin after the engagement but was hampered by the haze. GREEN 2 and 3 were able to get together quickly; and then, GREEN Lead, noting that 2 and 3 were together, elected to follow GREEN 4 and provide cover for him as he egressed the area with all external stores.

GREEN 2 and 3 set up a search pattern for the downed F-105 pilot (see Event II-1) until they reached Bingo fuel. They then returned to the tanker, refueled, and returned to the search area to continue searching for the downed aircrew and CAP the rescue helicopter. At the second Bingo fuel, GREEN 2 and 3 returned to Danang and recovered. The flight time was 3 hr and 35 min, and no member of GREEN flight received any damage.

[redacted]

Event III-3

Aircraft Involved: Four F-100Ds vs two MIG-17s

Results: No damage

Vicinity of Encounter: 20°00'N/105°50'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 April 1965/1150H

PURPLE flight (four F-100Ds) was fragged to fly MIGCAP support for a force of F-105s attacking the Than Hoa Bridge at 19°50'N/105°48'E. Their assigned orbit was north of the target between the MIG airfields near Hanoi and the target. At least one flight of four F-100s was in the area to fly RESCAP for the same mission (See Event III-2).

## 2. MISSION ROUTE

PURPLE flight departed Danang, proceeded to rendezvous with a KC-135 tanker and then paralleled the coastline about 10 mi off shore to the orbit area.

## 3. AIRCRAFT CONFIGURATIONS

F-100D PURPLE 1, 2, 3, 4

2 - AIM-9B IR SIDEWINDER missiles (at least one on each inboard pylon)
2 - 335 gal external fuel tanks
4 - M-39 internally mounted 20mm cannons, 200 rds HEI for each cannon

MIG-17 MIG 1, 2

Cannons

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 3000 ft scattered, 12,000 ft scattered, 20,000 ft thin cirrus overcast with 3-5 mi visibility in a haze layer extending from the surface up to 12,000 ft.

| | PURPLE 1 2 3 4 | MIG 1 2 |
|---|---|---|
| Altitude: | 18,500-20,000 ft | About 17,000 ft |
| Heading: | Southerly | About 225° |
| Speed: | 300-35- KCAS | About 450 KCAS |
| Fuel State: | Fuel in drops | Unknown |
| Flight Formation: | Fluid Four | Echelon |

## 5. INITIAL DETECTION

The lead element was turning through an easterly heading in a loose right orbit at 18,500 ft when PURPLE 2, flying on lead's right wing, element high left, saw two MIG-17s at his 9 o'clock about 3 mi away, 1000-2000 ft low on a southeast heading. Just prior to the MIG sighting, PURPLE 2 observed a flight of two F-105Ds at his 1 to 2 o'clock position about 5 mi away and about 2000 ft low in a left orbit passing through a southerly heading. PURPLE 2 felt that the MIGs were being vectored under GCI control toward the F-105s.

## 6. ACTION INITIATED

PURPLE 2 called the MIGs to PURPLE Lead and started looking for the MIG alert code word to warn the F-105s. PURPLE Lead saw some F-8s at his 10 o'clock high and thinking these were the aircraft PURPLE 2 was calling, he continued the loose right turn and called back, "Negative - friendly aircraft", attempting to keep radio chatter to a minimum.

## 7. SITUATION DEVELOPMENT

PURPLE 2 replied that there were confirmed MIG-17s now at 11 o'clock low, and crossing, and PURPLE Lead acknowledged with a quick reversal to the left and called, "Let's have at them." PURPLE 2 vectored lead back to the right in a descending turn in afterburner and the element was able to close on the MIGs, but not before the lead MIG shot and critically damaged the lead F-105. PURPLE Lead fired a missile that passed over the MIG's right wing without detonating and PURPLE 2 followed the second MIG up into the top half of a loop. PURPLE 2 yo-yoed over the top as the second MIG completed his loop and started a second loop. PURPLE 2 then dove to the right and met the MIG head-on firing 280 rds of 20mm from about 1500 ft down to 800 ft with no observed results. The first MIG broke left and up hard, then yo-yoed back down on the second F-105 critically enough that the pilot was forced to bail out near Danang.

PURPLE Lead and 2 rejoined and resumed MIGCAP with 3 and 4.



[redacted]

## 8. ORDNANCE

(No. fired/No. hit)

| | Missiles | Cannons | Remarks |
|---|---|---|---|
| PURPLE 1 | 1/0 | - | |
| PURPLE 2 | - | 1/0 | 280 rds HEI |
| PURPLE 3 | - | - | |
| PURPLE 4 | 1/0 | - | No target |
| MIG-17 | 2/2 | 2/2 | Hit two F-105Ds |

## 9. EQUIPMENT PROBLEMS

None mentioned.

## 10. AIRCREW COMMENTS

Experience

| | Total Hours | F-100 Time | Combat Missions | Remarks |
|---|---|---|---|---|
| PURPLE 1 | 7000 | 700 | 20 | Sqd C.O., ADC background P-40, P-51 in WW II |
| PURPLE 2 | 2600 | 1800 | 30 | |
| PURPLE 3 | Unknown | ---Very experienced in tactical fighters--- | | |
| PURPLE 4 | Unknown | ---Very experienced in tactical fighters--- | | |

Comments on this Encounter

PURPLE 1 and 2 - Too much chatter on primary frequency. Flights were attempting to practice radio silence but just too many aircraft on one frequency.

PURPLE 1 - Day fighters not too effective over enemy GCI environment. MIGs easily slipped around small number of MIGCAP aircraft.

PURPLE 1 - Navy aircraft passing through the target area added to the location, identification, and discriminative task.

PURPLE 1 - F-105s orbiting on ingress and egress were very hazardous.

PURPLE 1 - Feels his flight of F-100s did a poor job of maintaining flight integrity.

## 11. DATA SOURCES

Project Interviews: PURPLE 1 - 6 November 1968, and PURPLE 2 - 4 November and 6 November 1968.

Messages, Reports: 2 AD 060740, April 1965.

## 12. NARRATIVE DESCRIPTION

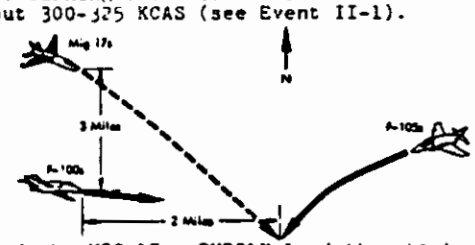
PURPLE flight, consisting of four F-100Ds piloted by four very experienced tactical fighter pilots, was assigned a MIGCAP mission in support of a force of F-105s attacking the Than Hoa Bridge at 19°50'N/105°48'E in North Vietnam. These aircrews had an opportunity to view the damage to an F-8 Crusader that recovered at Danang AB on the previous day, the first U.S. aircraft damaged as a result of air-to-air conflict in SEA.

PURPLE flight departed Danang, proceeded to take on a full load of fuel from a KC-135 tanker and then paralleled the coastline about 10 mi off shore to their orbit area just north of Than Hoa. The flight established a figure eight orbit at 18,500 ft for the first element, about 20,000 ft for the second element, and were attempting to hold fluid four position at 300-350 KCAS.

The orbit was mostly over land with hazy weather conditions limiting visibility, a broken cloud layer at 15,000 ft and thin overcast at 20,000 ft further restricted visibility over enemy territory where the enemy had a GCI capability. U.S. Navy F-4 and F-8 strike and BARCAP aircraft were in the area. U.S. Air Force F-105s were orbiting prior to being called into the target, were shuttling in and out from the target, and then were orbiting over the water for rejoin which further complicated the task of acquiring, identifying and stopping MIG aircraft vectored into the area by GCI radar. Another complication was the need for strict discipline in reducing the use of the single mission frequency used by about 70 aircraft. PURPLE Flight was instructed to call out only positively confirmed MIG aircraft. However, the radio chatter between the mission coordinator and F-105 flights under his direction fairly blocked the frequency.

When the action started, PURPLE Lead was turning through an easterly heading in a shallow right turn at 18,500 ft with PURPLE 2 on his right side and the second element was back to the left and just under the overcast at 20,000 ft. PURPLE Lead had just observed

a flight of Navy F-8 aircraft at his 10 o'clock, a little high, but far out when PURPLE 2 identified two MIG-17s in close formation at his 9 o'clock about 2,000 ft low, 3 mi range in a loose left turn. The MIGs were moving faster than PURPLE flight and the MIGs' southeast heading would take them in front of PURPLE flight toward a flight of F-105s that PURPLE 2 had just seen at his 1 o'clock position about 5 mi range. The F-105s were observed in a left orbit turning from west to south and a few thousand feet below PURPLE flight, probably at about 300-325 KCAS (see Event II-1).




When PURPLE 2 called the MIG-17s, PURPLE Lead thought he was referring to the Navy aircraft and in an effort to reduce radio chatter replied, "Negative PURPLE flight, friendly aircraft". PURPLE 2 also saw the Navy aircraft and replied that they were confirmed MIG-17s passing under PURPLE flight's 11 o'clock low, on a 45° angle. At this time PURPLE 2 was looking for the MIG alert code word to relay the warning to other aircraft in the area.

At the second call from PURPLE 2, PURPLE Lead called, "Let's have at them", and racked the F-100 up on the left wing. PURPLE 2 transmitted the MIG alert and called PURPLE Lead to a right descending break since the MIGs had passed in front of the F-100s by this time. PURPLE Lead and 2 lit afterburner and reversed into a right descending turn that eventually put the MIGs at 11 o'clock about 10,000 ft range. A few more vectors from PURPLE 2 put the MIGs at the lead element's 12 o'clock position. The F-100s were initially falling further behind, but were able to accelerate in the afterburner descent to .9 to .95 Mach (480 to 500 KCAS) and close on the MIGs as the MIGs closed on the F-105s, which were still in a loose left orbit.

PURPLE Lead and 2 saw the lead MIG-17 fire on the lead F-105. PURPLE 2 saw hits on the F-105 with debris coming off the F-105. The Number 2 MIG maintained close formation on the lead MIG's right wing and was not observed to fire. PURPLE Lead hesitated to fire an AIM-9B IR missile at the MIG because of the proximity of the F-105 and by the time he was sure the MIG was the target, he had closed to within 3000 ft of the MIG. PURPLE Lead fired the SIDEWINDER as PURPLE 2 was calling that "He had his pipper on a MIG - Was he clear to fire?"

The SIDEWINDER missile passed 10 ft over the right wing of the lead MIG, but now the F-105 was in afterburner. PURPLE Lead elected not to fire the second missile for fear of hitting the F-105 and decided to close for a gun attack.

He cleared PURPLE 2 to fire and glanced over his shoulder to verify the position of PURPLE 2.

The two MIGs broke hard up when the first missile passed them, MIG 1 turning a little to the left and MIG 2 a little to the right, both flight paths about 20° off the vertical. The F-105 went into a sharp descending spiral so that when PURPLE Lead again looked forward, there were no MIGs or F-105s. The first MIG is reported to have yo-yoed onto the second F-105 and damaged that aircraft enough that the pilot could not attempt a landing and on bailout, experienced a chute malfunction. Both F-105 aircrews were lost.

PURPLE 2 followed the second MIG into the vertical but could not match the rate of turn and overshot the MIG's flight path. The MIG continued over the top pulling into a tight, off vertical loop and continued up in a second loop which would put him behind PURPLE 2. However, PURPLE 2 pulled up into a sort of high-speed yo-yo rather than the loop and when the MIG started back up into the second loop, PURPLE 2 whipped his F-100 into a right descending turn and cut into the top of the MIG's projected flight path. PURPLE 2 put his pipper on the MIG and fired 280 rounds of 20mm HEI in a 35° to 40° dive at the MIG with about 400 KCAS from a range of 1500 ft down to about 800 ft but did not observe any hits. The MIG was inverted and PURPLE 2 was right side up. PURPLE 2 had good tracking with his sight set on air-to-air, uncaged and manually ranged to 1500 ft.

PURPLE 2 passed over the MIG, belly to belly, passed through the MIG flight path with a bit of turbulence and banked to look for the MIG. The MIG went down into the cloud deck and was not seen again.

PURPLE Lead called the flight together so that they could be reformed and ready for additional MIG attacks. PURPLE 3 had jettisoned all stores including his missiles with the emergency jettison button and PURPLE 4 had jettisoned his tanks on the initial MIG break. PURPLE Lead and 2 jettisoned their tanks after rejoin to be ready for the next attack. PURPLE 4 fired an AIM-9B missile without a target, apparently to confirm its operational capability.

[redacted]



PURPLE Lead reported that a missile passed between his aircraft and the MIG when he was initially about 10,000 ft behind the MIG. PURPLE Lead does not think that the missile was that of PURPLE 4 but rather a missile from a Navy Crusader.

PURPLE flight did not see any additional MIGs and returned to Danang with no further incidents.

[redacted]

Event III-4

Aircraft Involved: F-104s vs MIGs
Results: No damage
Vicinity of Encounter: Unknown

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 May 1965/Unknown.

11. DATA SOURCE

CINCPACFLT Staff Study 3-67.

12. NARRATIVE DESCRIPTION

No other information is available except that the MIGs involved were from Hinan Island.

Event III-5

Aircraft Involved: One RB-66 vs MIG
Results: Sighting only
Vicinity of Encounter: 19°13'N/105°55'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 May 1965/1235H.

11. DATA SOURCE

CINCPACFLT Staff Study 3-67.

12. NARRATIVE DESCRIPTION

A B-66 saw an unidentified type MIG at 20 miles. The unidentified aircraft was at 25,000 foot altitude and was turning away.

Event III-6

Aircraft Involved: MIGCAP Flight vs two MIGs
Results: No damage
Vicinity of Encounter: 20°20'N/105°44'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 May 1965/1300H

11. DATA SOURCE

CINCPACFLT Staff Study 3-67.

12. NARRATIVE DESCRIPTION

BLUE flight, composed of aircraft of an unknown type, was on a MIGCAP mission when they saw a silver flash at 31,000 feet altitude. The MIG then jettisoned tanks and reversed course when approached. A second MIG was then seen alongside the first. BLUE flight started to go after the MIGs but stopped after a brief chase and broke off due to fuel.

Event III-7

Aircraft Involved: Four A-1Hs vs two MIG-17s
Result: One MIG-17 destroyed
Vicinity of Encounter: 20°10'N/105°25'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 June 1965/1835H

Four A-1Hs were on a rescap mission. One other flight of four A-1Hs were about 30 miles distant, but were not on the same mission.

2. MISSION ROUTE

BLUE flight penetrated NVN coast approximately 5 miles south of Thanh Hoa, thence northwest at heading of 330°, turning to 315° about time of action.

3. AIRCRAFT CONFIGURATION

BLUE 1, 2, 3, 4

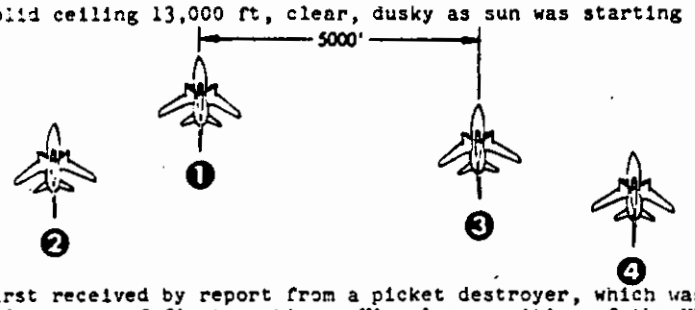
800-20mm rounds (4-20mm cannon)
Two LAU pods, 19 rounds each
Two 300 gal ext tanks
IFF, radio, TACAN

MIG 1, 2

Two rockets each (about 8" DIA)

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: High overcast, solid ceiling 13,000 ft, clear, dusky as sun was starting to set.
Altitude: 9000 ft
Heading: 310 degrees
Speed: 150 KIAS
Fuel: Unknown
Flight Formation:




5. INITIAL DETECTION

Warning of MIGs was first received by report from a picket destroyer, which was tracking MIGs as they closed on rear of first section. Visual recognition of the MIGs occurred as they overtook the first section of BLUE flight and passed it to the right.

6. ACTION INITIATED

After MIGs passed BLUE flight they turned back to launch a head-on attack. BLUE 1 observed MIGs firing two rockets. BLUE 1 ordered BLUE flight to reverse course and dive. All BLUE craft executed a split-S and started a rapid descent.

7. SITUATION DEVELOPMENT

After the MIGs turned back to attack BLUE flight, one MIG pursued BLUE 1 and 2 while the other MIG pursued BLUE 3 and 4. This pursuit took place at very low altitude in the form of a circular route around a ridge line. The engagement lasted about 5 minutes without one MIG breaking off. On the final attack one MIG attacked BLUE 1 and 2, and BLUE 3 and 4 on a head-on pass fired on the MIG, obtaining hits. One of the MIGs, hit by BLUE 3, then crashed.

8. ORDNANCE

| | No. fired/No. hit | | |
|---|---|---|---|
| | Cannon | Rockets | Remarks |
| BLUE 3 | 2/1 | -- | About 30 rounds per gun |
| BLUE 4 | 3/0 | -- | About 30 rounds per gun |
| MIG 1 | No firing | 2/0 | |
| MIG 2 | 1/0 | 2/0 | Fired unknown number of times |

9. EQUIPMENT PROBLEMS

BLUE 3 indicated that his radio became inoperative en route to the area. Radio became operative later. No other significant problems, although as a result of the encounter three of the four engines were overboosted.

## 10. AIRCREW COMMENTS

BLUE 1 believed that, had he realized the hostile rockets were of the ballistic type, they could have downed the MIGs at the outset with their 20mm cannon, instead of talking evasive action.

The SAR destroyer's GCI assistance was fantastically helpful.

The MIG pilot that stayed with them was good.

BLUE 1 was surprised at the MIG-17 maneuverability. The A-1H could not complete a 180° turn in the time it took the MIG-17 to execute a wing over and roll in for a good attack.

## 11. DATA SOURCES

Messages, Reports: Debrief of BLUE 1 (17 Jan 67)
Debrief of BLUE 3 (17 Jan 67)
CTG 77.6 MSG 201523Z

## 12. NARRATIVE DESCRIPTION

The four A-1Hs entered North Vietnam from the sea, penetrating the coast about 5 miles south of Thanh Hoa. They then took up a heading of about 315°, at 9000 ft and 150 KIAS. The flight was in two sections abeam of each other and about 5000 ft apart, with BLUE 3 and 4 to the right of BLUE 1 and 2.

When at a position of 20°10'N/105°25'E the SAR picket destroyer reported two non-squaking, high speed contacts closing from a bearing of 347° and and 45 miles (about 135 miles from the SAR destroyer). The destroyer tracked the bogies and called them at 1, 3, and 5 o'clock to BLUE flight. The contacts were lost at 12 miles at 6 o'clock from BLUE flight. (It was felt that this was due to the fact that the targets had turned tail to the ship.

BLUE 1 looked behind him, and within a short time picked up two bogies at 6:30 to 7 o'clock about 3000 ft above BLUE flight. (This put the bogies at about 12,000 ft altitude and 500 to 1000 ft below the overcast.) When seen, the bogies appeared to be about 2 miles away.)

The bogies, on a straight course, paralleling that of the A-1Hs, passed off to the left about 1 to 1-1/2 miles away without changing altitude. The bogies were estimated to be flying at about 350 to 400 kts. The wingman of the bogies was on the right and they were in a tight formation.

As the bogies passed out ahead, they were identified as MIG-17s due to their outline and shape. BLUE flight turned slightly toward the MIGs and started a slow descent. BLUE 1 felt that the MIGs were heading for the other A-1Hs, having lost contact with BLUE flight. He therefore called the other flight to warn them of the MIGs' presence.

As the MIGs got about 5 miles in front of BLUE flight, they abruptly turned 180° to the left and started back in a descent towards BLUE flight, approaching from 11 to 11:30 o'clock. At this time BLUE flight was at 8000 to 8500 ft altitude indicating 180 to 190 kts.

BLUE flight set up for a head-on pass at the MIGs since this type of attack was best for the A-1s. When the MIGs reached 3 to 4 miles range,[1] the lead MIG (MIG-1) launched two large rockets. BLUE 1 felt that these were air-to-air missiles and broke the flight off from the head-on attack and started to execute a split-S to the right and down. During this maneuver, BLUE 1 observed the rockets to burn out on a ballistic trajectory off to the right. BLUE 3 also observed one smoke trail to his left, after about 3000 ft of descent.

In the 50 to 60 degree dive, BLUE flight reversed course and leveled off at 150 to 200 ft AGL. BLUE flight was then heading about 140 degrees, toward the coast; and BLUE 3 and 4 were several hundred feet above BLUE 1 and 2 and were off to the beam.

At this point, BLUE flight observed the MIGs to be close behind them. One MIG was following each section of BLUE flight.

BLUE 1 observed a MIG to be 150 to 300 ft behind BLUE 3 and 4, firing steady (not in bursts). The tracers appeared to be passing beneath BLUE 3 and 4. Although there was a MIG close behind BLUE 1 and 2, he was not observed to fire.

BLUE 1 and 2, who had full power at this time, jettisoned tanks and broke right, around the edge of a karst cliff, putting the karst between them and the MIG.

As BLUE 1 and 2 broke right, BLUE 3 and 4 observed smoke trails and a rocket exploding on the ground in front of BLUE 1 and 2. BLUE 3 saw the MIGs behind them and jettisoned tanks and rolled off to the left. He observed the MIG behind him to continue to fire. BLUE 3 kept moving in and out of the MIGs' fire as the MIGs tried to pull lead.

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[1]Due to the lighting conditions, the range was difficult to estimate.

Finally the MIG (MIG-2) overshot and climbed away. As the MIG did so, BLUE 4 got a snapshot but missed.

This MIG (MIG-2) then climbed up above BLUE flight, and although he stayed for the rest of the incident, did not again enter the flight.

BLUE 3 and 4 observed the other MIG (MIG-1) to follow BLUE 1 and 2 and failing on one pass, reversed for another from head-on. However, the MIG did not make it successfully and broke off without firing. BLUE 1 and 2 were at this time pulling maximum g's (in the buffet) and were in maximum power, keeping the airspeed at about 200 kts.

BLUE 1 and 2 ended up on the opposite side of the karst ridge from BLUE 3 and 4. The MIG,, by climbing and executing a nose high reversal, could reposition on BLUE 1 and 2. BLUE 1 and 2 kept the MIG from getting a good position on them by maneuvering to keep the ridge between them and the MIG as the MIG rolled in. This was done by maneuvering through a saddle in the ridge. The MIG made several passes in this manner by use of the yo-yo maneuver.

After going around several times, BLUE 1 observed the MIG to be above them in a 90° bank as they passed through the saddle.

BLUE 1 and 2 passed through the saddle with the MIG behind. At this time BLUE 3 and 4 came back up over the karst at a 90° deflection to the MIG, and BLUE 3 fired but missed, observing the tracers to pass in front of the MIG.

The MIG then turned in to BLUE 3 and 4 in a climbing pass as BLUE 3 and 4 descended toward the MIG. On a head-on pass, BLUE 3 and 4 each had a good shot, as the MIG passed underneath BLUE 3 and above BLUE 4.

BLUE 3 held the nose down to stay on the MIG; and just before he broke off, he observed tracers go into the MIG and pieces come off. BLUE 3 and 4 turned back on him as BLUE 4 got off a quick burst but missed.

The MIG slowly increased his angle of bank and impacted the ground, exploding on impact and burned. The MIG was in a 90° bank when he passed BLUE 3 and 4.

BLUE 1 and 2 heard BLUE 3 call the hit on the MIG; and after passing to the other side of the karst, saw the burning wreckage.

All members of the flight then saw the other MIG depart toward Hanoi, climbing into the overcast. BLUE 1 and 2 started for the coast, with BLUE 3 and 4 following by about 15 miles. At this time the SAM destroyer called to say that there were numerous unidentified contacts coming to intercept them, so BLUE flight stayed at low altitude to the coast. The contacts broke off as BLUE flight passed over the coast.

BLUE 3 and 4 pulled 3 to 4 g's during their maneuvers. Although the rocket pads were armed, they were not fired for fear of hitting the other section. BLUE 3 fired with a fixed sight, with the pipper set to zero deflection. BLUE 3 utilized the tracers to assist in aiming.

BLUE 1 did not expect the MIG-17 to try to get down low and mix it up with the A-1s. During the engagement the altitude never exceeded about 700 ft except for the MIG's yo-yo which went up to about 2000 ft.

MIG-1 was never observed to fire his cannon.

Event III-8

Aircraft Involved: Two RF-101s vs two MIG-17s

Result: No damage

Vicinity of Encounter: 21°45'N/104°05'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 12 October 1965/day

8. ORDNANCE

MIGs fired cannon.

11. DATA SOURCES

Messages, Reports:

CINCPACFLT Staff Study 3-67.

12. NARRATIVE DESCRIPTION

Two RF-101s on a reconnaissance mission near Yen Bai were attacked by two MIG-17s. No damage.

[redacted]

Event III-9

Aircraft Involved: Two RF-101s vs two MIGs
Results: No damage
Vicinity of Encounter: 21°41'N/104°58'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 15 November 1965/1445H

Two RF-101s (BLUE Flight) were on a photo-reconnaissance near the city of Yen Bai, NVN.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Unknown

| | BLUE 1 | BLUE 2 |
|---|---|---|
| Altitude: | 9,000 ft | |
| Heading: | 031° | |
| Speed: | Unknown | |
| Fuel State: | Unknown | |
| Flight formation: | Loose staggered trail with wingman on the left. | |

5. INITIAL DETECTION

BLUE 2 sighted two MIG-type (model unknown) aircraft at 4 o'clock high (15,000 ft) crossing above and behind BLUE Flight. Positive identification was made at this time.

6. ACTION INITIATED

BLUE Flight maintained course and engaged afterburner for acceleration.

7. SITUATION DEVELOPMENT

The MIGs pulled up to a high perch position on the left side of BLUE Flight, then broke down to the right and opened fire (cannon) on BLUE 2 who was left and behind BLUE 1. BLUE 1 completed his photo run, and then broke down to the left while BLUE 2 maintained course. BLUE 2 pulled up into a steep climb until reaching 300 kts, then did a split-S down to 500 ft with the MIGs in pursuit. During this maneuver, BLUE 1, ahead of BLUE 2, was able to elude the MIGs and make a maximum speed egress toward friendly territory. BLUE 2 increased to maximum speed and descended to 100 ft AGL. He elected to cross Yen Bai at low altitude in hopes of exposing the MIGs to their own ground fire. (Yen Bai is a heavily defended area with approximately 200 guns.) BLUE 2 crossed Yen Bai at 100 ft while receiving intense flak and AW fire; however, his high airspeed kept him out in front of the ground fire. One min and 30 sec after crossing Yen Bai, BLUE 2 entered a fog-filled valley and executed a rapid climb to 44,000 ft. The MIGs were not seen after this maneuver. Neither BLUE 1 or 2 received any damage and returned home safely.

8. ORDNANCE

MIGs - cannon fire - no hits

11. DATA SOURCES

2nd AD, OPREP-3, 151536Z Nov 65, DOCO-O 07312

12. NARRATIVE

See items 5-7.

Event III-10

Aircraft Involved: Two RF-101s vs two MIG-?
Results: Sighting only
Vicinity of Encounter: 21°38'N/106°15'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time 16 November 1965/1638H

11. DATA SOURCES

Messages, Reports:

CINCPACFLT Staff Study 3-67.

12. NARRATIVE DESCRIPTION

BLUE Flight sighted two MIGs at 10 nmi range. BLUE Flight popped into the clouds, and lost sight of MIGs. [redacted]



[redacted]

[redacted]

Event III-11

Aircraft Involved: Six A-4Es and two A-4Cs vs at least three MIG-17s

Results: No damage

Vicinity of Encounter: 21°04'N/106°32'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 25 November 1965/1448H

Eight A-4Es (BLUE and PURPLE Flights) and four A-4Cs (GREEN Flight) were on a strike mission against the Me Xa Highway Bridge (JCS 18.66). There were support aircraft for this mission.

2. MISSION ROUTE

The aircraft were from the USS Ticonderoga, operating from YANKEE Station.

3. AIRCRAFT CONFIGURATIONS

A-4E BLUE and PURPLE

2 - MK-82
2 - MK-83

A-4C GREEN

2 - MK-83
Bombs

8. ORDNANCE

(No. fired/No. hits)

| | Air-to-Air Rocket | Cannon | Remarks |
|---|---|---|---|
| MIG 1 | 1/0 | | One rocket at PURPLE Flight |
| MIG 2 | 1/0 | | One rocket at PURPLE Flight |
| MIG 3 | | 1/0 | |

9. EQUIPMENT PROBLEMS

One member of BLUE Flight's gun jammed (either BLUE 3 or BLUE 4).

11. DATA SOURCES

Messages, Reports:

CTG 77.7 251030Z OPREP-3
CINCPACFLT Staff Study 3-67
USN COMBAT REPORT FORM 3480-4

12. NARRATIVE DESCRIPTION

The weather was one-tenth cloud cover with 15 mi visibility. At 1445H PURPLE Flight was retiring at 500 ft altitude and 450 KIAS from a bombing run when they were attacked by two MIG-17s which fired rockets without obtaining hits. PURPLE Flight was unaware of this attack which was witnessed by BLUE 1 and 2 from 10,000 ft altitude as BLUE Flight rolled in on the target. The MIGs attacked PURPLE from 2000 ft altitude from the 5:30 o'clock high position.

A single MIG-17 (MIG 3) made a pass on BLUE 3 and 4 while they were in their dive bomb run and fired 23mm or 37mm cannon. BLUE 3 and 4 made an abrupt turn into the MIG and forced him to overshoot and pass between BLUE 3 and 4, under BLUE 3 and over BLUE 4. BLUE 3 and 4 were at 10,000 ft at the time and 350 KIAS, and the MIG made a pass from 8000 ft altitude from 4 o'clock low. Either BLUE 3 or 4 got into a gun tracking position but his guns would not fire. BLUE 3 and 4 then continued on and bombed the target, having received no damage from the MIG attack.

As GREEN 3 and 4 approached the bomb release point, they were attacked by two MIG-17s which fired cannon. GREEN 3 and 4 were at 6000 ft and 450 KIAS and the MIG attacked from 3000 ft altitude at 6 o'clock low. BLUE 3 and 4 jettisoned their tanks and one of the A-4s was hit by a single 23mm round. He retired from the scene at 1415H and recovered without further incident.

The other A-4C was repeatedly engaged by three MIG-17s at 3000-5000 ft altitude just east of the target area for about 5 min (he disengaged at 1653H). This A-4 encountered MIGs a total of five times. Although the MIGs, in five separate passes, fired cannon, no damage was sustained. The first encounter was by a single MIG-17 who made a flat pass from 9 o'clock, firing cannon from 3000 ft range. Both the MIG and the A-4 were at 3000-5000 ft, and the A-4 was at 500 KIAS. The second encounter was an attack by two MIG-17s, one from 7 o'clock and another from 4 o'clock in flat passes. The MIGs were at

[redacted]

4000 ft altitude and fired cannon from a range of 1000 ft or less. The A-4 was at 5000 ft altitude and 500 KIAS. The last encounter was again by two MIG-17s who made a pass from 5 o'clock and 7 o'clock firing cannon from 2000 ft range. The MIGs and the A-4 were at 3000-5000 ft and the A-4 was at 500 KIAS.

All A-4 aircraft retired from the target area as soon as they had disengaged from the MIGs. The F-8E BARCAP attempted to locate the MIGs but were unsuccessful.

The enemy aircraft had two red stripes around the after fuselage and a large single star on the vertical tail. One pilot reported a good view of a dark-colored star with a yellow border.

Event III-12

Aircraft Involved: Two RF-8As vs two MIG 19s

Results: Sighting only

Vicinity of Encounter: 20°08'N/107°42'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 25 November 1965/1510H.

II. DATA SOURCE

Project Interviews: None.

Messages, Reports:

CINCPACFLT Staff Study 3-67.

12. NARRATIVE DESCRIPTION

Two RF-8As (BLUE Flight) at 25,000 feet altitude saw two MIG 19s at low altitude. BLUE Flight was in orbit, waiting to make a photo BDA (bomb damage assessment) run on the target hit by the aircraft of Event III-11. There was no engagement with the MIGs, who apparently did not see BLUE Flight.

[redacted]

Event III-13

Aircraft Involved: Two RF-101s vs four to six MIGs

Results: No damage

Vicinity of Encounter: 21°47'N/104°59'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 26 November 1965/1123H

Flight of two RF-101s (BLUE Flight) in NVN.

5. INITIAL DETECTION

On scanning aft, the number two man of BLUE Flight sighted four to six MIGs attacking and observed gun flashes.

6. ACTION INITIATED

BLUE Flight executed a left break in afterburner and descended to 200 ft AGL.

7. SITUATION DEVELOPMENT

No hits were sustained by BLUE Flight, and the MIGs made no further pursuit.

8. ORDNANCE

| | Cannon |
|---|---|
| MIGs | No hits |

11. DATA SOURCES

Messages, Reports:

CPF 262301Z Nov 65, (Navy Msg)
CINCPACFLT Staff Study 3-67

Event III-14

Aircraft Involved: One RF-8A and one F-8C vs one MIG-21 (probable)

Results: Sighting only

Vicinity of Encounter: 19°40'N/107°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 15 January 1966/1200H

Two F-8s (BLUE Flight) on a photo reconnaissance mission in NVN. One aircraft was the photo airplane, the other was acting as escort.

5. INITIAL DETECTION

BLUE Flight sighted a delta wing silver aircraft on a westerly heading at 19°40'N/107°30'E at a range of 8 nmi (probable MIG-21). The unidentified aircraft passed directly over BLUE Flight at an estimated altitude of 40,000 ft. The bogey made no heading change, and no engagement followed.

11. DATA SOURCES

CTG 77.3, OPREP-4/068, 150658Z Jan 66

12. NARRATIVE DESCRIPTION

See item 5.

[redacted]

[redacted]

Event III-15

Aircraft Involved: Two F-4Bs and one EA-3B vs Radar Contact

Results: Radar contact

Vicinity of Encounter: 19°45'N/107°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 January 1966/0950H

Two F-4Bs (BLUE Flight) were on BIG LOOK CAP.

11. DATA SOURCES

CTG 77.6 190420Z Jan 1966 OPREP-3

12. NARRATIVE DESCRIPTION

BLUE Flight held two targets on airborne intercept gear at 50 mi at approximately 0950H. The estimated position of the targets was 30 mi southeast of Haiphong with an estimated speed of 350-375 kts and estimated altitude of 25,000 ft on a northerly course. The SAR DD could not confirm targets and directed BLUE Flight to remain with BIG LOOK EC-121 in the vicinity of 19°45'N/107°20'E.

Event III-16

Aircraft Involved: One EA-3B vs Radar Contact

Results: Radar contact only

Vicinity of Encounter: 20°30'N/108°18'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 January 1966/0953H

An EA-3B (GREEN Flight) from the Kitty Hawk was on ELINT mission over the Gulf of Tonkin.

11. DATA SOURCES

CTG 77.6 190420Z Jan 1966 OPREP-3

12. NARRATIVE DESCRIPTION

GREEN Flight, in position 20°30'N/108°18'E, altitude 30,000 ft, called MIG attack imminent at 0953H when a steady, apparent lock-on from a SCAN ODD signal was received from a bearing of 300T. GREEN Flight broke away from signal and accelerated. The signal shifted to search mode and the lock-on was not re-acquired. GREEN Flight returned to the carrier without further incident.

No visual contact was made at any time.

[redacted]

[redacted]

Event III-17

Aircraft Involved: One F-4B and one EA-3B vs Unidentified contact

Results: Radar contact

Vicinity of Encounter: 19°44'N/106°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 January 1966/0832H

An EA-3B (GREEN Flight) escorted by one F-4B (BLUE Flight) was flying ELINT in support of a BLUE TREE mission.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Unknown

| | BLUE | GREEN |
|---|---|---|
| Altitude: | 30,000 ft | 30,000 ft |
| Heading: | 320° | 320° |
| Speed: | .7 IMN | .7 IMN |
| Fuel State: | Unknown | Unknown |
| Flight Formation: | Unknown | Unknown |

5. INITIAL DETECTION

GREEN Flight received a signal from a bearing of 350°, with contact closing from 20°20'N/106°25'E.

6. ACTION INITIATED

GREEN broke away and BLUE Flight attempted to acquire contact on radar.

7. SITUATION DEVELOPMENT

See item 12.

8. ORDNANCE

None

11. DATA SOURCES

CTG 77.6 200522Z Jan 66 OPREP-3

12. NARRATIVE DESCRIPTION

GREEN Flight, escorted by BLUE Flight, flying ELINT in support of a BLUE TREE mission, received indications of MIG airborne intercept tracking at position 19°44'N/106°30'E, time 0032Z. BLUE and GREEN Flights were flying at 30,000 ft, course 320°, and speed Mach 0.7 indicated at the time. The signal was first received from bearing 350° and the contact appeared to be closing from position 20°20'N/106°25'E. GREEN Flight gave warning to BLUE Flight and then broke away. GREEN Flight lost contact immediately after breaking.

BLUE Flight turned into the contact but was unable to acquire the target either visually or on radar. GREEN and BLUE Flights then returned to the carrier. Approximately 2 min of tape of the signal were recorded.

[redacted]

[redacted]

Event III-18

Aircraft Involved: One F-4B vs two unknowns
Results: Radar contacts
Vicinity of Encounter: 18°40'N/107°42'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 8 February 1966/1000H

One F-4B (BLUE Flight) was an escort mission.

4. FLIGHT CONDITIONS

Weather: Unknown

| | BLUE 1 (both contacts) | |
|---|---|---|
| Altitude: | 22,000 ft | |
| Heading: | 335° | |
| Speed: | 320 KIAS | |
| Fuel State: | Unknown | Unknown |
| Flight Formation: | N/A | |

5. INITIAL DETECTION

BLUE Flight detected a contact on radar bearing 60°.

The second contact was picked up bearing 270° at 15 nmi range.

6. ACTION INITIATED

At both contacts BLUE Flight attempted to close on the target.

7. SITUATION DEVELOPMENT

See item 12.

8. ORDNANCE

None

11. DATA SOURCES

CG 1st MAW 081204Z Feb 66 OPREP-3

12. NARRATIVE DESCRIPTION

An F-4B was an escort mission weaving east to west and making good a track generally 335° at 320 KIAS and 22,000 ft. BLUE Flight contacted (on radar) an unidentified aircraft at 080200Z bearing 60° and located at approximately 18°40'N/107°42'E and orbiting. BLUE chased the contact to within 12 n mi range when the unidentified aircraft turned to approximately 18,000 ft, speed unknown. BLUE Flight returned to escort without visual contact.

At 080210Z, BLUE Flight, under same flight conditions as described above, contacted an unidentified aircraft orbiting at approximately 18,000 ft at location 18°40'N/107°42'E bearing 270° at 15 n mi from BLUE Flight. BLUE Flight closed to within 8 n mi when unidentified aircraft left orbit and proceeded on course 280° (garbled) speed unknown. BLUE Flight again returned to escort without visual contact.



[redacted]

Event III-19

Aircraft Involved: One EA-3B vs three Contrails
Results: Sighting
Vicinity of Encounter: 20°00'N/111°50'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 10 February 1966/1349H

One EA-3B, BLUE Flight, flew a mission to update the electronic order of battle of Hainan Island.

2. MISSION ROUTE

The mission track is shown in the following table:

| Track Coordinates | Time |
|---|---|
| Launch Cubi Point | 0310Z |
| 17°36'N/110°23'E | 0432Z |
| 18°00'N/108°15'E | 0448Z |
| 19°00'N/108°00'E | 0458Z |
| 18°00'N/108°15'E | 0511Z |
| 17°36'N/110°23'E | 0523Z |
| 20°00'N/111°50'E | 0547Z |
| 17°36'N/110°23'E | 0613Z |
| Land Cubi Point | 0730Z |

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear with visibility unlimited. Contrail level unknown.

| | BLUE 1 |
|---|---|
| Altitude: | 30,000 ft |
| Heading: | 030° |
| Speed: | Unknown |
| Fuel: | Unknown |
| Flight Formation: | N/A |

5. INITIAL DETECTION

BLUE Flight observed two contrails at 8 o'clock high.

6. ACTION INITIATED

BLUE Flight reversed course.

7. SITUATION DEVELOPMENT

See item 12.

11. DATA SOURCES

VQ-1 CUBI PT 101234Z Feb 66 OPREP-4

12. NARRATIVE DESCRIPTION

During the mission the majority of intercepts were of the EW/GCI type. A SCAN FIX ECM intercept occurred a few seconds after the contrails were observed, and the height finder at Lung Men was active. BLUE Flight reversed course at 0549Z, position 20°00'N/111°50'E, maintaining visual contact and increased speed to .82 Mach. Bogeys reversed course and rapidly overtook BLUE Flight on parallel course commencing at 5 o'clock position. At this time a third contrail was observed.

When two bogeys reached the 3:30 o'clock position, they turned toward BLUE Flight and pushed over in a descent. Just prior to leaving the contrail level, the bogeys became visible but unidentifiable.

BLUE Flight commenced a rapid descent at 0554Z position 19°35'N/111°35'E as bogeys descended from the contrail level. The db level increased from 12 to 24 as the bogey's bearing moved aft. SCAN FIX and height finder contacts were lost in descent.

BLUE Flight commenced climb at 0601Z position 18°50'N/111°10'E and SCAN FIX was re-acquired at 0604Z at 18db as BLUE passed through 14,000 ft at 18°35'N/111°00'E. Closest approach was estimated to be 7 n mi.

[redacted]

Event III-20

Aircraft Involved: Two RF-101s vs 2 Bogeys

Results: Sighting

Vicinity of Encounter: 22°35'N/103°05'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 12 February 66/1440H

A flight of two RF-101s (BLUE Flight) had just completed a photo reconnaissance run in NVN.

11. DATA SOURCES

2nd AD OPREP-3, 122049Z Feb 66, DOCO-O 13328
CINCPACFLT Staff Study 3-67

12. NARRATIVE DESCRIPTION

BLUE Flight sighted two bogeys in the vicinity of the Chinese border (22°35'N/103°05'E) at an altitude of 40,000 ft. Bogeys were on a southerly heading, but made an abrupt turn to the west at time of sighting. No positive identification could be made.

Event III-21

Aircraft Involved: EA-3B, F-4B vs possible MIG-17D

Result: Radar contact only

Vicinity of Encounter: 18°48'N/107°16'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 February 1966/Unknown

An EA-3B(GREEN Flight) was on an ELINT collection mission, while an F-4B (BLUE flight) was on BLUE TREE Mission escort.

8. ORDNANCE

None

11. DATA SOURCES

Messages, Reports:

USAF Fighter Weapons School, Bulletin No. 3.

12. NARRATIVE

Green flight had received and held an ECM contact evaluated as SCAN ODD radar (carried by MIG-17D) signal. GREEN flight estimated that the MIG was in an intercept run position and immediately initiated evasive action, and called for BLUE flight support from BLUE TREE mission escort. BLUE flight made radar contact and initiated an intercept. The bogey turned and headed for the shoreline in the Thanh Hoa area. Pursuit was broken off due to the SAM envelope and no visual contact was made. Radar contact was lost when the bogey crossed the beach.

[redacted]

[redacted]

Event III-22

Aircraft Involved: Two RF-101s vs one MIG
Results: Sighting
Vicinity of Encounter: 20°50'N/105°00'E

1. **PRIMARY MISSION AND TACTICAL SITUATION**

Date/Time: 15 March 1966/1121H

BLUE Flight was on a reconnaissance mission.

4. **FLIGHT CONDITIONS PRIOR TO ENCOUNTER**

| | BLUE 1 | BLUE 2 | MIG |
|---|---|---|---|
| Altitude: | 15,000 ft | | 40,000 ft |
| Heading: | Unknown | | 225° |
| Speed: | Unknown | | 600-600 kts |

5. **INITIAL DETECTION**

BLUE 1 and 2 sighted bogey above.

6. **ACTION INITIATED**

None

7. **SITUATION DEVELOPMENT**

Bogey made a 180° turn 25 mi after being sighted. No incidents.

8. **ORDNANCE**

None

11. **DATA SOURCES**

160833Z, 2nd Air Division, DOCO-0 15359, Mar 1966

12. **NARRATIVE DESCRIPTION**

BLUE 1 and 2 were 20 n mi north of Sam Neua at 14,000 ft. They sighted a bogey at 20°50'N/105°00'E (believed to be a MIG because of his flight pattern) at 40,000 ft heading 225°. After about 25 n mi, the MIG made a 180° turn toward Hanoi at point 20°25'N/104°45'E and contact was lost. There was no further sighting.

[redacted]

Event III-23

Aircraft Involved: Two RF-101s vs eight MIGs
Results: Sighting
Vicinity of Encounter: Near Hanoi

1. **PRIMARY MISSION AND TACTICAL SITUATION**

Date/Time: 17 March 1966/1222H

A flight of RF-101s (BLUE Flight) on a reconnaissance mission near Hanoi, NVN.

5. **INITIAL DETECTION**

BLUE Flight sighted four flights of two MIGs each.

6. **ACTION INITIATED**

None

7. **SITUATION DEVELOPMENT**

First MIG flight was seen at 1222H. The MIGs approached to 5 n mi, made a 180° turn, and headed toward the Hanoi area at 1229H. The second and third flights of MIGs approached to within 20-25 n mi, made a 180° turn, and departed. The fourth flight closed to within 10 n mi, broke off south as if to set up for an intercept, but then departed toward Hanoi. All MIG flights were estimated to be at 30,000 ft altitude.

11. **DATA SOURCES**

CINCPACAF, 180035Z Mar 66, DIE 20481

12. **NARRATIVE DESCRIPTION**

See items 5 and 7.

Event III-24

Aircraft Involved: Two F-4Cs vs Bogey
Results: No damage
Vicinity of Encounter: 21°15'N/107°30'E

1. **PRIMARY MISSION AND TACTICAL SITUATION**

Date/Time: 8 April 1966/0906H

Two F-4Cs (BLUE Flight) were on a SILVER DAWN/BIG EYE escort mission.

11. **DATA SOURCES**

35 TFW Danang FASTEL at 1510Z 8 April 1966

12. **NARRATIVE DESCRIPTION**

At 0906H, BLUE Flight, while flying a SILVER DAWN/BIG EYE mission at 30,000 ft altitude, 510 KTAS on a heading of 040° TRUE, and at a location of 20°15'N/107°30'E, received a call from Ethan Alpha that he had a radar lock on a bogey.

Ethan Alpha vectored BLUE 1 and 2 on a heading of 360° and at that time BLUE Flight picked up a radar lock. The bogey was heading 270°. The radar contact was acquired at 10° right and 15 mi range. BLUE Flight descended to 7000 ft altitude and the bogey was painted on radar above them.

BLUE Flight climbed to 10,000 ft altitude and closed to within 3 mi of the bogey and lost radar contact. Visual contact was not made due to heavy haze. The weather was heavy haze below 10,000 ft with visibility 2-3 n mi.

BLUE Flight started a search orbit at this time but broke off the search when they discovered they were over land. At 0910H, BLUE Flight turned to a heading of 120° to depart the area. Ethan Alpha lost contact with the bogey before BLUE Flight lost contact.

[redacted]

Event III-25

Aircraft Involved: KA-3B vs MIGs

Results: One KA-3B lost

Vicinity of Encounter: 21°N/110°E

1. **PRIMARY MISSION AND TACTICAL SITUATION**

Date/Time: 12 April 1966/Unknown

A KA-3B was enroute from Cubi Point to USS Kitty Hawk.

11. **DATA SOURCES**

NMCSD Listing of US Aircraft downed by MIGs
OP-05W Box Score

12. **NARRATIVE DESCRIPTION**

The KA-3B was tracked northeast of Hinan Island to Chinese coastline. Was downed by CHICOM MIG cannon fire. Suspect crew oxygen system malfunction was contributing cause to loss.

Event III-26

Aircraft Involved: Two F-4Cs vs Bogeys

Results: Radar contact

Vicinity of Encounter: Unknown

1. **PRIMARY MISSION AND TACTICAL SITUATION**

Date/Time: 27 April 1966/Unknown

11. **DATA SOURCES**

DIA Intelligence Summary 4-28-66

12. **NARRATIVE DESCRIPTION**

Two USAF F-4C aircraft at 26,000 ft altitude, on a MIGCAP mission for a B-52 strike at Mu Gia Pass, picked up two bogeys on radar approximately 25 mi southwest of VINH.

Event III-27

Aircraft Involved: Two F-4Bs vs Bogey

Results: Radar contact

Vicinity of Encounter: --

1. **PRIMARY MISSION AND TACTICAL SITUATION**

Date/Time: 28 April 1966/1405H

Two F-4Bs (BLUE Flight) were on BARCAP.

11. **DATA SOURCES**

CTG 77.7 2810372 April 1966 OPREP-4

12. **NARRATIVE DESCRIPTION**

BLUE Flight, from VF-96, were vectored on a bogey by an E-1B and a SAR destroyer. The bogey began to retreat toward Hanoi at this time (1405H) at an altitude of 4000 ft. BLUE Flight broke off the chase when they crossed the coast. They could not close less than 15 mi range and achieved no visual contact.

[redacted]

[redacted]

Event III-28

Aircraft Involved: One A-1E vs MIG

Results: A-1E lost probably to MIG

Vicinity of Encounter: 21°30'N/104°45'E.

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 29 April 1966/1745H

Two A-1Es (BLUE Flight) were on a RESCAP mission for a downed RF-101.

11. DATA SOURCES

CINCPACFLT Staff Study 3-67
7th AF 292155Z April 1966 OPREP-3 DOCO-0-18654
NMCSD Listing of US aircraft downed by MIGs

12. NARRATIVE DESCRIPTION

BLUE 1 and 2 from Udorn were on a RESCAP mission. They were in the area of the downed RF-101 when a MIG alert was received. BLUE 1 and 2 then immediately departed the area but became separated.

When MIGCAP was re-established, BLUE 1 proceeded back to the orbit area and at this time noticed that BLUE 2 was missing. Radio contact was attempted without success.

BLUE 2 had sufficient fuel to remain airborne until 2030H.

Event III-29

Aircraft Involved: Two A-4Cs and one A-4E vs one MIG-15 and one MIG-15/17

Results: Sightings

Vicinity of Encounter: 20°55'N/105°50'E and 21°02'N/105°35'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 12 July 1966/1135H

Two A-4Cs (BLUE Flight) were part of a force attacking the Co Trai railroad bridges. (21°42'N/105°55'E.) The strike force also included some A-4Es.

11. DATA SOURCES

CINCPACFLT Staff Study 3-67
CTG 77.8 120650Z Jul 66

12. NARRATIVE DESCRIPTION

An IRON HAND element BLUE Flight reported one MIG-15/17 taking off from Haiphong-Gai-Lam airfield (21°02'N/105°35'E) at 1135H.

An A-4E also sighted one MIG-15 flying at 20°55'N/105°58'E heading 120°. The MIGs avoided contact in both sightings.

[redacted]

[redacted]

Event III-30

Aircraft Involved: One EC-121M vs one MIG-21
Results: Radar contact only
Vicinity of Encounter: 19°15'N/106°53'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 24 July 1966/1805H

An EC-121 from Danang was on a BIG LOOK mission over the Gulf of Tonkin.

11. DATA SOURCES

CINCPACFLT Computer Listing of MIG Events
VQ-1 241245Z July 1966

12. NARRATIVE DESCRIPTION

An EC-121 BIG LOOK aircraft intercepted a CROSS-UP IFF signal at a range of 48 n mi. The contact appeared to be a MIG-21 making a low level intercept. As the contact was 44 mi away, the EC-121 commenced a diving right turn and headed for the SAR destroyer.

Two F-4Bs on BARCAP were vectored to investigate but the target faded.

This incident is thought to be the first observed attempted low altitude intercept by NVN aircraft against U.S. aircraft operating over water in the Gulf of Tonkin.

Event III-31

Aircraft Involved: One RC-47 vs MIGs
Result: One RC-47 lost
Vicinity of Encounter: 20°12'N/104°17'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 29 July 1966/1610H

The RC-47 was on a combat support - other mission.

11. DATA SOURCES

Messages, Reports:

7 AF 292245Z July 1966 DIO 30105
7 AF 220730Z August 1966 MSG 29241
XOXS 67-2567 - Description of air-to-air losses
NMCSD listing of US aircraft lost to MIGs
DIA Intelligence summary of MIG events
CINCPACFLT Staff Study 3-67

12. NARRATIVE DESCRIPTION

An RC-47 on a combat support mission was heard to transmit that he was under attack by hostile fighters. The call was intercepted by A-1Es in an orbit south of the C-47 and relayed.

SAR and RESCAP aircraft were scrambled but the C-47 did not return to base. The C-47 was downed by MIG cannon fire and the crew is missing.

[redacted]

[redacted]

Event III-32

Aircraft Involved: Four A-4s vs two MIG-17s
Result: No damage
Vicinity of Encounter: 20°06'N/105°51'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 August 1966/0656H

BLUE Flight (four A-4Es) and GREEN Flight (two A-4Es) on a search and destroy mission had located a train. BLUE 3 and 4 had expended all weapons and departed. BLUE 1 and 2 had also expended all weapons but were remaining in the target area to assist GREEN Flight (on an IRON HAND mission) that was inbound to help BLUE Flight destroy the train. There was a BARCAP flight over the target.

2. MISSION ROUTE

Unknown

3. AIRCRAFT CONFIGURATIONS

Four A-4Es BLUE Flight

6 - MK-81 bombs
6 - MK-82 bombs
400 gal tank
20mm cannon (port gun not armed)

Two A-4Es GREEN Flight

4 - MK-81 bombs
2 - SHRIKE missiles

MIG-17

Silver
External tanks

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered clouds at 2000-3000 ft.

| | BLUE 1 2 | GREEN 1 2 |
|---|---|---|
| Altitude: | 5000 ft | Unknown |
| Heading: | Approx. 300° | Approx. 160° |
| Speed: | 300 kts | Unknown |
| Fuel State: | Unknown | Unknown |
| Flight Formation: | Element | Element |

5. INITIAL DETECTION

BLUE 1 saw the MIGs come across target low and fast on a reciprocal heading.

6. ACTION INITIATED

BLUE Flight executed a left 270° turn to a heading of approximately east. In this turn the MIGs yo-yoed up and left and ended up at 6 o'clock to BLUE Flight.

7. SITUATION DEVELOPMENT

GREEN Flight was coming up to join BLUE Flight. The MIGs started firing 37mm at BLUE. BLUE 2 did a hard right 360° turn and as he did this, the MIGs broke off and departed.

8. ORDNANCE

(No. fired/No. hits)

| | Cannon | Remarks |
|---|---|---|
| MIG 1 and 2 | Unknown/0 | Fired 37mm only |

9. EQUIPMENT PROBLEMS

None.

10. AIRCREW COMMENTS

Experience

| | Total Hours | A-4 Hours | Remarks |
|---|---|---|---|
| BLUE 1 | 3800 | 3200 | Second Combat Cruise |

No other experience information available.



[redacted]

Comments on This Encounter

BLUE 1 - Recommends saving 20mm any time striking north of Thanh Hoa in case MIGs attack. The MIG acquisition of the A-4s should have been easy.

MIG shooting was poor.

Comments on Overall Experience

BLUE 1 - Likes gun in fighter.

Wants a "super SPARROW" that can hit any target as long as the target is in the windscreen at launch.

## 11. DATA SOURCES

Project Interviews: BLUE 1, 3 May 1967
Messages, Reports:

CTG 77.6 161222Z Aug 66 OPREP-3

## 12. NARRATIVE DESCRIPTION

BLUE Flight of four A-4Es was on an early morning mission and had arrived at the coast before sun-up. They crossed the coast near the hour glass rivers and turned south towards Thanh Hoa. At about 0628H they saw a train at 20°06'N/105°52'E and began to attack it with both bombs and guns. They made runs expending all of their ordnance and then called in an IRON HAND flight (GREEN Flight) which was orbiting off the coast. BLUE 3 and 4 departed at this time. The IRON HAND came in and attacked the train and BLUE 1 and 2 stayed to provide direction for the attack. After the IRON HAND flight had attacked, the force had made between 20 and 30 passes on the train. At this time they had been on the target about a half hour.

BLUE 1 and 2 were at 5000 ft altitude, at 300 KIAS, east of the target, heading approximately northwest when BLUE 1 saw an aircraft coming off of the target. The range was about 3 mi at 9 o'clock at BLUE 1. It was seen against the dark background and BLUE 1 recognized it as a MIG-17. The MIG was heading southeast and was pulling up at 2000 ft altitude. The MIG, at 450 kts, was observed to drop his tanks and light his afterburner.

BLUE 1 then called MIGs and instructed the members of GREEN Flight who had just pulled off the target to egress.

BLUE 1 and 2 then turned 270° into the MIGs, at 5 "g" in buffet, and joined on GREEN 1 and 2 in a line abreast formation.

During the turn, BLUE 1 saw a second MIG trailing the first.

As BLUE 1 and 2 made their turn, the MIGs executed a high speed yo-yo and ended up at 6 o'clock, pulling lead and firing their 37mm cannon. It was observed to fire slowly and the shells were seen to detonate in front of the A-4s. The MIGs were 2000 ft away and at co-altitude (about 1000 ft AGL).

BLUE 1 felt that the situation was not too critical so he did not jettison his tanks. At this, BLUE 1 switched to guard and called MIGs and his position.

At this time, the four A-4s (BLUE 1 and 2, and GREEN 1 and 2) were egressing to the east. BLUE 2 at this time broke off to the right and the MIGs broke off and departed the area toward the northwest. BLUE 2 completed a 360° turn and joined the rest of the A-4s for egress.

The BARCAP did not hear the A-4's MIG call.

[redacted]

Event III-33

Aircraft Involved: Two A-4s vs three MIG-17s
Results: Sightings only
Vicinity of Encounter: 20°30'N/107°06'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 23 August 1966/1135H.

11. DATA SOURCE

Project Interviews: None.

Messages, Reports:

CINCPACFLT Staff Study 3-67.

12. NARRATIVE DESCRIPTION

Two A-4Es (BLUE Flight) observed MIG-17s on two individual encounters separated by 10 minutes.

In the first encounter, BLUE Flight observed two MIG-17s heading southeast to Ile de Cac Ba at 3000 feet altitude. These MIGs were observed to turn 180 degrees and return to the vicinity of Haiphong. At the point of closest approach the MIGs were five miles away.

A third MIG-17 was sighted as BLUE Flight was outbound from the target. This MIG was at 25,000 feet, heading west. The MIG turned toward BLUE Flight and then proceeded west again and disappeared.

No warnings were heard by BLUE Flight.

Event III-34

Aircraft Involved: EC-121 vs one MIG-17
Results: No damage
Vicinity of Encounter: 19°47'N/107°00'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 10 September 1966/0830H

11. DATA SOURCE

CINCPACFLT Computer Run Listing MIG Events
7 AF 1122320Z Sept 1966

12. NARRATIVE DESCRIPTION

A BIG LOOK aircraft detected a conical scan, SCAN ODD airborne intercept radar signal. The signal strength was 54 decibels at a bearing of 265° from BIG LOOK. At 0827H, BIG LOOK issued a MIG warning based on a bearing cutting the coastline at GEOREF CG-4 (area northeast of Haiphong).

Shortly after the warning, the PIRAZ ship (Red Crown) directed BIG LOOK to turn south. A turn was made to a heading of 180° true; the bogey platform was estimated to be within 5-10 mi range in lock-on mode (conical scan).

At 0831H a rapid bearing change of 300° in 1.5 min occurred coupled with a signal strength of 64 decibels indicating that the MIG circled BIG LOOK as BIG LOOK completed a turn descending into the clouds at 8000 ft.

The SCAN ODD signal faded at 0832H on a bearing of 330° as the BARCAP aircraft were vectored in pursuit.

BARCAP intercept was broken off as the MIG approached land and no visual sightings were obtained.

Note: This is the second attempted intercept of BIG LOOK aircraft (see Event III-45A)

The ECM data from this intercept indicated that the MIG circled the EC-121 as the EC-121 descended into a cloud bank.

The MIG aircraft was tracked by the PIRAZ ship which vectored the CAP toward the MIG. The MIG ran for the beach and no visual sighting was ever held as the BARCAP intercept was broken off as the MIG approached land.



[redacted]

[redacted]

Event III-35

Aircraft Involved: One EB-66B and four F-4Cs vs two MIG-21s

Results: Sightings

Vicinity of Encounter: 21°43'N/104°14'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 10 September 1966/0941H

Four F-4Cs (BLUE Flight) were escorting two EB-66 (GREEN Flight) aircraft who were on an ECM mission.

11. DATA SOURCES

CINCPACFLT Staff Study 3-67
460 TRW 100944Z September 1966 CCE 11306
7th AF 112320 September 1966

12. NARRATIVE DESCRIPTION

The B-66s were in their orbit pattern between 22°15'N/104°06'E and 21°52'N/104°02'E from about 0935H until 1013H. The lead EB-66C (GREEN 1) was at 30,000-32,000 ft altitude and the EB-66B (GREEN 2) was at 28,000 ft altitude trailing GREEN 1 by 15 mi.

At 0941H GREEN 2 observed two MIG-21s at 24,000 ft heading 050°. GREEN 1 was at 21°43'N/104°14'E at 28,000 ft altitude heading 240°. The MIGs passed below GREEN 2. They were in sight 5 sec.

Three min later, BLUE Flight reported lock-on with the same MIGs but had zero overtake. BLUE Flight then broke off the chase and continued escort.

GREEN Flight had received three MIG alerts prior to the sighting but none were in the immediate vicinity.

Event III-36

Aircraft Involved: Two F-4Bs vs MIGs

Results: Radar contact

Vicinity of Encounter: 20°25'N/107°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 10 September 1966/2020H

Two F-4Bs from the USS CONSTELLATION were on a night escort mission over the Gulf of Tonkin.

11. DATA SOURCES

7th AF Computer Listing of MIG Incidents

12. NARRATIVE DESCRIPTION

Two F-4B aircraft made radar contact with MIG-17s after being warned of the MIGs presence by the agencies.

[redacted]

[redacted]

Event III-37

Aircraft Involved: Two F-4Bs vs Bogey
Results: Radar contact only
Vicinity of Encounter: 20°00'N/106°25'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 24 September 1966/2020H

II. DATA SOURCES

CTG 77.8 241530Z September 1966 OPREP-4

12. NARRATIVE DESCRIPTION

Two BARCAP aircraft, BLUE 1 and 2, were vectored by Red Crown to investigate a contact in the vicinity of 20°00'N/106°25'E. The time was 2020H and the contact was at about 7000 ft altitude.

After closing to about 30 mi, BLUE Flight was instructed to break off the intercept vector due to tentative assessment of the contact as a possible friendly aircraft.

BLUE Flight started to resume normal BARCAP station but were recommitted at 2030H on the same contact. In the meantime, the contact had orbited about 15 mi from the coast over water in the vicinity of 20°00'N/106°25'E.

As the BARCAP were committed the second time, BLUE 1 closed to 25 mi range and gained a momentary contact on his radar.

At this time the contact turned inland and accelerated from 250-500 kts and was lost overland.

BLUE 1 and 2 broke off the run about 10 mi from the beach.

Event III-38

Aircraft Involved: F-4B vs Contact
Results: Radar contact only
Vicinity of Encounter: 20°35'N/107°26'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 October 1966/0235H[1]

II. DATA SOURCES

CTG 77.6 042305Z October 1966 OPREP-4

12. NARRATIVE DESCRIPTION

TARCAP aircraft obtained a lock-on on two high speed air contacts in the vicinity of 20°35'N/107°26'E at 1835Z. An E-1B aircraft held radar contact with two EF-10B aircraft in the area and one possible unknown. Contact was broken at 1834Z due to no positive identification.

[1]Or 4 October, 1835Z.



[redacted]

[redacted]

[redacted] Event III-39

Aircraft Involved. E-1B vs Contacts

Results: Radar contact only

Vicinity of Encounter: 20°35'N/107°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 6 October 1966/0026H[1]

11. DATA SOURCES

CTG 77.6 052136Z October 1966 OPREP-4

12. NARRATIVE DESCRIPTION

An E-1B aircraft held an unidentified high speed air contact in the vicinity of 20°35'N/107°20'E at 0025H, heading 200°.

The BARCAP was vectored to intercept, however, the bogey turned north and disappeared from the E-1B scope in the vicinity of 20°50'N/107°00'E at 0030H. The BARCAP did not acquire the bogey on AI radar.

[1] or 5 October 1966/1626Z

[redacted]



[redacted]

[redacted]

Event III-40

Aircraft Involved: Four A-1Hs vs four MIG-17s[1]

Results: One MIG-17 destroyed and one MIG-17 damaged

Vicinity of Encounter: 20°32'N/105°46'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 9 October 1966/1013H

Four A-1Hs were orbiting with a helicopter at 19°45'N/106°10'E in a SAR position for a possible RESCAP for a downed strike aircraft.

2. MISSION ROUTE

The route was from the ship to 19°45'N/106°10'E. Then when called, entered coast heading 295° to 19°53'N/105°57'E for 15 miles, then 350° for 25 miles, then 030° for 12 miles and then vectors to 21°32'N/105°46'E. Egress was via the same route.

3. AIRCRAFT CONFIGURATIONS

BLUE 1, 2, 3, 4

2 LAU 10 rocket packs
20mm cannon (800 rounds)

MIGs

Guns
Blue-gray with red stars

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered to broken clouds at 4000 feet with tops to 6000 to 7000 feet. Visibility restricted by haze.

| | BLUE 1 and 2 | BLUE 3 and 4 |
|---|---|---|
| Altitude: | 500 ft | 1500 ft |
| Heading: | Unknown | Unknown |
| Air Speed: | Unknown | 260 kts |
| Fuel: | Unknown | Unknown |

Flight Formation: Unknown

5. INITIAL DETECTION

Warning was given by an E-2A aircraft of bogeys approaching from the north. BLUE 2 then observed tracers going by BLUE 1's wing from 6 o'clock high.

6. ACTION INITIATED

BLUE 1 and 2 then broke and descended into valley with the MIGs following.

7. SITUATION DEVELOPMENT

BLUE 2 saw two MIGs follow BLUE 1 so he broke left taking two MIGs with him. He flew in and out of valleys which placed the attacking aircraft in difficult situations. The MIGs then attacked BLUE 2 but on their attack passed in front of him at which time he fired cannon and rockets at them, achieving cannon hits on one aircraft. By this time, BLUE 3 and 4 arrived with the helicopter and attacked the MIGs. BLUE 3 saw two MIGs on BLUE 2's tail and made two passes at them. BLUE 4 saw a MIG on his right, rolled in and destroyed the MIG.

8. ORDNANCE

| | No. fired/No. hits | | | |
|---|---|---|---|---|
| | 20mm | ZUNI | Cannon | Remarks |
| BLUE 2 | ~7/1 | Several/0 | | One MIG damaged |
| BLUE 3 | 3/0 | | | Two beam, one head-on |
| BLUE 4 | 1/1 | | | One MIG destroyed |
| MIGs | | | Many/0 | Once at BLUE 3 and many times at BLUE 1 and 2 |

9. EQUIPMENT PROBLEMS

None.

[1]There were initial reports that these were SU-7s [redacted]



[redacted]

## 10. AIRCREW COMMENTS

Experience: Unknown

Comments on this Encounter:

BLUE 3 - Observed open in-take on head-on pass.
BLUE 4 - Aircraft had one large tailpipe.
All BLUEs: Delta wings, wing mounted on fuselage with wing root guns.

Comments from Overall Experience:

BLUE Flight: Consider rough terrain and low altitude as a major factor in their safety. Successful flight due to E-2A calling and bogeys and radar vectors to search area.

## 11. DATA SOURCES

Messages, Reports: OPREP-3 Z090438Z October 66 from CTG 77.5
OPREP-3 Z090745Z October 66 from CTG 77.5
OPREP-3 Z091719Z October 66 from CTG 77.5
OPREP-3 Z091018Z October 66 from CTG 77.5
Recommendation for Awards P 100108Z October 66 from Intrepid

## 12. NARRATIVE DESCRIPTION

BLUE Flight of four A-1Hs launched from the Intrepid at 0700H from a position of 19°17'N/106°33'E as target RESCAP for Phu Ly strike. The flight arrived on station at 19°45'N/106°10'E orbiting over the rescue helicopter. At 0922H the flight was advised that an F-4B was down and their assistance required at 20°32'N/105°46'E.

BLUE 1 and 2 proceeded to the SAR scene with BLUE 3 and 4 remaining to escort the helicopter. The flight crossed the coast at 19°53'N/105°57'E on a vector of 295° for 15 miles, then they proceeded on a vector of 350 degrees for 25 miles, then 030 degrees for 12 miles, as directed by the E-2A aircraft. BLUE 1 and 2 crossed the coast at 0925H at 4000 feet altitude, climbing to 6500 feet. BLUE 3 and 4 followed by about 10 minutes at altitudes between 6000 and 9000 feet. Both sections encountered moderate, inaccurate 37mm flak, concentrated mainly on the helicopter. Flak became very light after crossing the Song Ma River at 20°00'N.

BLUE 1 and 2 arrived on the rescue scene at 0953H and descended to 4500 feet for search. At 1010H BLUE Flight was warned by E-2A aircraft of bogeys approaching from the north at 27 miles. BLUE 1 and 2 headed for the mountains 8 miles away to get cloud cover, descending to 500 feet above the terrain.

Shortly thereafter (about 1013H), BLUE 2 observed tracers from 6 o'clock high going below and ahead of BLUE 1 and called a break. BLUE 1 broke right descending further into valleys to remain below the ridge lines. BLUE 2 saw two aircraft follow BLUE 1 in a climbing turn and then he broke left. BLUE 1 saw two other aircraft follow BLUE 2.

BLUE 1 made no attack runs and had no firing opportunities.

BLUE 1 and 2 then lost contact with each other and BLUE 2 soon observed himself under attack by three aircraft. BLUE 2 found several narrow valleys between ridges about 800 feet high. By flying into the valleys and around the ridges he forced the attacking aircraft into difficult maneuvering situations. The three aircraft attacked successively from all aspects, beginning runs from within low clouds. During these attacks each aircraft would usually pass in front of BLUE 2. At such time BLUE 2 would fire 20mm and ZUNI rockets. He obtained no rocket hits but at one time he saw his 20mm hitting the MIG as he fired from the enemy's 9 o'clock position. He observed debris coming from the wing root and smoke or fuel trailing as the MIG retired. BLUE 2 made no attack runs but was able to fire about 7 times.

After BLUE 2 had damaged the MIG, BLUE 3 and 4, escorting the helicopter, arrived on the scene at 1025H. BLUE 3 and 4 were at 1500 feet and about 250 knots (as a result of en route descent) BLUE 3 saw BLUE 2 low at his 10 o'clock position and under attack by two aircraft from the rear. BLUE 3 rolled left into an attack run and made two high side runs from above, firing 20mm. After the second run BLUE 3 rolled out into a head-on situation with the enemy aircraft. Both fired at each other, but no hits were achieved.

BLUE 4, after BLUE 3 began his attack, saw an aircraft low at 2 o'clock, about 1500 feet away. BLUE 4 began a high speed descent closing on the target. The enemy aircraft saw BLUE 4 and started a left climbing turn. BLUE 4 began firing at 300 feet and closed to 200 feet observing 20mm hitting the tailpipe section. The enemy aircraft then dropped sharply on its right wing and dove through the clouds followed by BLUE 4. Beneath the clouds BLUE 4 saw the aircraft and the pilot ejected and the seat separated from the pilot.

The enemy aircraft disengaged at 1035H. BLUE Flight continued the SAR mission until 1045H when BLUE 3 and 4 departed with the helicopter. BLUE 1 and 2 departed at 1105H, and crossed the coast at 1120H.

The crews of BLUE Flight considered the rough terrain, and low altitude as a major factor in their safety. The E-2A support with its timely reporting of bogey tracks navigation vectors was also a significant factor.

The four enemy aircraft were in lally thought to be FITTER (SU-7) or FACEPLATE, based on the crew's description of the fuselage, wing and a report of the horizontal tail on the fuselage.

BLUE 1 and 2 landed on the carrier with about 300 pounds of fuel.

[redacted]

Event III-41

Aircraft Involved: EA-3B vs Bogey

Results: Radar contact only

Vicinity of Encounter: 20°08'N/107°16'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 10 October 1966/Unknown

II. DATA SOURCES

Messages, Reports:

FEC 130055Z October 66 PECPDC
FAIRECGNRON One 121500Z October 66
TAF 152237 October 66 DIO 30666

12. NARRATIVE DESCRIPTION

An EA-3B aircraft flying over the Gulf of Tonkin reported intercepting a SPIN SCAN B airborne intercept radar. The intercept frequency was 9320 MCS and was received in both search and track mode.

One DF heading 330° true from 20°08'N/107°16'E was reported. This bearing indicates the signal source was in the Cat Bi - Haiphong area.

The signal was later confirmed by analysis as belonging to a MIG-21D equipped to handle the air-to-air beam rider missiles. However, no quadrant marker pulses which would indicate missile guidance were observed during this intercept.

This was the first confirmed SPIN SCAN intercept in NVN.

Event III-42

Aircraft Involved: Four F-4Cs vs Unidentified

Result: Radar contact only

Vicinity of Encounter: 20 nmi from NVN coast

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 10 October 1966/1450H

II. DATA SOURCES

Messages, Reports:

CINCPACFLT Computer listing of MIG Events.

12. NARRATIVE DESCRIPTION

BIG EYE initiated a flight of F-4C to intercept an unidentified aircraft. PIRAZ held the F-4s and the unidentified aircraft and monitored the progress. The intercept was broken off 20 nmi from the coast, as the unidentified aircraft faded over southern China.

As the intercept was broken off, there was a border violation broadcast on the air for GEOREF CG-no color.

[redacted]

[redacted]

Event III-43

Aircraft Involved: Two RF-101s vs two MIG-19s

Results: Sighting

Vicinity of Encounter: Unknown

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: November or December 1966

Two RF-101s (BLUE Flight) on a photo reconnaissance mission in NVN.

11. DATA SOURCES

Letter from BLUE 1.

12. NARRATIVE DESCRIPTION

BLUE Flight saw two MIG-19s at 6 o'clock about 5 mi away. The RF-101s accelerated and left the MIGs.

Event III-44

Aircraft Involved: Two F-8Es vs possible MIG

Results: Radar contact

Vicinity of Encounter: 20°39'N/106°09'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 28 November 1966/1155H

11. DATA SOURCES

CTG 77.4 280848Z November 66 OPREP-3/004

12. NARRATIVE DESCRIPTION

Just prior to 1155H, two F-8Es from the USS TICONDEROGA, who were on a BARCAP mission, were vectored by PIRAZ (Red Crown) to intercept one possible MIG aircraft.

At approximately 1155H when the two F-8Es (BLUE 1 and 2) were at 20°39'N/106°09'E, they were fired upon by six SA-2 missiles. At this time the F-8Es were heading 300° at 7500 ft MSL above a solid cloud layer with tops at 5000 ft when a missiles away transmission was heard on guard channel.

BLUE 2 immediately reported a flashing red APR-27 light. BLUE 1 saw a SAM at BLUE 2's 6 o'clock about 1000 yd away and called a hard right break. This SAM detonated 500 ft from BLUE 2 and a second detonated 1500 ft from BLUE 2.

BLUE 2 then saw a third missile at BLUE 1's 6 o'clock and called a left break. This SAM detonated about 400 ft above BLUE 1. BLUE 1 then reversed and a fourth SAM detonated about 1000 ft at 10 o'clock. Two more SAMs passed between BLUE 1 and 2 and detonated 2500-3000 ft above the flight.

The hard break evasion tactics were successful in avoiding the missiles and the lowest altitude reached by BLUE Flight was 5500 ft.

After the SA-2 firings, PIRAZ observed four additional possible MIGs on radar which were trailing the original single bogey. BLUE 1 and 2 were then vectored clear of the area. It was believed that this was a trap to lure the BARCAP into a SAM envelope. However, no damage was sustained.



[redacted]

[redacted]

Event III-45

Aircraft Involved: Four F-4Cs and one EB-66C vs possible MIG

Results: Radar contact

Vicinity of Encounter: 20°35'N/104°02'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 28 November 1966/1412H

## 11. DATA SOURCES

432 TRW 281240Z November 1966 OPREP-4 CCE 18915

## 12. NARRATIVE DESCRIPTION

One EB-66C (GREEN 1) and its high cover of F-4Cs (BLUE Flight) were on an ELINT collection mission in North Vietnam and Laos.

GREEN 1 departed Takhli at 1240H and was on watch 1312H at a position of 17°42'N/103°02'E. The initial point was at 20°00'N/104°40'E. The route continued through 21°42'N/103°45'E; then through 21°42'N/104°30'E; then through 21°33'N/103°48'E (at 1402H); then to 19°00'N/104°24'E (at 1424H) and went off watch at 1432 at 18°12'N/103°44'E.

At 1409H, GREEN 1 picked up an AI radar in search mode at 11 o'clock position. At this time GREEN 1 was at 20°51'N/103°58'E heading 165° and at 27,000 ft. GREEN 1 was in the clear above an 8000-10,000 ft broken deck. GREEN 1 inquired of BLUE Flight if they were painting anything at that bearing. BLUE Flight confirmed a single return at 14 mi range with a speed of 500 kts.

At 1410H when at 20°51'N/103°59'E, GREEN 1 reported that he was lock-on by an AI radar. BLUE flight reported the bogey at 3 mi range from GREEN 1 and closing. Neither GREEN or BLUE crew members saw the bogey at any time during the intercept. As the bogey passed above or below GREEN 1 the AI radar returned to search. The fly-by occurred at 1412H at a location of 20°35'N/104°02'E.

GCI radars were unusually active and FIRECAN signals strong all during the incident. It is believed that the bogey could have been locked on chaff which had been dispensed by GREEN 1 (both RR-44 and RR-59 were being dropped at this time).

Although the intercepted AI radar signals were similar to that of the F-4C AI radar (APQ -72), the presence of a single F-4C in this area was highly unusual.

[redacted]

[redacted]

Event III-46

Aircraft Involved: Four F-4Bs vs Bogeys

Result: Radar contact

Vicinity of Encounter: 20°30'N/107°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 2 December 1966/1420H

Four F-4Bs (BLUE Flight) from the Coral Sea were on a flak suppression mission for a ROLLING THUNDER 52A strike. The target was at approximately 21°23'N/106°16'E.

11. DATA SOURCES

Coral Sea Report No. 036

12. NARRATIVE DESCRIPTION

BLUE Flight, armed with MK-82 bombs, performed a flak suppression function on active flak sites located near 21°23'N/106°16'E, between 1351H and 1358H.

SAM guidance radar was detected by the APR-27 at 1400H and chaff was dropped from 12,000 ft altitude.

The weather was clear, with 4-5 mile visibility in haze.

At 1420H, BLUE Flight detected two possible bogeys at 20°30'N/107°40'E. These bogeys were detected on radar and were at 15 miles range, low and closing at a rate of 600 kts. At this time BLUE Flight was at 25,000 ft altitude, heading 180 deg at 450 kts.

The bogeys turned to a heading of 090 and the closing rate dropped to 50 kts, with BLUE Flight in a 0.8 n mi trail position. Since it was determined that BLUE Flight could not overtake, due to fuel state, the incident was reported to RED CROWN. The F-4s were soon thereafter diverted for a SAR mission.

Event III-47

Aircraft Involved: EB-66C vs two MIG-21s

Result: Sighting

Vicinity of Encounter: 22°25'N/105°22'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 December 1966/0818H

Two EB-66, one B and one C, (Blue Flight) were on an ECM mission.

11. DATA SOURCES

Messages, Reports:

432 TRW 041900Z Dec 66, MSG 18992
7th AF 042250Z Dec 66, MSG DIO 30926
CINCPACFLT Staff Study 3-67

12. NARRATIVE DESCRIPTION

BLUE 1 sighted two MIG-21s flying north at 11 o'clock position, approximately eight miles away. At the time of sighting, BLUE 1 was flying west on the first orbit at 0818H, position was 22°25'N/105°22'E. Both MIGs made left descending turns to the clouds and were lost from sight.

Immediately after, fighter bombers below were heard to call alerts for MIGs. Some fighter (no call sign heard) was heard to say, "Who got him?" Response was, "Number 3 or number 4 got him." This was believed to mean one of the MIGs was shot down. (Note: Possibly refers to Event 70, Vol. II.)



[redacted]

[redacted]

Event III-48

Aircraft Involved: Two F-4Cs vs two unidentified aircraft

Result: Radar contact

Vicinity of Encounter: 21°05'N/106°45'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 December 1966/1130H

Two F-4Cs (BLUE Flight) were on CAP over the Gulf of Tonkin, under the direction of RED CROWN.

## 11. DATA SOURCES

Messages, Reports:

7th AF 042250Z Dec 66, DIO 30926

## 12. NARRATIVE DESCRIPTION

At .102H RED CROWN called MIG alert for area AF-2, and 28 minutes later BLUE 1 and 2 were vectored toward two bogeys orbiting at 2500 ft in area BG-4. Bogeys headed towards BLUE Flight but turned back at approximately 21°05'N/106°45'E. BLUE Flight then turned back southeast and bogeys went into an extended left-hand racetrack orbit.

BLUE Flight was vectored toward bogeys three times between 1130H and 1145H, as the bogeys attempted to draw U.S. aircraft into SAM envelope.

Each time the bogeys turned back to west when BLUE Flight reached the coast BLUE Flight's extreme position was 20°50'N/107°00'E and minimum distance to bogeys was 20 n mi. No visual contact was made.

[redacted]

[redacted]

[redacted]



[redacted]

Aircraft Involved: Two EB-66s vs one MIG-21
Results: No damage
Vicinity of Encounter: 21°05'N/104°07'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 December 1966/1057H

Two EB-66 aircraft orbiting between 20°30'N/104°30'E and 21°20'N/104°30'E. They were on active/passive ECM support for armed recce missions numbers FB-5643-3 and D-3A.

2. MISSION ROUTE

Departed Takhli, direct to 19°22'N/103°53'E, direct to 21°15'N/104°40'E, direct orbit between 20°30'N/104°30'E and 21°20'N/104°30'E, direct 18°15'N/103°10'E, direct Takhli. Refueling was as planned.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Not given.

| | BLUE 1 | BLUE 2 |
|---|---|---|
| Altitude: | not given | |
| Heading: | 30,000 ft | |
| Speed: | not given | |
| Fuel State: | not given | |
| Flight Formation: | BLUE 2 in trail with BLUE 1; undetermined distance, same altitude. | |

5. INITIAL DETECTION

Received MIG warnings: MIG, 6A at 0950, 1006 and AG-1 at 1009, QG-2 at 1015, AG-1 at 1017, and AG-1 at 1025. Observed possible MIG-21 at 1057H.

10. AIRCREW COMMENTS

None.

11. DATA SOURCES

Messages, Reports:

7thAF DIA(005) 052317Z Dec 66 DIO 30934
432TRW, OPREP-4 X Electronic Warfare 053 050922Z Dec 66
432TRW 19005

12. NARRATIVE DESCRIPTION

An EB-66 and an EB-66B at 21°05'N/104°07'E observed one silver, delta wing aircraft (possible MIG-21) heading east to west at true course of approximately 090°, altitude 10-15,000 ft and estimated airspeed of 350 kts. The aircraft did not alter its course nor appear hostile.



[redacted]

[redacted]

[redacted]

Event III-50

Aircraft Involved: USN aircraft vs one possible MIG-21

Result: Sighting

Vicinity of Encounter: 20°57'N/105°47'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 December 1966/1602H

11. DATA SOURCE

CTG 77.7 OPREP-3 PINNACLE 0002/CH1, 14 December 1966

12. NARRATIVE DESCRIPTION

A possible MIG-21 sighting was reported by USN aircraft flying from the USS Roosevelt. One silver gray aircraft was seen heading 230° at position 20°57'30"N/105°47'E, with a speed in excess of 500 kts. The altitude of the bogey was 200 ft and the time was 1602H. No aircraft markings were observed.

The flight who saw the bogey lost contact immediately after the sighting due to SAM evasion.

The weather for the coast in to west of Thanh Hoa was scattered cloud cover at 5000 ft. In the foothill region, there was broken cloud cover, with bases at 3000 ft and tops at 5000 ft. In the target area there was scattered cloud cover at 5000 ft. In general the visibility was 5-7 miles.

[redacted]

[redacted]

Event III-51

Aircraft Involved: Two RF-101s vs MIGs

Results: Radar contact only

Vicinity of Encounter: 21°08'N/104°41'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 1 January 1967/1545H

Two RF-101s (BLUE Flight) on a photo-reconnaissance mission in NVN. A BIG EYE aircraft had just called a MIG alert in area QG-3.

2. MISSION ROUTE

Flight departed Udorn on a heading of 028°, 15,000 ft, direct to TACAN Channel 97 and climbed to 20,000. Then direct 20°47'N/104°06'E heading 035°, 20,000 ft and 540 kts. Turned east to 090° direct to 20°47'N/104°46'E at 23,000 ft, 540 kts. Then direct to 20°25'N/104°41'E heading 210°, 8,000 ft at 0.98 Mach. (MIG chase began here). Then direct 20°18'N/104°22'E heading 240° at 1.05 Mach; and then direct to Udorn on a heading of 200°, 25,000 ft, 540 kts.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Unknown

| | BLUE 1 | BLUE 2 |
|---|---|---|
| Altitude: | 20,000 ft | |
| Heading: | 080° | |
| Speed: | 0.98 Mach | |
| Fuel State: | Unknown | |
| Flight Formation: | Unknown | |

5. INITIAL DETECTION

At 1545H BLUE Flight got a vector equipment lock-on (X-band strobe) at their 10 o'clock position moving to 9 o'clock. The continuous strobe moved on around and held at their 6 o'clock position. At 1545H MOTEL called MIG alert in QG-3.

6. ACTION INITIATED

BLUE Flight made a break toward the Laos border, heading 210°, descended to 8,000 ft, and then took up a heading of 240°. As BLUE Flight broke, the strobe, which was continuous, moved to 6 o'clock.

7. SITUATION DEVELOPMENT

MOTEL then called a MIG alert at 1547H in QF-2.

BLUE Flight egressed on a heading of 240°, speed 1.05 Mach with the MIGs in tail chase; however, neither aircrew made visual contact with the MIGs. The BLUE Flight was at 20°10'N/104°15'E when a MIG alert was again called in QF-2. The MIGs broke off the chase at 20°20'N/104°35'E, at which time they were at or across the Laotian border. The vector signal was on one ring at the start of this attack and had increased to over two rings when the MIGs broke off.

11. DATA SOURCES

432TFW OPREP-3 011150Z January 67 FASTEL 00016

12. NARRATIVE DESCRIPTION

See items 5-7.

Event III-52

Aircraft Involved: One RF-4C vs two unidentified

Results: Sighting only

Vicinity of Encounter: 21°30'N/103°17'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 2 January 1967/1315H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

BLUE TREE aircraft saw contrails and was followed briefly by contacts until they broke off to the north.

[redacted]

[redacted]

Event III-53

Aircraft Involved: One RF-4C vs Bogey
Results: Radar contact only
Vicinity of Encounter: 20°26'N/103°43'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 3 January 1967/0734H

An RF-4C (BLUE 1) was on a weather recce mission in the north Laos NVN area.

2. MISSION ROUTE

BLUE 1 departed Udorn at 2135Z and proceeded directly to Mekong River 18°18'N/103°16'E. BLUE 1 turned north to Channel 97 (20°26'N/103°43'E). Forty miles south of Channel 97 he picked up an X-band strobe on radar.

3. AIRCRAFT CONFIGURATIONS

Centerline fuel tank

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 10,000 ft overcast, clear above. Visibility 10 mi.

| | BLUE 1 |
|---|---|
| Altitude: | 15,000 ft |
| Heading: | 011° |
| Speed: | unknown |

5. INITIAL DETECTION

Forty nmi south of Channel 97, BLUE 1 received less than a one-ring return on X-band strobe at his 2 o'clock position.

6. ACTION INITIATED

No action was taken. BLUE 1 continued heading 011°.

7. SITUATION DEVELOPMENT

Still heading 011°, the strobe moved to BLUE 1's 6 o'clock position and increased to three-rings. Signal became intermittent as BLUE 1 turned to 030° at Channel 97. BLUE 1 turned to 140° and descended to 10,000 ft. The strobe disappeared. BLUE 1 turned back to course (030°). As BLUE 1 turned to 030°, the strobe came up again to three-rings at 6 o'clock. The pilot decided to abort the mission. He did a 180° turn at 21°10'N/104°25'E at 0739H to a heading of 190°, 10,000 ft, squawked emergency IFF and dropped centerline tank, proceeding directly to BAN BAN (19°30'N/103°30'E). Heading varied slightly and airspeed increased to Mach 1.3. Strobe continued intermittently from 4 o'clock to 8 o'clock position. Strobe signal diminished and quit at 19°30'N/103°30'E. BLUE 1 proceeded to 18°18'N/103°16'E and then directly to Udorn. No bogeys were seen visually. A ground operational check of APR 25/26 equipment showed fully operational. However, it never lit up in flight.

11. DATA SOURCES

Messages, Reports:

030145Z Jan 67 2EL FASTEL TUOC 00055 Jan 67

[redacted]

[redacted]

Event III-54

Aircraft Involved: Two EB-66s vs two MIGs

Result: No damage

Vicinity of Encounter: 21°00'N/103°33'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 6 January 1967/0919H

11. DATA SOURCE

RED BARON MIG Incident Summary of PACAF CP Event 9.

12. NARRATIVE DESCRIPTION

Two MIGs of unidentified type attempted to attack the B-66s. No damage occurred.

Event III-55

Aircraft Involved: One C-135 vs one MIG-17

Results: Sighting only

Vicinity of Encounter: 19°30'N/108°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 15 January 1967/0905H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Tanker called MIG under his nose and headed south; two F-104 CAP rendezvoused with tanker eight minutes later, but saw no MIGs; MIG warning had been passed 40 minutes earlier in Package VIB.



[redacted]

[redacted]

[redacted]

Event III-56

Aircraft Involved: One RF-101 vs one MIG (probable)

Results: Sighting only

Vicinity of Encounter: 20°47'N/102°36'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 January 1967/1035H

One RF-101 (BLUE Flight) was inbound to his secondary target area on a routine reconnaissance mission in NVN.

## 2. MISSION ROUTE

Departed Udorn to 18°18'N/103°16'E; then direct to 20°19'N/104°01'E; then to 20°08'N/103°38'E; then to 21°05'N/102°30'E, south along 102°27'E, to 20°37'N/102°27'E; then to 18°20'N/103°18'E; direct to Udorn.

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Thin cloud layer at 12,000 ft, clear above and below. Visibility unlimited.

| | BLUE 1 |
|---|---|
| Altitude: | 22,000 ft MSL |
| Heading: | 330° |
| Speed: | Unknown |
| Fuel State: | Unknown |
| Flight Formation: | Single Ship |

## 5. INITIAL DETECTION

BLUE's vector equipment gave him an X-band signal at 1 o'clock for approximately 3 min. He then sighted a silver, swept wing aircraft at 1 o'clock, 4 nmi range, and 3000 ft above him. Bogey appeared to be in a quartering head-on attack.

## 6. ACTION INITIATED

BLUE 1 made a hard left break to a heading of 180° and descended rapidly into a cloud deck.

## 7. SITUATION DEVELOPMENT

BLUE 1 continued his turn to a heading of 050° and leveled off at 12,000 ft MSL in full military power with a TAS of 590 kts. He continued making evasive turns along a general heading of 050° until reaching 19°45'N/103°15'E. At this point BLUE 1 climbed back to 22,000 ft and returned to Udorn via 18°19'N/103°10'E without further incident. After the initial sighting, BLUE 1 had no further visual or electronic contact with the suspected MIG. BLUE 1 heard no MIG warnings issued prior to the incident. BLUE 1 did hear ETHAN issue a border warning on guard channel prior to the encounter. Due to the brief time of the encounter, BLUE 1 could not positively identify the aircraft encountered as a swept wing. However, he did not believe the aircraft was a delta wing type.

## 10. AIRCREW COMMENTS

Experience:

| | Total Hours | RF-101 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 4150 | 78 | Unknown | No prior air-to-air engagements |

## 11. DATA SOURCES

Messages, Reports:

432TRW OPREP-3 160514Z Jan 67, FASTEL 00397
432TRW OPREP-3 160734Z Jan 67, FASTEL 00405
432TRW OPREP-3 160914Z Jan 67, FASTEL 00406

[redacted]



[redacted]

[redacted]

Event III-57

Aircraft Involved: One EB-66 vs two MIG-17s
Result: Sighting only
Vicinity of Encounter: 21°30'N/104°45'E

1. PRIMARY MISSION AND TACTICAL SITUATION
   Date/Time: 16 January 1967/1555H

11. DATA SOURCE
   RED BARON MIG Incident Summary of PACAF CP Event 29.

12. NARRATIVE DESCRIPTION
   The crew of the B-66 sighted two MIG-17s. No other action occurred.

[redacted]

[redacted]

[redacted]

Event III-58

Aircraft Involved: One RF-4C vs two MIGs

Result: No damage

Vicinity of Encounter: Approximately 21°04'N/104°45'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 January 1967/1855H

One RF-4C (BLUE Flight) was on a photo reconnaissance mission.

2. MISSION ROUTE

BLUE Flight departed Udorn and proceeded to Channel 97 at 25,000 ft; then to 20°03'N/104°37'E, descending to 8,000 ft; then to Fop Point 21°40'N/104°52'E in a left 90° turn over TOT, descending to mountain top level; thence to 20°49'N/104°01'E. From there he made a climb to altitude then proceeded direct to Udorn.

3. AIRCRAFT CONFIGURATIONS

RF-4C BLUE 1

No armament

MIGs

Unknown type
Silver

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear

| | BLUE 1 |
|---|---|
| Altitude: | 8000 ft |
| Heading: | 240° |
| Speed: | 540 KTAS |
| Fuel State: | Unknown |

Flight Formation: None

5. INITIAL DETECTION

MIGs were detected visually at the 3 o'clock position, three miles away and turning into BLUE 1 on an intercept course. The MIGs were heading 150 deg and were turning in on BLUE 1.

6. ACTION INITIATED

BLUE 1 went into full afterburner, descended to the deck and accelerated out of the area at 700 KTAS.

7. SITUATION DEVELOPMENT

BLUE 1 lost sight of the MIGs as they approached his 6 o'clock position and never regained sight. Due to sunlight glinting off the APR-28/26 scope and other strobes on it, BLUE 1 was not able to determine if the MIGs were registering on the X-band radar warning gear.

8. ORDNANCE

None

9. EQUIPMENT PROBLEMS

None

11. DATA SOURCE

432 TRW 160619Z Jan 67, OPREP-3 TUOC 00410

12. NARRATIVE DESCRIPTION

BLUE 1 was a lone RF-4C on a reconnaissance mission at 8000 ft at 20°04'N/104°45'E when he observed two MIGs, silver in color, at his 3 o'clock position, 3 miles away, heading 150 deg. BLUE 1 was heading 240 deg at 540 KTAS. The MIGs turned into BLUE 1 at which time he unloaded the aircraft, descending to tree top level and accelerating to 700 KTAS out of the area all the way to Channel 97. BLUE 1 then climbed to altitude and returned home safely.

[redacted]



[redacted]

[redacted]

[redacted]

Event III-59

Aircraft Involved: One EB-66B vs one MIG-21
Result: Sighting only
Vicinity of Encounter: 21°50'N/104°45'E

1. PRIMARY MISSION AND TACTICAL SITUATION
Date/Time: 17 January 1967/1539H

11. DATA SOURCE
RED BARON MIG Incident Summary of PACAF CP Event 34.

12. NARRATIVE DESCRIPTION
The crew of the B-66 sighted one MIG-21. No other action occurred.

Event III-60

Aircraft Involved: Two RF-101s vs two unidentified
Results: Sighting only
Vicinity of Encounter: 21°40'N/104°47'E

1. PRIMARY MISSION AND TACTICAL SITUATION
Date/Time: 17 January 1967/1540H

11. DATA SOURCE
CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION
Photo flight at 16,000 ft saw two silver aircraft at 6 o'clock on different heading.

[redacted]

[redacted]

Event III-61

Aircraft Involved: Four F-105s vs two MIG-17s

Results: Sighting only

Vicinity of Encounter: 21°26'N/105°37'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 January 1967/0955H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Armed reconnaissance flight at 15,000 ft saw two MIGs at 8-9000 ft on perpendicular heading.

Event III-62

Aircraft Involved: Two F-4Cs vs two MIG-21s

Results: Sighting only

Vicinity of Encounter: 22°30'N/105°15'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 January 1967/0825H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Lead of ECM escort at 31,000 ft saw two MIGs, possible MIG-21s, at 5 o'clock; MIGs maneuvered and headed away; MIGs closest point of approach was five miles.

Event III-63

Aircraft Involved: Three F-4Cs vs two unidentified

Results: No damage

Vicinity of Encounter: 21°28'N/106°15'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 January 1967/1613H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Remaining three members of flight of aircraft downed by ground fire were in vicinity of downed aircraft; Lead saw two bogeys at 4-6 miles turning in behind flight; flight broke right and up and came under intense ground fire; lost sight of unidentified aircraft.

[redacted]

Event III-64

Aircraft Involved: Four F-105s vs one MIG-17

Results: Sighting only

Vicinity of Encounter: 21°14'N/106°44'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 January 1967/1620H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

After pulling off target, strike flight at 6000 ft saw MIG very low on opposite heading.

Event III-65

Aircraft Involved: Two F-102s vs four unidentified

Results: Sighting only

Vicinity of Encounter: 20°30'N/104°10'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 January 1967/1600H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

CAP Flight at 27,000 ft saw four unidentified aircraft at 18,000 ft; closest point of approach was 8-9 miles; unidentified aircraft may have been friendly.

Event III-66

Aircraft Involved: One B-66 vs one MIG-17

Results: No damage

Vicinity of Encounter: 22°20'N/105°28'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 January 1967/1130H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

ECM aircraft at 28,000 ft saw MIG at 10 o'clock; MIG closed to two miles and turned away.

[redacted]

Event III-67

Aircraft Involved: Two RF-101s vs two MIG-17s

Results: Sighting only
Vicinity of Encounter: 22°00'N/105°15'E

1. PRIMARY MISSION AND TACTICAL SITUATION
Date/Time: 28 January 1967/1620H

11. DATA SOURCE
CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION
Photo aircraft climbing through 10,000 ft saw MIGs directly above at 25,000 ft; MIGs, in orbit, apparently did not see flight, which descended to 100 ft and coutinued mission.

Event III-68

Aircraft Involved: Four F-105s vs three MIG-21s

Results: Sighting only
Vicinity of Encounter: 21°16'N/106°41'E

1. PRIMARY MISSION AND TACTICAL SITUATION
Date/Time: 28 January 1967/1629H

11. DATA SOURCE
CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION
Inbound flak suppression flight saw three MIGs 5-6 miles away; no hostile action.

Event III-69

Aircraft Involved: Four F-105s vs four MIG-17s

Results: No damage
Vicinity of Encounter: 21°18'N/105°45'E

1. PRIMARY MISSION AND TACTICAL SITUATION
Date/Time: 28 January 1967/1632H

11. DATA SOURCE
CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION
Strike flight inbound to same target as flight of Event III-68 saw MIGs at 4-5 miles, 9 o'clock low; flight began turn into MIGs, but MIGs evaded.

[redacted]

[redacted]

Event III-70

Aircraft Involved: Three F-105s vs two MIG-21s

Results: No damage

Vicinity of Encounter: 22°13'N/104°25'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 February 1967/Unknown

II. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight at 18,000 ft saw MIGs breaking away from rear; MIGs turned sharply and disappeared.

Event III-71

Aircraft Involved: Three F-4Cs vs one unidentified

Results: No damage

Vicinity of Encounter: 18°07'N/105°30'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 February 1967/1154H

II. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight climbing off target at 22,000 ft saw contrails at 3 o'clock; three minutes after sighting, unidentified aircraft was seen descending toward flight; unidentified aircraft remained at 5 miles off starboard wing for one minute; subsequent actions of unidentified aircraft indicated it may have been friendly, although silver in color.

Event III-72

Aircraft Involved: Two RF-101s vs one MIG-19/21, one IL-14 and one MI-6

Results: Sighting only

Vicinity of Encounter: 20°25'N/103°55'E
21°27'N/103°17'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 10 February 1967/1418H

II. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Photo flight at 21,000 ft saw silver, swept wing aircraft at 35,000 ft on a reciprocal heading, range 10 miles; 16 minutes later at second position shown, cargo plane at 4000 ft seen coming from Dien Bien Phu; flight flew over cargo aircraft to obtain photos, which subsequently revealed helicopter in vicinity, also.



[redacted]

[redacted]

Event III-73

Aircraft Involved: Four F-105s and four F-4Cs vs two MIGs

Results: Sighting only

Vicinity of Encounter: 22°05'N/104°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 February 1967/1624H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

F-105 IRON HAND flight at 13,000 ft saw two possible MIGs pass in front at eight miles range; six minutes later, F-4C flight saw two unidentified aircraft at 20 miles; F-105s and F-4Cs in same general area.

Event III-74

Aircraft Involved: Three F-105s vs three unidentified

Results: Sighting only

Vicinity of Encounter: 20°44'N/104°54'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 February 1967/0859H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight at 15,000 ft saw three silver aircraft flying over at 36,000 ft; no attack made; unidentified aircraft may have been F-104s, but were headed generally for area of Event III-75.

Event III-75

Aircraft Involved: Four F-4Cs vs two MIGs

Results: No damage

Vicinity of Encounter: 20°58'N/105°02'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 February 1967/0902H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Escort flight at 12,000 ft saw two MIGs descending from 1 o'clock; flight turned into MIGs and got lock-on at 17 miles, but was unable to close; MIGs continued and flight broke off; five SA-2s then fired at flight.

[redacted]

[redacted]

[redacted]

Event III-76

Aircraft Involved: Four F-105s vs four MIG-21s

Results: Sighting only

Vicinity of Encounter: 21°31'N/105°36'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 February 1967/1624H

II. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight made sighting at 6000 ft.



[redacted]

[redacted]

[redacted]

Event III-77

Aircraft Involved: Two RF-4Cs vs two MIGs (probable)

Result: Sighting

Vicinity of Encounter: 21°45'N/104°05'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 23 February 1967/1500H

A flight of two RF-4Cs (BLUE Flight) were inbound on a photo reconnaissance mission of the Tung Tu (6M 1892) and Thang Quang (6M 1836) railroad sidings.

2. MISSION ROUTE

BLUE Flight departed Udorn direct to TACAN Channel 79 at 25,000 ft; then to 21°19'N/103°30'E at 20,000 ft; then to 20°54'N/104°14'E; then to 22°12'N/105°06'E (abort point), and returned via same route.

3. AIRCRAFT CONFIGURATIONS

RF-4C BLUE 1, 2

Vector equipment

MIG 1, 2

Silver color

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clouds, 6,000 ft broken to overcast. Visibility 2 to 3 miles in haze.

| | BLUE 1 | BLUE 2 |
|---|---|---|
| Altitude: | 20,000 ft | |
| Heading: | Generally NE | |
| Speed: | Unknown | |
| Fuel State: | Unknown | |
| Flight Formation: | Unknown | |

5. INITIAL DETECTION

Both BLUE 1 and 2 picked up strong X-band strobing at 21°45'N/104°05'E. Strobing had lasted for 1 1/2 minutes when BLUE Flight made a visual contact on two bogeys at 9 o'clock, 1 n mi range, at 15,000 ft. Unidentified aircraft were silver in color, and were flying a loose abreast formation.

6. ACTION INITIATED

BLUE Flight broke down and right, and lost contact with the unidentified aircraft.

7. SITUATION DEVELOPMENT

No engagement took place; BLUE Flight aborted their mission and returned safely to Udorn.

8. Ordnance

None

11. DATA SOURCES

432 TRW OPREP-3, 230930Z Feb 67, FASTEL 01398

[redacted]

[redacted]

[redacted]

Event III-78

Air[redacted]ed: Four F-105s vs one MIG-21

Results: Sighting only

Vicinity of Encounter: 21°20'N/103°55'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 23 February 1967/1532H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight joining up at 10,000 ft after target run; MIG seen at 14-15,000 ft; no engagement due to low fuel.

Event III-79

Aircraft Involved: One RF-101 vs two unidentified

Results: No damage

Vicinity of Encounter: 20°23'N/104°03'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 25 February 1967/0948H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Photo aircraft in turn at 26,000 ft picked up X-band, range-only light and indication of lock-on for next 30 seconds; at lock-on, RF-101 dived to 7000 ft, where lock-on broken due to cloud bank entry; RF-101 pilot looked back to see two aircraft pulling contrails; aircraft were silver and delta-winged. F-4C possibly in area at time of sight; point of closest approach of the unidentified aircraft was 12 miles.



[redacted]

[redacted]

[redacted]

Event III-80

**Aircraft Involved:** One RF-4C vs two unidentified

**Results:** No damage

**Vicinity of Encounter:** 21°00'N/102°50'E

1. **PRIMARY MISSION AND TACTICAL SITUATION**

Date/Time: 25 February 1967/1105H

11. **DATA SOURCE**

CINCPACFLT Staff Study 6-68.

12. **NARRATIVE DESCRIPTION**

Photo aircraft got X-band strobe, rolled out, saw two unidentified aircraft trying for tail position; RF-4C maneuvered and outran unidentified aircraft.

Event III-81

**Aircraft Involved:** One RF-4C vs ? MIG-?

**Results:** No damage

**Vicinity of Encounter:** 22°10'N/104°45'E

1. **PRIMARY MISSION AND TACTICAL SITUATION**

Date/Time: 5 March 1967/0703H

11. **DATA SOURCE**

CINCPACFLT Staff Study 6-68.

12. **NARRATIVE DESCRIPTION**

Photo aircraft at 1500 ft received X-band strobe from rear; aircraft lit afterburner and maneuvered for 5 minutes until lock-on broken. MIG was not visually sighted due to overcast; mission aborted, partly due to weather, after MIG chase.

Event III-82

**Aircraft Involved:** Four F-105s vs one MIG-15 (probable)

**Results:** Sighting only

**Vicinity of Encounter:** 19°30'N/104°30'E

1. **PRIMARY MISSION AND TACTICAL SITUATION**

Date/Time: 5 March 1967/1615H

11. **DATA SOURCE**

CINCPACFLT Staff Study 6-68.

12. **NARRATIVE DESCRIPTION**

Flight inbound to target at 23,000 ft saw an unidentified aircraft for about 5 minutes; unidentified aircraft described as MIG-15 or F-86 with color and markings unobserved.

[redacted]

[redacted]

Event III-83

Aircraft Involved: Two RF-4Cs vs two MIG-17s (possible)

Results: Sighting only

Vicinity of Encounter: 21°00'N/103°50'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 7 March 1967/1618H

II. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Photo flight enroute at 13,000 ft saw two silver aircraft with swept wings and blunt noses 2000 ft above; unidentified aircraft turned right and photo flight broke down into clouds.



[redacted]

[redacted]

Event III-84

Aircraft Involved: Two RF-4Cs vs one MIG-17 and 4 unidents

Results: No damage

Vicinity of Encounter: 21°13'N/105°00'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 8 March 1967/about 1400H

Two RF-4Cs (BLUE Flight) were on a reconnaissance mission against the Chi Pan RR yard.

2. MISSION ROUTE

BLUE Flight departed Udorn and proceeded to Channel 97 at 19,000 ft. From there they proceeded to 21°13'N/105°00'E at 1000 ft AGL. They then climbed to 6000 ft altitude. After encountering the MIGs they proceeded to 21°24'N/105°09'E and then to Channel 97.

8. ORDNANCE

None

11. DATA SOURCES

432 TRW 081110Z March 1967 OPREP-3 TUOC 01722

12. NARRATIVE DESCRIPTION

From 1558H to 1602H, BLUE Flight turned from the target area and climbed to about 6000 ft on a heading of 230°. They were on this heading about 1 1/2 min when an X-band strong (1 ring - steady) appeared at 3 o'clock.

The crew of BLUE 1 (Lead) saw four unidentified aircraft at 3 o'clock in two elements of two each, in trail about 500 ft apart. The lead element was seen to move toward the 6 o'clock position but visual contact was lost with both elements.

The X-band strobe continued and moved to the 6 o'clock position and increased to 3 rings. BLUE 2 then turned right across BLUE 1's track to check the 6 o'clock and saw one swept wing, blunt-nose silver aircraft identified as a MIG-17 about level with BLUE 1 and within 2 mi range.

BLUE 1 and 2 went to afterburner and descended to about 1000 ft altitude. The signal remained on during the descent, went off at level off, and came back on at 2 1/2 rings from the 5:30 o'clock position after about 30 sec, and remained on 20-30 sec.

The signal then went off and stayed off. The flight proceeded to channel 97 and had climbed to 28,000 ft 25 mi prior to Channel 97.

The weather was broken to overcast.

BLUE Flight heard MIG calls for AF-3 about 1605H.

Event III-85

Aircraft Involved: Four F-105s vs two MIG-21s

Results: No damage

Vicinity of Encounter: 22°00'N/105°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 8 March 1967/1603H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Inbound armed reconnaissance flight at 8000 ft saw two MIGs approaching at 15,000 ft. MIGs passed 1 mile ahead, lit afterburner, and turned, trying to get behind flight. MIGs broke off from 3000 ft just after completing turn and no firing was seen.

[redacted]

[redacted]

Event III-86

Aircraft Involved: One RF-4C vs possible MIG

Results: Radar contact

Vicinity of Encounter: 22°04'N/104°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time:[1] 9 March 1967/0351H

One RF-4C (BLUE Flight) was on a reconnaissance mission.

2. MISSION ROUTE

Departed Udorn at 0312H, then proceeded direct to Channel 97 (21°27'N/103°43'E) arriving at 0336H. BLUE 1 then headed to 21°22'N/103°43'E at 8000 ft MSL, arriving at 0342H. On a heading of 050, BLUE 1 then descended to 5000 ft MSL and proceeded to 22°05'N/104°34'E. At 0350H BLUE 1 turned to a heading of 117°, descending to 4000 ft MSL (1000 ft AGL) with a speed of 540 kts.

5. INITIAL DETECTION

While on a heading of 117° at 22°04'N/104°40'E at 1000 ft AGL, BLUE 1 began to receive fluctuating power and activity lights for a few seconds and then launch lights at 0351H.

6. ACTION INITIATED

BLUE 1 made a left turn to 080°, varying altitude and airspeed.

7. SITUATION DEVELOPMENT

Thirty seconds later, BLUE 1 received a 3-ring X-band audio strobe and light from the 6 o'clock position. At the same time he received fluctuation activity, power, and launch lights as well as S-CONS from the 7 o'clock position.

BLUE 1 increased his speed to 600 kts plus and turned to 300° descending to 500 ft AGL. He maintained that heading for 1 min, then turned to 270° heading for a few minutes, then to 230° at 22°00'N/103°56'E at 0357H.

The 3-ring plus X-band strobe remained at 6 o'clock for 6 min until BLUE 1 got to the Black Mountains at 21°45'N/105°50'E at 0400H.

No further signals were received after this point. BLUE 1 then went direct to Channel 97 and then home.

8. ORDNANCE

None observed.

11. DATA SOURCES

432 TRW 082225Z March 1967 TUOC 01734

12. NARRATIVE DESCRIPTION

Additional comments:

BLUE 1 was to have passed near the Thai Nguyen iron and steel works at 21°33'N/105°52'E, and weather points at 21°40'N/105°40'E and 21°40'N/105°00'E. This part of the mission was not accomplished due to the MIG encounter.

During the mission, BLUE 1 was in an overcast with tops at 8000 ft MSL, bottoms at 500 ft AGL. Visibility was 10 mi above the overcast and less than 1 mi below.

No warnings were heard.

The possible enemy tactics used were to give false SAM launch signals to make BLUE 1 turn northeast (a turn south would have placed BLUE 1 in a SAM ring). When BLUE 1 turned, a probable MIG jumped him.

[1] 8 March 1967 1951Z



[redacted]

[redacted]

Event III-87

Aircraft Involved: Four F-4Cs and four F-105s vs one MIG-21

Result: No damage

Vicinity of Encounter: 21°55'N/104°55'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 10 March 1967/1553H

BLUE Flight (four F-105s) was egressing from a strike on Thai Nguyen Iron and Steel Works (JCS 76.00). GREEN Flight (F-4Cs) was assigned a STRIKE-CAP mission.* The flight had completed its strike on JCS 76.00 and was egressing, trailing F-105 flights. GREEN had rendezvoused with F-105 strike force over Northern Laos inbound to target and maintained position above and behind the last F-105 flight for ingress and egress. Strike force probably consisted of IRON HAND leading, followed by a flak suppression flight, followed by three strike flights and the F-4 STRIKE-CAP flight.

## 2. MISSION ROUTE

Inbound unknown. Outbound, force was proceeding westerly from target toward Thud Ridge when attacked.

## 3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4

6 750-lb bombs
(Probably carrying two 450-gal. wing tanks and QRC-60 pod.)
Camouflaged

F-4C GREEN 1, 2, 3, 4

6 750-lb bombs
4 SPARROW (AIM-7E)
1 370-gal. wing tank
1 450-gal. centerline tank
1 QRC-60
Camouflaged

MIG-21

Silver color
Air-to-air missile(s)

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered to broken clouds at altitudes below egress altitudes.

| | BLUE | GREEN |
|---|---|---|
| | 1 2 3 4 | 1 2 3 4 |
| Altitude: | 14,000-18,000 ft | 16,000-20,000 ft |
| | (altitudes are not clear -- GREEN Flight was above BLUE Flight) | |
| Heading: | 300° | 300° |
| Speed: | 400 KCAS | 400 KCAS |
| Fuel State: | Unknown | 7,500 to 8,000 lb |

Flight Formation: Both flights in pod formation.

## 5. INITIAL DETECTION

BLUE Flight observed a single MIG-21 approaching from below at 6 o'clock, detection range above 5 miles or greater. GREEN 1 (front) observed the MIG at 10 o'clock, very low (nearly underneath him) just before the MIG fired a missile at BLUE Flight. Estimated altitude of the MIG was about 3000 ft. There was no evidence of MIG warning in this case.

## 6. ACTION INITIATED

BLUE Flight continued egress, taking evasive action when MIG was observed to fire missile at them. GREEN 1 had inoperative radar and on sighting MIG called it out and told GREEN 3, who was on his left wing, to go after him.

## 7. SITUATION DEVELOPMENT

BLUE Flight observed the MIG fire a missile from extreme range (several miles or more) and took evasive action by turning 45° and climbing toward the sun. The missile was observed to approach to about 2 miles behind the flight, then lost momentum and arched toward the ground. MIG broke off and BLUE continued egress.

*Mission carries bombs and air-to-air missiles; assigned to strike a given target, but jettison bombs and protects F-105s if MIGs become a clear threat on ingress. Follows F-105s out on egress to protect against MIGs.

[redacted]

GREEN 3 banked sharply to get a better view and both front and back sighted what appeared to be a MIG-21 below. At about the same time GREEN 3 (front) observed a missile leaving the MIG, followed by a prominent white trail of smoke. GREEN 3 could not see what the MIG was shooting at due to broken clouds between the MIG and GREEN Flight. GREEN 3 then rolled inverted, nose down, and fired a SPARROW, without a radar target, in an attempt to divert the MIG. The MIG broke right and GREEN lost sight of him under clouds shortly after the missile firing. He was not detected again. GREEN 3's missile followed a ballistic path, missing the MIG by about 1/2 mile. GREEN Flight continued egress. Later, at a point on the Red River just below Yen Bai, with GREEN Flight trailing the last flight of F-105s by 3 to 4 miles, F-4s and F-105s about 14,000 ft altitude, a flight of four MIG-21s was observed closing the F-105s from 5 o'clock, level. GREEN 1 radar was now operating and GREEN Flight turned toward the MIGs who then did a hard turn away and departed the area. GREEN continued to egress with the F-105s. GREEN Flight was just about at BINGO fuel.

8. ORDNANCE

| | (No. fired/No. hits) SPARROW AIM-7E | Remarks |
|---|---|---|
| GREEN 3 | 1/0 | Fired without lock-on as a diversionary measure. Missile went ballistic. |

9. EQUIPMENT PROBLEMS - Green 1 radar was inoperative part of the time.

10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| GREEN 1 (front) | 3000 | 220 | 55 | 10 years in ADC. |
| GREEN 3 (front) | 4500 | 175 | 52 | Most of time in fighters or interceptors; 100 missions in Korea in F-80; ADC after Korea. |

Comments on this Encounter:

GREEN 3 (front) - A missile system which permits launch and missile guidance without fine tracking of the target would be highly desirable in a situation like this.

Comments from Overall Experience:

GREEN 1 (front) - The visual identification requirement is necessary in the SEA environment with many friendly aircraft in the air and our lack of ability to discriminate by other than visual means.

The SPARROW is basically a good missile -- it just needs better reliability.

Releasing the centerline tank offers problems in maneuvering to release and keeping the flight together as well as in maintaining position on the F-105s. There have been aircraft hit and damaged by centerline tanks

You always want more speed and maneuverability although the F-4 has the speed it needs and definitely has the maneuverability.

The F-4 can disengage from a MIG-21. If you have a MIG-21 making a pass from the rear quarter (either co-altitude or diving on you) you pull a hard break and cause him to yo-yo high. If he does this just right he's still in an awkward position. What you can do is break into him or, if he goes high enough, you can just unload, put the burners in, jink to spoil his tracking, and get out.

The F-4's ability to accelerate is a great advantage. It can turn well, and what it does best is roll. You can roll the airplane all day and this makes a big difference.

You absolutely have to have a pilot in the back seat of the F-4 rather than an RO. It would be difficult for an RO to understand the various tactical situations, and a pilot in the back could bring the aircraft home if the frontseater is hurt.

GREEN 3 (front) - Two people in the F-4 work out well. In addition to needing the other man to operate the weapon system, it's helpful to have somebody else looking around. There have been a number of cases where the extra set of eyes have spotted things.

The practice of having an RO in the back seat rather than a pilot is sound for day work or in just an interceptor role, but in night air-to-ground work it is extremely valuable to have a man to watch the instruments and this requires a pilot or a very experienced RO.

11. DATA SOURCES

Project Interviews: GREEN 1 (front) 6 March 1967
GREEN 3 (front) 10 March 1967

Messages: 388TFW Korat OPREP-3 101139Z, March 1967, DOI 0750
8TFW Ubon OPREP-3 101240Z, March 1967, DOI 03223
7AF message 110107Z, March 1967, DIO 22589

[redacted]

Event III-87

12. NARRATIVE DESCRIPTION

As in paragraphs 1 through 7 above.

Event III-88

Aircraft Involved: Four F-105s vs three Mig-17s

Results: Sighting only

Vicinity of Encounter: 21°54'N/105°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 10 March 1967/1556H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight on egress from ALFA target when at 4500 ft BLUE 3 saw two silver MIGs 7 miles off starboard wing at same altitude; speed was increased and visual contact lost. When approximately 20 miles to northwest and at 5000 ft, BLUE 4 saw one silver MIG 5-7 miles range at 2 o'clock. MIG winged over and was not seen again.

[redacted]

[redacted]

Event III-89

Aircraft Involved: Twelve F-105s vs two MIG-21s and four MIG-17Ds

Result: Two MIG-17Ds killed, one MIG-17 damaged

Vicinity of Encounter: 21°38'N/105°45'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 10 March 1967/1556H

BLUE Flight (four F-105s) was the mission lead for a strike of sixteen F-105 aircraft from Takhli. The target was the Thai Nguyen steel mill. Primary mission of BLUE Flight was flak suppression in and around the target area. IRON HAND flight, EB-66 ECM flights, MIGCAP and other support aircraft were airborne in connection with this mission which took place on the same day as the initial strike on this target.

2. MISSION ROUTE

Takhli to GREEN ANCHOR extended to North Star Tracking Station, to Red River, east to Cho Mi, then south into the target. Egress west to Red River.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4

4 CBU-24 (centerline)
2 450-gal. wing tanks (inboard)
1 AIM-9B (left outboard) (BLUE 1 and 3 only)
1 QRC-160 (right outboard)
All camouflaged and carrying 20mm cannon.

MIG-17

Cannon
Silver color
Not camouflaged

MIG-21

AAM
Silver color
Not camouflaged

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER*

Weather: Clouds 3000 ft scattered, visibility about 5 miles in haze over the target and in the valley around the target area.

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 4,000-5,000 ft | | | |
| Heading: | 280°-290° | | | |
| Speed: | 550 KCAS | | | |
| Fuel State: | Approx. 1000 lb above BINGO | | | |

Flight Formation: Left echelon almost line abreast, BLUE 3 on the right, with 1, 4 and 2 to the left, in that order.

5. INITIAL DETECTION

Numerous MIG warnings in the area from BIG EYE and the preceding strike force. Coming off the target, as the flight was rejoining, BLUE 1 sighted four MIG-17Ds at 2 o'clock, approximately 2000 ft down, distance 1 to 2 miles. MIGs were in a 70° echelon to the right, 1500-2000 ft between each airplane, on a westerly course.

6. ACTION INITIATED

BLUE 1 and 3 rolled into the MIG-17s, attacking from the MIGs 7 to 8 o'clock position. BLUE 1 did a descending barrel roll, rolling in behind the first two MIGs, but ahead of the second two. BLUE 3 followed BLUE 1 with a high side pass from 9 o'clock, pulling in behind the fourth MIG. BLUE 2 had lost his radio receiver when popping up to go in on the target and was not aware of the situation. He lost contact with rest of flight and egressed. BLUE 4's actions are not known.

7. SITUATION DEVELOPMENT

BLUE 1 rolled in between MIG 2 and 3 and tried unsuccessfully to fire his AIM-9B at the MIGs ahead. (He had thrown the wrong switches and the missile would not fire.) BLUE 1 fired cannon and damaged MIG 2. BLUE 3 fired cannon (after experiencing switching

*Refers to the encounter with four MIG-17s.



[redacted]

problems in trying to fire his missile) at MIG 4 as the MIG was firing at BLUE 1 and downed the MIG. BLUE 3 then took MIG 3 under cannon fire (after MIG 3 had fired on BLUE 1) and scored hits and a probable kill. MIG 1 successfully disengaged; BLUE Flight did not give chase due to fuel and mission considerations.

## 8. ORDNANCE

| | (No. fired/No. hits) 20mm | Remarks |
|---|---|---|
| BLUE 1 | Unk/1 | Tried to fire AIM-9B but failed to throw proper switches. |
| BLUE 3 | 975 rd/damaging 1 downing 1 | Wanted to fire AIM-9B but unable to throw proper switches in time. Did not use gunsight -- too much switching required. |
| MIG-17s (3, 4) | Unk/0 | |
| | AAM | |
| MIG-21s | 1/0 | |

## 9. EQUIPMENT PROBLEMS

BLUE 2's radio receiver became inoperative as he popped up for his pass at the target. Later, his gun failed to fire as a MIG-21 crossed ahead of him. Pilot attributed the gun failure to a "bad contact."

## 10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 3277 | 604 | 76 | TAC background. Had several MIG encounters before this one. |
| BLUE 2 | ~1200 | 900 | 12 | Completely TAC background. This was first mission into Route Package VIA. |
| BLUE 3 | ~2650 | 300 | 79 | ADC and TAC background. Had never fired a missile in F-105. |

Comments on this Encounter:

BLUE 1 - Could not get a missile off because he missed one of five switches that must be thrown. Could not get the gunsight set up in time to get any use out of it even though switching was practiced every day -- in the excitement of the encounter, one switch was forgotten.

BLUE 3 - There is a need for a capability to go simply and instantaneously from air-to-ground to air-to-air modes. Did not go air-to-air coming off the target because was too busy with speed brakes, afterburner, flaps.

Comments from Overall Experience:

BLUE 1 - There is always a lot of apprehension about the enemy's capabilities, but once you really see what they can do -- the weaknesses and limitations of their equipment and personnel -- then it can be seen that our people are more effective.

BLUE 2 - No MIG-21 pilot I've ever seen has been very aggressive.

BLUE 3 - To get an electrically caged gunsight an F-105 will put the sight right on top of the combining glass. This is no mils depression. Everyone uses various methods to bugger the F-105 system.

The MIG-21s sometimes run right through their own flak. Sometimes they follow the F-105s up in the "pop" maneuver, through the flak, and try to attack over the target.

## 11. DATA SOURCES

Project Interviews: BLUE 1, 17 March 1967
BLUE 2, 29 May 1967
BLUE 3, 17 March 1967

Messages: 355TFW OPREP-3 101400Z, March 1967, DOTO-0-10782
7AF message 1101072, March 1967, DIO 22583
355TFW OPREP-3 110944Z, March 1967 DOTO-0-S-10804

## 12. NARRATIVE DESCRIPTION

Just as the flight approached the target heading 170°, 550-600 KCAS, altitude 3000 ft, in a left echelon for a right roll-in, BLUE 3 sighted two MIG-21s at BLUE 1's 4 o'clock,

5,000-6,000 ft out. The MIGs fired a missile as BLUE 1 pulled up in his pop maneuver. BLUE 3 in his pop broke into the MIGs as he made his right roll in on the target. The flight lost sight of the MIG-21s at this point and, since they were in their bomb run, did not attempt to engage.

The flight came off the target on a westerly heading. While in the process of joining up (5 or 6 miles west of the target) BLUE 1 sighted four MIG-17s at his 2 o'clock low 1 to 2 miles out. The flight formation at this time was BLUE 3 on the right with the flight echeloned left. BLUE 1 called the MIGs; BLUE 3 acknowledged the call. BLUE 1 initiated the attack by turning right, into the MIGs making a right high-g barrel roll coming out on the first MIG element's 6 o'clock position.

BLUE 1 tried to fire his AIM-9B at the MIG-17s ahead but the missile would not fire because he had not thrown the proper switches. MIGs 1 and 2 took evasive action with BLUE 1 following at speeds of 500 to 600 KCAS, doing barrel rolls and S-turns between the deck and about 4000 ft. BLUE 1 fired cannon at MIG 2 without a sight and observed sparkles on the MIG's wing. The MIG-17s disengaged by turning sharply. BLUE 1 did not attempt to reengage since it was not his mission to pursue MIGs and because of being at BINGO fuel.

BLUE 3 rolled in immediately after BLUE 1. He made a 90° high side pass on the second MIG element rolling out on MIG 4's 6 o'clock position approximately 1000 ft back. BLUE 3 jettisoned his wing tanks and went afterburner as he started his pass. He also attempted to set his armament switches for "missiles air" but was unable to accomplish this due to the time required and his proximity to the enemy. As he reversed his turn on the MIGs, he saw two MIG-21s coming toward his 6 o'clock. He disregarded these two aircraft and pressed his attack on the MIGs in front of him. (The MIG-21s were not sighted again.) As BLUE 3 closed on MIG 4 the MIG was firing cannon at BLUE 1. BLUE 3 fired and the MIG turned right. BLUE 3 fired again observing hits on the MIG at this time. The MIG then broke hard left. As he passed in front of BLUE 3 at 3,000 to 4,000 ft, BLUE 3 fired again observing hits on the aft fuselage, canopy and a fire starting in the left wing. The MIG rolled down and went straight in, exploding upon impact with the ground. BLUE 3 pulled off to the right. At this point MIG 3 crossed in front of him from right to left. The MIG was attacking BLUE 1, firing its cannon. BLUE 3 pulled up and left, abreast of the MIG. The MIG, seeing BLUE 3, turned right, into BLUE 3. BLUE 3 fired his cannon at this time and he thinks he hit the MIG. Then the MIG broke hard left, and BLUE 3 fired again. The MIG continued left and disengaged. BLUE 3 felt he also hit the MIG in the left turn. At this point BLUE 1 called to disengage and BLUE 1 and 3 egressed the area without further incident.

At no time did BLUE 3 have a gunsight (unable to change switch settings). He used the top of the combining glass and just pointed the aircraft in the general direction. Most of his shooting was done within 800 ft or so.

BLUE 3 was in afterburner most of the time and had observed the MIG-17s light afterburners.

BLUE 2 had lost his radio receiver in his pop maneuver going in on the target. Coming off target BLUE 2 lost sight of the rest of the flight and was not aware of contact with the MIG-17s. He joined with the first F-105 he saw and, upon joining, learned that it was an F-105F trying to hit a SAM site. A MIG-21 turned in on the F-105F and BLUE 2 tried to fire his gun at the MIG. The gun would not fire. As BLUE 2 turned into the MIG, the MIG turned away. BLUE 2 was at BINGO fuel and egressed.

Actions of BLUE 4 are not known.

The MIG-17s that were engaged by BLUE Flight were also engaged by two other flights of F-105s, GREEN and PURPLE.

At 1556H GREEN Flight, on egress from the target, was at 21°34'N/105°40'E, heading 273°, altitude 4500 ft when GREEN 3 observed two silver MIG-17s at his 3 o'clock position, approximately 7 miles away at the same altitude, beginning a turn to the southeast. GREEN 3 continued to pick up speed and lost visual contact with the MIGs. While near 21°45'N/105°25'E, heading 315°, altitude 5000 ft, GREEN 4 saw one silver MIG-17 at his 2 o'clock position 5 to 7 miles away. The MIG was at 10,000 ft altitude and was executing a wing over. GREEN 4 passed out of the area without further incident.

At approximately 1556H, PURPLE Flight of four F-105s observed a SAM detonation directly over the target at 11,000 ft. On egress, when at approximately 21°35'N/105°40'E, heading 270°, altitude 6000 ft, PURPLE 4 sighted a MIG at his 3 o'clock position about 2000 ft to the right. PURPLE 4 called bogey at 3 o'clock and went to afterburner. By the time the MIG-17 was able to roll in behind PURPLE Flight, they were at 580 kts and pulled away.

[redacted]

Event III-90

Aircraft Involved: Two F-105s vs four MIG-21s
Results: No Damage (except by ground fire)
Vicinity of Encounter: Near 21°35'N/105°45'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 10 March 1967/Afternoon

BLUE Flight was on an IRON HAND mission for a strike in the Thai Nguyen area.

II. DATA SOURCES

Messages, Reports:

USAF citation quoted in AF/Space Digest

12. NARRATIVE DESCRIPTION

BLUE 1 was shot down and BLUE 2 withdrew due to battle damage, both caused by ground fire.

BLUE 3 and 4 were attacked by two MIG-21s on two separate encounters, while BLUE 3 and 4 were attacking SAM sites in the vicinity of the target.

Event III-91

Aircraft Involved: Four F-105s vs one MIG-17

Results: No damage
Vicinity of Encounter: 21°35'N/105°40'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 10 March 1967/1558H

II. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight was on egress from Thai Nguyen at 6000 ft. BLUE 4 saw MIG at 2000 ft, off right wing and called bogey. Flight lit afterburners and outran MIG at 580 knots before MIG could roll in.

Event III-92

Aircraft Involved: Four F-105s vs one MIG-17
Result: Sighting Only
Vicinity of Encounter: 21°31'N/104°10'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 11 March 1967/Unknown

BLUE Flight (four F-105s) sighted one MIG-17.

II. DATA SOURCES

WESG team visit to Southeast Asia

[redacted]

[redacted]

Event III-93

Aircraft Involved: Four F-4Cs vs one MIG

Results: Sighting only

Vicinity of Encounter: Unknown

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 12 March 1967/Unknown

BLUE Flight sighted one MIG, type unidentified. There was no maneuvering.

11. DATA SOURCES

WESG team in Southeast Asia.

Event III-94

Aircraft Involved: Two RF-4Cs vs two MIG-17s

Results: Sighting only

Vicinity of Encounter:

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 March 1967/1650H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Photo flight at 24,000 ft saw two MIGs at 8 o'clock high, 1-2 miles range. Flight descended and accelerated, losing MIGs.

Event III-95

Aircraft Involved: Four F-105s vs one MIG-17

Results: Sighting only

Vicinity of Encounter: 21°02'N/105°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 26 March 1967/1616H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

At 1616H, second flight (same force as Event III-96) of F-105s was pulling off target when Lead saw one MIG-17 maneuvering with F-4C flight (Event III-102).



[redacted]

[redacted]

[redacted]

Event III-96

Aircraft Involved: Four F-105s vs four MIG-17s and one MIG-21

Result: One MIG-17 destroyed

Vicinity of Encounter: 21°01'N/105°29'E

## 1. PRIMARY MISSION AND TACTICAL SITUATIONS

Date/Time: 26 March 1967/1613H

Four F-105s (GREEN Flight) had just pulled off target in the Hoa Lac area when they spotted MIGs and engaged them. GREEN Flight was part of larger strike force.

## 3. AIRCRAFT CONFIGURATIONS

GREEN 1, 2, 3, 4

Guns

MIGs

AA missile

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Visibility 3 miles in haze with a broken cloud condition.

| | GREEN 1 2 3 4 |
|---|---|
| Altitude: | 4000 ft |
| Heading: | 250° |
| Speed: | 520 kts |
| Fuel State: | Unknown |
| Flight Formation: | Unknown |

## 5. INITIAL DETECTION

Immediately after GREEN Flight pulled off the target, GREEN Lead observed one MIG-17 taking off from Hoa Lac Airfield at approximately 1613H.

## 6. ACTION INITIATED

GREEN Lead and GREEN 2 began a left turn to approximately 150 degrees to follow MIG-17 for possible engagement.

## 7. SITUATION DEVELOPMENT

At this time GREEN Lead observed three more MIG-17 aircraft orbiting the airfield at Hoa Lac. GREEN 1 and 2 then concentrated their attention on the nearest MIG-17. The MIG began a turn to the right. GREEN Lead started firing and observed ordnance impacting on the left wing of the MIG with pieces of material tearing off MIG after 274 rounds of 20mm had been fired. MIG began a hard left descending turn. GREEN Lead and GREEN 2 over flew the MIG-17 and lost sight of him.

## 8. ORDNANCE

| | (No. Fired/No. Hits) 20mm | AAM | Remarks |
|---|---|---|---|
| GREEN 1 | 274/several | | Hit MIG-17 in left wing. |
| GREEN 2 | --- | | |
| GREEN 3 | --- | | |
| GREEN 4 | --- | | |
| MIG-17 1, 2, 3, 4 | --- | | |
| MIG-21 | --- | 1/0 | Went to left of GREEN 3 and 4. |

## 11. DATA SOURCES

Messages, Reports:

OPREP-3 261330Z March 1967 from 355 TFW DOTO-0-10987

## 12. NARRATIVE DESCRIPTION

GREEN Flight (part of larger strike force) was engaged with MIGs and missiles from time over target (0813Z to 0824Z). Immediately after GREEN Flight pulled off the target (heading approximately 250 degrees, altitude approximately 4000 ft) GREEN Lead observed one MIG-17 taking off from Hoa Lac Airfield. Lead and GREEN 2 began a left turn to 150 degrees to follow MIG for possible engagement. At this time GREEN Lead observed three more MIG-17s orbiting the Hoa Lac Airfield at approximately 300 ft in single ship trail with 3000 to 5000 ft spacing. MIGs were silver with red star. Lead and GREEN 2 then concentrated their attention to the nearest MIG-17 and pressed the attack. As Lead and

[redacted]



[redacted]

GREEN 2 closed on the MIG, the MIG began a right turn. Lead and GREEN 2 followed, turning inside the MIG. GREEN Lead began firing and observed ordnance impacting on left wing with pieces of material tearing off MIG after 274 rounds of 20mm had been fired. MIG went into hard left descending turn. Lead and GREEN 2 over flew the MIG-17 at this time and broke right losing sight of the MIG. The altitude of the flight at this time was approximately 2500 ft in the vicinity of 21°01'N/105°29'E, the time 0820Z. At the same time BLUE Flight (Event III-102) observed a MIG-17 impact in the same vicinity. GREEN Lead and GREEN 2 then turned left to heading of 180 degrees then back to 360 degrees to sweep target area and to provide CAP for the remainder of the strike force.

GREEN 3 and 4 were jumped by one probable MIG-21 just as they pulled off the target at altitude 4000 ft, airspeed 520 kts, heading approximately 270°. MIG-21 was approximately 3000 ft above and descending to their 6 o'clock position. GREEN 3 made a hard left turn to 180 degrees. As GREEN 3 and 4 started to pull away from MIG, MIG fired an ATOL missile which passed level and approximately 500 yards left of GREEN 3 and 4. Airspeed at this time was 550 kts, altitude 3500 ft. As GREEN 3 and 4 were turning back to a westerly heading to join with GREEN Lead and GREEN 2 they observed a camouflaged surface-to-air missile launched from vicinity of 20°53'00"N/105°22'20"E. Flight altitude approximately 4000 ft, airspeed 520 kts. Missile did not appear to guide but was climbing at approximately a 45 degree angle and passed 200 yards low and behind GREEN 3 and 4. On a south-to-north track, detonation was observed by GREEN 3 to be at about 12,000 ft. GREEN 3 and 4 then pressed the attack against point of missile launch which is approximately 3.5 miles north of Lead 58. After attack on SAM position, GREEN 3 could not relight afterburner and was forced to leave the area.

[redacted]

Event III-99

Aircraft Involved: Two RF-4Cs vs one MIG-21

Results: No damage

Vicinity of Encounter: 20°43'N/105°05'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 26 March 1967/1645H

Two RF-4Cs (BLUE Flight) were on a reconnaissance mission against Hoa Pinh.

11. DATA SOURCES

432 TRW 261110Z March 1967 OPREP-3 TUOC 02198.

12. NARRATIVE DESCRIPTION

BLUE Flight departed Udorn and proceeded to Channel 97. From Channel 97 they proceeded to 21°00'N/104°55'E at 30,000 ft altitude. From there, they proceeded to 20°50'N/105°20'E descending to 15,000 ft.

At 1645H, when BLUE Flight was at 20°52'N/105°20'E and 15,000 ft altitude, they saw three SAMs at 11 o'clock. When seen, the SAMs were 2000 ft away. BLUE 1 and 2 broke left and down.

BLUE 1 and 2 then egressed separately from the target, jinking from 12,000-18,000 ft altitude and changing heading. When BLUE 2 was at 20°43'N/105°12'E, he saw three more SAMs; one was out of control, another passed to the right, and the third exploded at 3 o'clock level, 1500 ft away. BLUE 1 saw one MIG at 20°43'N/105°05'E at 2 o'clock high about 2 mi away turning into BLUE 1. The MIG appeared dark in color with a flat nose and delta wing. BLUE 2 was about 1 mi in front of BLUE 1 at this time.

The weather was clear with 5-7 mi visibility.

Numerous MIG calls were heard but no SAM calls.

Event III-97

Aircraft Involved: Four F-105 vs one MIG-17

Results: Sighting only

Vicinity of Encounter: 21°04'N/105°31'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 26 March 1967/1017H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight pulling off same target as that of Events III-95, 96, 102 saw a MIG 6000 ft below but no attempt was made by MIG to engage. MIG may have been one involved in engagement in referenced events.

Event III-98

Aircraft Involved: One B-66 vs two unidentified

Results: Sighting only

Vicinity of Encounter: 19°45'N/106°37'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 26 March 1967/1620H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Jamming aircraft saw two swept-wing, silver aircraft and turned 180°; no further contact.

[redacted]

[redacted]

Event III-100

Aircraft Involved: Four F-105s vs one MIG-17
Result: No Damage
Vicinity of Encounter: West of Hanoi

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 26 March 1967/1620H

Four F-105s on a strike mission west of Hanoi.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 4

Guns

MIG-17

Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Visibility 3 miles in haze with a broken cloud condition.

| | BLUE 4 |
|---|---|
| Altitude: | 3,500 ft |
| Heading: | 240° |
| Speed: | Unknown |
| Fuel State: | Unknown |

Flight Formation:

Trail for target engagement.

5. INITIAL DETECTION

BLUE 4 observed a MIG-17 in chase on an unknown flight as he was coming off the target.

6. ACTION INITIATED

BLUE 4 jettisoned his bombs and engaged the MIG-17.

7. SITUATION DEVELOPMENT

As BLUE 4 came off the target he observed one MIG-17 in chase on an unknown flight at 5 o'clock, low. BLUE 4 rolled in on the MIG in a scissors maneuver from 3,500 ft with the MIG at 3,000 ft. After BLUE 4 made one gun-firing pass, the MIG broke left and away from BLUE 4 and the friendly flight he has been chasing. Encounter ended at 1621H. BLUE 4 estimated no damage to MIG.

8. ORDNANCE

BLUE 4 fired guns - number rounds unknown.

MIG-17 - unknown.

9. EQUIPMENT PROBLEMS

BLUE 4 - bombs failed to drop during pass on target.

11. DATA SOURCES

Project Interviews: BLUE 1, (Lead)
Messages, Reports:

OPREP-3 261330Z March 67, from 366JFW
TAKHLI RTAFB DOTO-O-1097

12. NARRATIVE DESCRIPTION

See Items 5, 6, and 7.



[redacted]

Event III-101

Aircraft Involved: Four F-4Cs vs three MIG-17s

Result: No damage

Vicinity of Encounter: Near Hoa Lac Airfield (21°01'N/105°29'E)

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 26 March 1967/unknown

Four F-4Cs on a STRIKE/CAP mission in the vicinity of Hoa Lac Airfield.

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

Bombs
Air-to-air armament unknown

MIG-17

Unknown

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered to broken clouds with haze.

| | BLUE | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Altitude: | Unknown | | | |
| Heading: | Unknown | | | |
| Speed: | Approximately 540 kts. | | | |

Flight Formation

Trail for bomb delivery

5. INITIAL DETECTION

BLUE 2 spotted three MIG-17s as he pulled off the target. Time unknown.

6. ACTION INITIATED

BLUE Lead did not spot MIGs, but instructed flight to go get them.

7. SITUATION DEVELOPMENT

BLUE Flight was pulling off the target when BLUE 2 spotted three MIG-17s on downwind at Hoa Lac Airfield. BLUE 2 called the MIGs and Lead replied, "Rog, I don't have them; go get them." BLUE 2 rolled up, trying to get some lateral separation. At this time BLUE 2 hit BINGO fuel and broke off. Lead said to rendezvous at Alpha Point which was about midway in on the egress and coming out of the target area. About one minute later BLUE 2 saw a SAM hit BLUE Lead. Lead was at about 15,000 ft when he was hit. BLUE Lead called out, "We're over Alpha Point. We've been hit. We're bailing out. We're bailing out."

11. DATA SOURCES

Project Interviews: BLUE 2

12. NARRATIVE DESCRIPTION

See items 5, 6, and 7.

[redacted]

Event III-102

Aircraft Involved: Three F-4Cs vs eight MIG-17s
Result: No damage
Vicinity of Encounter: 21°02'N/105°22'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 26 March 1967/1615H to 1627H

Three F-4Cs (BLUE Flight) on a STRIKE/CAP mission. BLUE 2 aborted in the air due to the loss of his ECM pod. The target was Son Tay, the Army barracks just east of Hanoi, and the Hoa Lac area.

2. MISSION ROUTE

Departed Ubon and refueled on ORANGE ANCHOR. From there to Channel 97, then direct to 21°04'N/104°32'E, then direct to 21°07'N/105°28'E, then direct to within 15 miles of the target. Egress was direct to 21°04'N/104°32'E then to Channel 97 and then to air-to-air refueling on ORANGE ANCHOR.

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 3, 4
- 4 - SPARROW
- 6 - 750 lb bombs
- 1 - Left outboard wing tank
- 1 - Centerline tank
- 1 - ECM pod on right outboard station

MIG-17s MIG 1 through 8
- AAM missiles
- Guns
- Silver color
- No AB noted

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Visibility 3 miles in haze with a broken cloud condition.

| | BLUE 1 | 3 | 4 |
|---|---|---|---|
| Altitude: | 6,000 MSL | | |
| Heading: | 107° | | |
| Speed: | 540 kts | | |
| Fuel State: | Full internal plus some in external tanks. | | |
| Flight Formation: | Unknown | | |

5. INITIAL DETECTION

BLUE 3 sighted the MIGs at BLUE flight's 8 o'clock position at approximately 1615H.

6. ACTION INITIATED

BLUE flight dropped external stores, lit afterburners, and went into a hard left turn. BLUE 4 fell out on the first turn.

7. SITUATION DEVELOPMENT

BLUE flight enroute to target area broke out of weather and into clear in a valley 15 to 20 miles southwest of target and almost immediately they spotted F-105s egressing from target with eight MIGs in close pursuit and attacking the F-105s. The MIGs spotted BLUE flight and came off the F-105s and approached BLUE flight at their 8 o'clock position. BLUE flight jettisoned ordnance, lit afterburner and went into a hard left turn. BLUE 4 fell out on the turn. BLUE flight continued turning in a big horizontal circle with the MIGs in pursuit firing their cannons. This engagement lasted for approximately 10 minutes. BLUE flight hit BINGO fuel and the MIGs departed one way and BLUE flight another. Evidently the MIGs were also low on fuel. During encounter BLUE 1 locked on, interlocks out and armed, but missile would not fire. Several opportunities to fire missiles were prevented because of proximity to MIGs. BLUE flight received ground fire (37-57mm) while engaging these MIGs.

8. ORDNANCE

The only fire was from the MIGs (cannon fire). No hits.



[redacted]

## 9. EQUIPMENT PROBLEMS

BLUE 1 - Missile failed to fire.
BLUE 2 - Lost ECM pod and aborted early in the mission.

## 10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions |
|---|---|---|---|
| BLUE 3 | 3,000 | 240 | 65 |

Comments on this Encounter

A flight does not normally go in with 3 members. Should not be up in Route Package VI when the visibility was 2-3 miles, particularly since they have GCI. The first time you will see them will be at your 7 o'clock. They should have ignored the SAM threat and worked more in the vertical.

Comments on Overall Experience

SAMs will be fired at CAP aircraft even with MIGs in the area. Also flak will be fired. There is a high degree of coordination between AAA, SAMs and MIGs. A tactic is for a MIG-17 to keep at low altitude, hoping to draw you in to a flak trap. This may have happened on 20 May 1967.

## 11. DATA SOURCES

Project Interviews: BLUE 3, 3 June 1967
Messages, Reports:

8 TFW 261643Z Mar 1967 OPREP-3 DOI 03649
8 TFW 261220Z Mar 1967 OPREP-3 DOI 03639
8 TFW 270540Z Mar 1967 OPREP-3 DOI 03665

## 12. NARRATIVE DESCRIPTION

BLUE flight was on a STRIKE/CAP mission. Their TOT was about 10 minutes behind the F-105s which were striking the same target. The F-105s were strung out with 2-3 miles between flights and BLUE flight was passing them as the F-105s egressed from the target.

As BLUE flight broke out of the weather and into the clear in a valley 15-20 miles southwest of the target, BLUE 3 saw a flight of F-105s at 9 o'clock egressing and almost immediately saw 8 MIG-17s in close pursuit and attacking the F-105s. He called MIGs at 8 o'clock.

The MIGs immediately broke into the BLUE flight and ended up at 8 o'clock to BLUE flight. BLUE flight broke left and jettisoned ordnance into a mountainside at 21°02'N/105°22'E. Tanks were also jettisoned. BLUE flight was at 4500-6000 ft MSL heading 90-107 degrees at the time. The ensuing encounter lasted from 1615H to 1627H in a 4-5 mile radius of Hoa Lac airfield.

In the break BLUE 4 became separated from BLUE 1 and 3. BLUE 4 hassled with some of the MIG-17s but then was able to disengage and egress.

During his fight BLUE 4 sighted a silver MIG-21 in pursuit of an F-105, (Event III-96) but only for a short time and did not see the MIG-21 again.

Shortly after the break into the MIG-17s, BLUE 4 observed a MIG-17 in an approximate 15 degree nose down attitude, 3000 ft below him, belly up and corkscrewing toward the ground. The altitude of the MIG-17 was about 500 ft AGL. Although BLUE 4 did not see the impact due to his engagement, he felt that there was no way for the MIG to recover. The MIG-17 was silver in color with a red star on the lower right wing surface. This was the MIG kill of Event III-96. BLUE 1 also saw this MIG and helped confirm it.

BLUE 4 was fired on by cannon in two different head-on passes by the MIGs. Another time he was fired on as the MIG crossed from 7:30 o'clock, 200 yards to the rear. The MIG's cannon was firing from the lower left nose. The MIG overshot and at this time BLUE 4 broke off due to BINGO fuel, and returned to base.

BLUE 1, with BLUE 3 as wingman, initially started to turn with the MIGs. The MIGs were in a 7:30-6:30 o'clock position 1 1/2 miles back and were able to close and fired on several occasions. BLUE 3 was able to see the tracers fired at them.

Due to the SAM activity that day (one aircraft had been lost to a SAM previous to the encounter) BLUE 1 elected not to operate in the vertical. Therefore, BLUE 1 and 3 in afterburner and pulling 7-8 g's stayed low. They slightly yo-yoed (several thousand feet) and the fight varied from about 2000 to 8000 ft. Most of the time the BLUE 1 and 3 were about 5000 ft. Despite the restricted tactics BLUE 1 and 3 were able to keep the MIGs from tracking them. The MIGs could never pull sufficient lead on BLUE 3 who was outside of BLUE 1.

During the encounter BLUE 1 locked onto a MIG-17 and with interlocks out and missiles armed attempted to fire a SPARROW. No missile left the airplane. A thorough check of

Event III-102

the aircraft had negative results. The system and missiles were checked with the missiles still on the aircraft, but no reason was found for the failure for the missiles to leave. The missiles were removed and checked and although a minor hydraulic leak was found in one, and a slight guidance problem was found in another, no reason was found which would have prevented the missiles from firing.

In several other opportunities, missiles were unable to be fired because BLUE 1 was too close to the MIG.

After a short period (BLUE 3 estimates 10 minutes) the MIGs suddenly disappeared. At this time BLUE 1 and 3 were at BINGO fuel, and it was surmised that the MIGs were also probably out of fuel or ammunition so they broke off. Previous to this BLUE 1 and 3 had not been in a position to disengage.

BLUE flight received 37/57mm flak throughout the engagement.

Event III-103

**Aircraft Involved:** One B-66 vs one MIG-21

**Results:** Sighting only

**Vicinity of Encounter:** 20°50'N/104°10'E

**1. PRIMARY MISSION AND TACTICAL SITUATION**

**Date/Time:** 27 March 1967/1617H

**11. DATA SOURCE**

CINCPACFLT Staff Study 6-68.

**12. NARRATIVE DESCRIPTION**

Aircraft on ECM orbit at 28,000 ft saw MIG pass 2 miles ahead. MIG turned away and was not seen by B-66 escorts.

[redacted]

Event III-104

Aircraft Involved: Four F-105s vs two unidentified

Results: Sighting only

Vicinity of Encounter: 21°20'N/108°00'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 29 March 1967/1641H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Inbound IRON HAND flight at 16,000 ft saw two contrails above 35,000 ft. MIG warnings had been heard.

Event III-105

Aircraft Involved: Four F-4Cs vs Unknown

Results: No damage

Vicinity of Encounter: 21°26'N/106°55'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 29 March 1967/Unknown

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Inbound strike flight jettisoned ordnance when MIG call was received.

Event III-106

Aircraft Involved: Four F-105s vs three MIG-21s

Results: Sighting only

Vicinity of Encounter: 21°10'N/104°08'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 30 March 1967/0945H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight concluding armed reconnaissance saw single MIG at 3 o'clock high. MIG was joined by two others to rear of flight but no engagement ensued. MIGs were probably on defensive patrol.

[redacted]

[redacted]

Event III-107

Aircraft Involved: Four F-105s vs two MIG-21s

Results: Sighting only

Vicinity of Encounter: 21°00'N/105°00'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 30 March 1967/1600H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

F-105 flight at 10,000 ft saw two MIGs at 4 o'clock high and 4-5 miles range; no engagement; MIGs were apparently patrolling Hoa Lac Airfield defensively.

Event III-108

Aircraft Involved: Two RF-4Cs vs two MIG-21s

Results: No damage

Vicinity of Encounter: 21°20'N/103°54'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 8 April 1967/1610H

Two RF-4Cs (BLUE Flight) were on a reconnaissance mission against the Yen Bai airfields.

11. DATA SOURCES

432 TRW 081034Z OPREP-3 TUOC 02500

12. NARRATIVE DESCRIPTION

BLUE Flight proceeded from Udorn to Channel 97 and then headed direct toward Yen Bai. The visibility was 2 mi in haze.

BLUE Flight on a heading of 011° at 10,000 ft altitude saw two MIG-21s below them at 21°20'N/103°54'E. The MIGs were about 4000 ft below BLUE Flight at 3 o'clock and were in a right climbing turn toward BLUE Flight's 6 o'clock.

BLUE Flight went to afterburner and broke down and to the right, jettisoning tanks, and departed the area.

The MIGs were lost from sight after the turn. The RF-4Cs had been receiving X-band strobes of two rings intermittently for 1 min prior to the sighting.

After 4-5 min from the abort, BLUE Flight heard MIG calls in AG-1 and then in AG-4.



[redacted]

[redacted]

Event III-109

Aircraft Involved: Four F-105s vs two MIG-21s

Results: Sighting only

Vicinity of Encounter: 21°25'N/104°02'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 8 April 1967/1635H

BLUE Flight was to strike Rt. 601 Highway Bridge.

11. DATA SOURCES

Messages, Reports

7AF 0821432 DIO 22856 April 1967

12. NARRATIVE DESCRIPTION

At 1635H, BLUE Flight was at 21°25'N/104°02'E rolling in on target (Rt. 601 Highway Bridge) from 17,000 ft when two MIG-21 aircraft were sighted. The MIGs were at 30,000 ft in level flight at a heading of 280°, 10 o'clock high with respect to BLUE. The MIGs made one wide orbit, apparently at same altitude. They then rolled out on a heading of 45° and disappeared.

Event III-110

Aircraft Involved: Two F-104 vs one MIG

Results: Sighting only

Vicinity of Encounter: 19°47'N/106°29'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 11 April 1967/1325H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Turning F-104s saw silver colored aircraft and contrail at 35-40,000 ft heading west over Gulf of Tonkin; unident reversed direction and headed for Hainan; although may have been a friendly (DD held friendly track in area), other similar activity occurred in days following.

[redacted]

[redacted]

Event III-111

Aircraft Involved: Four F-105Ds vs three MIG-21s

Result: No damage

Vicinity of Encounter: 20°50'N/104°00'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 11 April 1967/1615H

BLUE Flight was on a strike mission into Route Package VI. Target hit was road segment at 21°08'N/104°10'E.

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 2, 3, and 4

6 - M117 bombs
1 - AIM-9B (carried by 3 aircraft only)
1 - M61 Cannon
Avionics - Unknown (probably had QRC-160 ECM pods)

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

| | BLUE 1, 2, 3, and 4 |
|---|---|
| Altitude: | 18,000 ft |
| Heading: | 040° |
| Speed: | Unknown |
| Fuel State: | Unknown |

5. INITIAL DETECTION

BLUE 1 observed three MIG-21s, approximately 10 miles away at 20,000 to 22,000 ft, on a heading of 230°.

11. DATA SOURCES

Messages, Reports

388TFW 111110Z FASTEL DOI 1735, for DOCO, April 1967.

12. NARRATIVE DESCRIPTION

While inbound to the target area at 18,000 ft, heading 040°, at vicinity 20°50'N/104°00'E, BLUE lead observed three MIG-21s approximately 10 miles away at 20,000 to 22,000 ft, heading 230°. The MIGs were observed to light afterburner and execute a 270° turn on an attack heading on BLUE Flight. BLUE Flight went into afterburner and executed a 270° turn for eventual head-on approach to MIGs. BLUE Flight was at speed of approximately 500 KCAS and still carrying ordnance. At approximate range of 7 miles, BLUE Flight observed the MIGs break away from attack heading and egress area in afterburner in a northerly direction at an estimated speed of 450 KCAS. Due to distance between flights, speed of MIGs, and ordnance load on BLUE Flight, the flight leader broke off the chase. BLUE Flight then went on to target and delivered ordnance.

Event III-112

Aircraft Involved: Four F-105s vs two Props

Results: Sighting only

Vicinity of Encounter: 17°44'N/106°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 12 April 1967/1239H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

One of F-105s saw two silver colored, low wing, mono-prop planes at 3500 ft; unidents were too small to be A-1s and resembled T-28s.



[redacted]

[redacted]

Event III-113

Aircraft Involved: Two F-4B vs one MIG

Results: No Damage

Vicinity of Encounter: 19°52'N/106°45'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 13 April 1967/1415H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

BARCAP lead, under E-2A control, made radar contact on unident at 12 miles; both BARCAP turned to investigate and wingman briefly saw what appeared to be a MIG-17 type aircraft; unident dived into clouds and contact not regained.

[redacted]

[redacted]

Event III-114

Aircraft Involved: Four F-105s vs eight to ten MIG-17s

Result: F-105F loss to a MIG,[1] one MIG-17 shot down

Vicinity of Encounter: 20°53'N/105°25'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 April 1967/1655H

BLUE flight (consisting of four F-105F WILD WEASEL aircraft) was fragged to suppress SAM activity while a force of 16 F-105Ds and 8 F-4Cs attacked JCS 22.00, the Xuan Mai Army Barracks at 20°53'N/105°35'E. The F-4C aircraft were assigned strike/cap which gave them the secondary mission of air superiority. Six other flights had MIG encounters in this area. (See Events III-116, -117, -118, -119, -120.)

## 2. MISSION ROUTE

BLUE flight departed Takli AB, flew to GREEN ANCHOR for refueling, direct to Channel 97, and direct to the Black River at 20°58'N/105°21'E. Their primary target was a series of SAM sites about 5 mi southwest of Hanoi. This route would pass a few miles north of Hoa Binh but the IRON HAND flight route would vary as they prepared to attack known SA-2 sites. The first MIG encounter occurred just north of Hoa Binh. Return route was direct to GREEN refueling anchor and from there dependent on the aircraft. BLUE 2 was shot down in the vicinity of 20°44'N/105°32'E.[2]

## 3. AIRCRAFT CONFIGURATIONS

4 - F-105Fs[3]

1 - 650 gal centerline tank
2 - CBU-24s on inbd stations
1[4] - AGM-45 (SHRIKE)
1[4] - QRC-160 ECMPOD
1 - M-61 20mm cannon

MIG-17

Red star with yellow border cutline on top of wing.
All - Large red star completely covering vertical stabilizer.
All - External fuel tanks (dropped).
Unguided (2.75 FFAR type) rockets.
One MIG camouflaged - others silver - red star on side.
Possible booster on one MIG.

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear, 7-10 mi visibility

| | Encounter 1 | Encounter 2 |
|---|---|---|
| | BLUE | BLUE |
| | 1 2 3 4 | 1 2 |
| Altitude: | 5,000 ft | In pop up |
| Heading: | 070° | Northerly |
| Air Speed: | 500 KTs | 450 KTs + |
| Fuel State: | 10,000 + | 10,000 + |
| Flight Formation: | Rt hand echelon | Trail |

BLUE 3 had reported equipment trouble so BLUE 4 was flying in the element head position.

## 5. INITIAL DETECTION

BLUE flight was inbound to the target area descending through 5,000 ft MSL on a heading of 070° and preparing to attack a FANSONG radar signal emitting from their

[1]Carried as probable loss to MIG in present official "Box Score"; however, eyewitness (see #3, Event III-116) saw MIG shooting at F-105F with debris coming off F-105F.

[2]Route of flight described in 432TRW OPREP-3, TUOC 02772 April 1967 is completely erroneous after Channel 97.

[3]432TRW OPREP-3 02771 April 1967. OPREP-3 indicates two F-105Fs and two F-105Ds; however, BLUE 4 named two crew members per aircraft for this flight.

[4]BLUE 1 carried 2 AGM-45 missiles and no QRC-160.

[redacted]

6 o'clock position when BLUE 4 saw eight MIG-17s in two flights of four aircraft. The MIGs were attacking almost head-on from BLUE 4's 2 o'clock position. The time was 1555H and this first encounter occurred in the vicinity of 20°53'N/105°25'E (about 5 mi northeast of Hoa Binh).

6. ACTION INITIATED

BLUE 4 called a MIG warning to the flight and with BLUE 3 on his right wing, broke right into the MIGs. The first flight of MIGs fired unguided rockets from a range of 3,000-4,000 ft. The rockets were ineffective. The second flight of MIGs was attacking BLUE 3 and 4 as the first flight overshot. BLUE 3 and 4 selected afterburner, jettisoned fuel tanks and ordnance but retained the ORC-160 and AGM-45 missile. BLUE 4's afterburner did not light and, as a result, BLUE 3 accelerated past BLUE 4 and they became separated. BLUE 1 and 2 continued in their attack on the FANSONG radar.

7. SITUATION DEVELOPMENT

Three separate engagements ensued. BLUE 4, without after burner, was the victim of three or four MIG-17s for a few minutes. The MIGs fired about 17 rockets in groups of three or four and made multiple cannon passes until they either became bored or ran out of ammunition and fuel. BLUE 4 stayed in the area attempting to aid in the rescap and then egressed, refueled, and returned to Takhli. BLUE 3 was able to separate from the MIGs and attempted to return to the troll area. He was again engaged by MIGs, managed to escape and egressed, recovering at Udorn AB.

BLUE 1 and 2 fired an AGM-45 at the FANSONG radar about 5 mi southwest of Hanoi and followed up the attack by dive bombing with the CBU-24s. They were attacked by MIGs during the pop up and during the recovery from the dive bomb run. BLUE 1 attacked and shot one MIG-17 down (verified by film). BLUE 2 apparently was hit by a second MIG during this time, called that he had a "hot air overheat light" on, and then called a second light on and said he would have to get out. BLUE 1 observed the chutes and received two good beeper signals in the vicinity of 20°44'N/105°32'E. See Event III-116 for more information on BLUE 2.

BLUE 1 orbited the bail-out area while he initiated rescue procedures and attempted to establish communications with the downed crew. He was jumped by more MIGs and forced to withdraw due to low fuel. BLUE 1 refueled and returned to the bail-out area where he was again attacked by MIGs during the rescue attempt. (See Event III-117 for related MIG engagements during the rescue attempt in which a second MIG was shot down and an A-1 was lost to a MIG). The rescue attempt was not successful and BLUE 1 recovered at Udorn AB.

8. ORDNANCE

(No. fired/No. hits)

| | Cannon | Remarks |
|---|---|---|
| BLUE 1 | 3/1 | Confirmed MIG kill |
| BLUE 2 | - | |
| BLUE 3 | - | |
| BLUE 4 | 1/1 | |
| MIG 1 | Yes plus unguided rockets | About 17 rockets total |
| MIG 2 | Yes plus unguided rockets | in groups of 3 to 4 |
| MIG 3 | Yes | |

9. EQUIPMENT PROBLEMS

BLUE 4 - AB failure

BLUE 2 - Reported Hot Air Overheat Light on. Then a second light on and they would have to get out.

BLUE 3 - "Lost all his equipment" - apparently WILD WEASEL equipment.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | Unknown | Unknown | Unknown | TAC background |
| BLUE 2 | Unknown | Unknown | Less than 10 | TAC background. F-105 instructor Nellis. F-105 tour in Germany. |
| BLUE 3 | Unknown | Unknown | About 95 | |
| BLUE 4 | 2400 | 500 | 64 | 9 yrs. rated, 4 mos. in SEA |

Comments

BLUE 4 feels that the MIG-17's ability to stay with him at 450 kts CAS, make a firing pass, and easily reposition for another firing pass is important.

BLUE 4 observed that the MIGs only fired at him when he started to turn and not when he was straight and level.

## 11. DATA SOURCES

Project Interviews: BLUE 3 (Pilot and EWO),
Messages, Reports:

432TRW OPREP-3, 02771 April 1967, 191300Z
432TRW OPREP-3, 02772 April 1967, 191315Z
355TFW OPREP-3, 11274 April 1967, 191757Z

## 12. NARRATIVE DESCRIPTION

BLUE flight was a flight of four F-105F WILD WEASEL aircraft on an IRON HAND mission assigned the task of suppressing SA-2 FANSONG radar and missile operation. The task was in support of a large force of F-105 and F-4 aircraft attacking JCS 22.00, the Xuan Mai Army Barracks and Insurgency School located about 12 mi southwest of Hanoi. During the initial MIG attack, the flight split into three separate units, with BLUE 1 and 2 attacking an SA-2 site, BLUE 3 attempting to separate from MIG aircraft and return to the task of suppressing SA-2 sites, and BLUE 4, without an afterburner, attempting to survive the attack of three to four MIG-17s.

As BLUE flight approached the target area, they were in a descent from 15,000 ft passing through 5,000 ft, on a heading of 070°, in the process of preparing to launch an AGM-45 against a FANSONG radar signal emitting at their 12 o'clock when BLUE 4 saw two flights of MIG-17s attacking from his 2 o'clock position. BLUE 4 was flying element lead position as a result of BLUE 3 experiencing equipment failure. The flight was in a right echelon so that the element could "look through the flight" for SAMs or MIGs from the high threat area, i.e., the delta around Hanoi, as they were passing about 5 mi north of Hoa Binh in the vicinity of 20°53'N/105°25'E. BLUE 4 called the MIGs to the rest of the flight and, with BLUE 3 on his right wing, immediately broke right into them. All of the MIGs were observed to drop their fuel tanks with fuel streaming out of the tanks. BLUE 3 jettisoned the centerline fuel tank and the two CBU-24s, retaining the QRC-160 and the AGM-45 Shrike missile. Both aircraft selected afterburner power. The first flight of MIGs fired unguided rockets from a range of 3,000-4,000 ft but the rockets appeared to tumble about 1,500 ft in front of the MIGs and were completely ineffective. The first flight of MIGs overshot but the second flight of MIGs turned into BLUE 3 and 4. About this time, BLUE 4's afterburner failed to light and BLUE 3, in afterburner, passed BLUE 4 and they became separated for the rest of this flight. BLUE 1 and 2 were not under direct MIG attack at this time and were able to continue the attack on the SA-2 site. The rest of this reconstruction will cover each member of the flight separately starting with BLUE 4, BLUE 3, and then BLUE 1 and 2, although all three entities were engaged by MIGs during the same time period.

BLUE 4, attempting to get his afterburner lit, unloaded his aircraft and pointed it down from 5,000 ft to gain some airspeed. He was only able to descend a few thousand feet because of the mountainous terrain but increased his airspeed to about 450 kts. He turned from his easterly heading to 240° and headed back across the Black River. The MIGs attacked BLUE 4 during this maneuver and one came into BLUE 4's view as he turned. BLUE 4 fired 47 rounds of 20mm HEI at the MIG as he passed the nose of the F-105, and BLUE 4 estimates that the MIG was damaged. The MIG continued away from BLUE 4 and was observed pulling out just above the treetops.

In the vicinity of 21°50'N/105°12'E, two more MIGs rolled in behind BLUE 4 and BLUE 4 was forced into a scissoring engagement lasting about 4 min. BLUE 4 was jinking to avoid being a stabilized target for the repeated firing passes and jettisoned his ordnance as he egressed, first the centerline fuel tank and then the CBU-24s. Before BLUE 4 jettisoned the AGM-45, one silver-colored MIG-17 with a red star on the side flew up to a position 200 ft to the left of BLUE and sat there for 3-4 sec looking over at the AGM-45 Shrike missile on the outboard wing pylon. The MIG broke away when BLUE 4 turned into him.

BLUE 4 continued to fly the mountainous terrain contour attempting to unload, dive, and increase airspeed when the terrain permitted. But due to the rising feature of the terrain in the area (a rise from about 2,000 ft to almost 10,000 ft) he was unable to accelerate to an airspeed over 450 kts. With each hard jink to avoid a MIG pass, his airspeed would fall off to about 420-430 kts. The Electronics Warfare Officer (EWO) in the rear cockpit was advising the pilot as the MIGs were coming in, relaying the enemy position, and what direction to jink in order to avoid the MIG fire. As BLUE 4 crossed over the town of Hoa Binh (nestled in a bend of the Black River Valley between 3,500 ft peaks) there were three or four MIGs attacking him but the 37mm antiaircraft batteries opened up on both the F-105 and the MIGs. However, the MIGs continued the attack as BLUE 4 progressed up the Black River Valley. The MIGs appeared to give up the chase one at a time until there was only one MIG left, and this MIG turned back at about 20°45'N/105°00'E.

BLUE 4 heard BLUE 1 call that BLUE 2 had bailed out. BLUE 4 reversed course and returned as far as he dared knowing that he could not engage any MIGs nor suppress any SAM threats without ordnance. He was able to relay radio calls to the rescue agency and remained in the area until his fuel ran low. He then egressed to GREEN ANCHOR for post-strike refueling and returned to Takhli AFB.

Return now to the initial encounter to retrace BLUE 3's engagement. BLUE 3 observed that the MIG-17s had a large red star that completely covered the vertical stabilizer and were silver colored except for one that was camouflaged. As BLUE 3 jettisoned the CBUs and fuel tank, he was immediately engaged by a MIG-17 coming into his 6 o'clock position at 3,000 ft range -- but not in position to fire. BLUE 3 broke and forced the MIG to overshoot but in so doing, slowed down too much and could not overtake the MIG as the MIG climbed away.

BLUE 3 then turned in an attempt to return to the target area but observed another MIG-17 on his tail but could not get this MIG to overshoot. BLUE 3 dove to the deck between the hills accelerating as he dove and lost the MIG. BLUE 3 once again attempted to return to the troll area but over the city of Hoa Binh, BLUE 3 observed a MIG below him at 4,000 ft going away to the north. BLUE 3 set up for an attack on the MIG thinking that the MIG pilot had not seen him but the MIG went to afterburner and turned so tight that the attack was nullified and the MIG came back in on BLUE 3's tail. However, this MIG could not close and BLUE 3 lost him. A short time later, the EWO informed BLUE 3 that another MIG was on their tail. But at this time, BLUE 3 was below Bingo fuel. He went to afterburner, accelerated away from the MIG on the deck, and egressed. BLUE 3 did not have enough fuel to attempt a rendezvous with a tanker and elected to recover at Udorn AFB.

Return again to the initial encounter to reconstruct the flight path of BLUE 1 and 2. As previously stated, BLUE 1 and 2 were not under immediate MIG attack when BLUE 3 and 4 engaged the force of eight MIG-17s. BLUE 1 continued to prepare for an attack on the FANSONG radar at their 12 o'clock position, and both BLUE 1 and 2 launched an AGM-45 shrike missile at a SAM site in the vicinity of 20°52'N/105°45'E.

BLUE 1 and 2 probably swung right in a southerly heading while waiting for the missile impact to mark the SA-2 site and then swung back around to their right in the pop-up for CBU-24 delivery. Delivery heading was to the north with release at 7,000 ft. BLUE 1 observed a couple of MIG-17s attempting to get into his 6 o'clock as they approached the SA-2 site but apparently the MIGs were not able to close and were not a threat at that time. As BLUE 1 rolled off of the target, he picked up a MIG-17 low at his 9 o'clock position.[1] BLUE 1 turned to get behind the MIG and paralleled his course. The MIG turned north toward Hoa Loc Airfield and BLUE 1 rolled in from above and fired a burst of 20mm, but did not see any hits. BLUE 1 then rolled in at the MIG's 6 o'clock and fired another butst hitting the MIG in the left wing. BLUE 1 observed the left wing start to disintegrate, pulled up to avoid collision with the MIG, and watched it crash in a rice paddy. During the attack on this MIG, BLUE flight moved 5-10 mi from the target toward the west/southwest.

During the time that BLUE 1 was shooting at the MIG-17, he thought that BLUE 2 was on his wing but in the process of coming off of the target, BLUE 2 apparently became separated from BLUE 1 and came under attack of another MIG. BLUE 2 called that he had a "Hot Air Line Overheat light on" and shortly thereafter repeated the first message with an additional warning light on and that he would have to get out. BLUE 1 advised BLUE 2 that he was not in sight and to head southwest. BLUE 1 headed in that direction and picked up two chutes in the vicinity of 20°44'N/105°32'E. Two good beepers were also heard. See Event III-116 for more information on BLUE 2.

BLUE 1 orbited the area attempting to locate and talk to the downed pilots without success until his fuel was running low and he observed a MIG-17 at his 6:30 o'clock position. He lit afterburner and egressed the area to GREEN ANCHOR to refuel. Prior to leaving the rescap area, BLUE 1 requested aid until the choppers could effect a pickup. The F-105s in Event III-117 and two A-1s responded (see Event III-117).

BLUE 1 returned to the rescap as a single ship since he knew the location of the downed pilots and could lead the rescue force to the spot. On arriving in the area, BLUE 1 called on GUARD Channel and heard a very brief beeper in response. BLUE 1 called repeatedly on GUARD Channel for the next 7 min but received no further response from the ground.

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[1]There is a disparity between the action reported by the 432TRW OPREP-3 and the information relayed to the interviewers by BLUE 4 and his backseater. BLUE 4 states, "I discussed the incident with Major (BLUE 1) in detail, later, after we were on the ground, and I'll try to explain exactly what he told me". The above follows BLUE 4's narration; however, according to the OPREP, the reader is led to believe that BLUE 1 shot the MIG down after BLUE 2 bailed out and was on the ground with the MIG heading 090° when initially seen by BLUE 1. The OPREP appears to compress the action as reported by BLUE 4 and reduces the number of MIG encounters to a total of two MIG-17s. The correct story cannot be determined because BLUE 1 was lost to possible MIG action about 10 days after this occurrence.

Event III-114

BLUE 1 observed four more MIG-17s orbiting the area and pulled in on one and fired. The MIG dropped his fuel tanks but did not go down. BLUE 1 thought that he had hit this MIG but had to let him go as two more MIGs were maneuvering on him. BLUE 1 went to afterburner and exited the area to a position about 20 mi west of the downed crewmen. BLUE 1 made one more pass through the area as the F-105s in Event III-117 arrived, but observed nothing and was forced to depart by low fuel. BLUE 1 recovered at Udorn AB. BLUE 1 fired a total of 700 rounds of 20mm HEI on the three passes.

BLUE 1 and his EWO reported a red star with a yellow border outline on the top of the wing on the MIGs which they engaged.

Event III-115

Aircraft Involved: Two RF-4Cs vs two MIGs

Results: No damage

Vicinity of Encounter: 21°05'N/104°57'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 April 1967/Unknown

Two RF-4Cs (BLUE Flight) were on a reconnaissance mission against the Son Tan army supply depot and airfield located near 21°05'N/105°30'E. At 20°45'N/104°04'E it was determined that the weather would preclude the mission accomplishment so BLUE Flight started a left turn to proceed to Channel 97.

11. DATA SOURCES

432 TRW 191330Z April 1967 OPREP-3 TUOC 02773

12. NARRATIVE DESCRIPTION

BLUE Flight was at 21°05'N/104°57'E at an altitude of 19,000 ft in a left turn to a heading of 210° when BLUE 2 sighted two unidentified aircraft. The aircraft were turning to BLUE Flight's 7 o'clock position, 3000-4000 ft above and 1 1/2 mi behind. BLUE Flight lit the afterburners and outdistanced the unidentified aircraft. No further contact was made.

Numerous MIG calls were received throughout the mission.

The weather was 5/8 coverage with tops at 12,000 ft and bases at 6000 ft.

[redacted]

Event III-116

Aircraft Involved: Four F-105s vs eleven MIG-17s

Results: Two confirmed MIG-17 kills
One F-105D slightly damaged

Vicinity of Encounter: 20°45'N/105°30'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 April 1967/1658H

ORANGE flight (four F-105Ds) was the first of four F-105D strike flights and two F-4C strike/cap flights fragged to attack JCS 22.00, the Xuan Mai Army Barracks at 20°53'N/105°35'E. The force also included a WILD WEASEL flight (Event III-114) which preceded the attack force into the target area. All of the flights listed above were attacked by MIGs on this date. (See Events III-114, -117, -118, -119, -120). The flights were in trail with Time-on-Target separation of 2-3 min.

## 2. MISSION ROUTE

ORANGE flight departed Takhli RTAFB and proceeded directly to GREEN ANCHOR for refueling, direct to Channel 97, at 19°28'N/103°43'E, direct to the Black River at 20 20°55'N/105°21'E and direct to the target at 20°53'N/105°35'E. Egress was planned via the reverse route with post strike refueling on GREEN ANCHOR and then direct to Takhli.

## 3. AIRCRAFT CONFIGURATIONS

F-105D ORANGE 1, 2, 3, 4

6 - M117 bombs on centerline MER
2 - 450 gal fuel tanks on inboard wing stations
1 - QRC-160 ECM Pod on outboard station
1 - AIM-9B IR missile on outboard station (1 and 3 only)
1 - M61 20mm cannon 1029 rds each

MIG-17s

Cannon
Three designs were seen: camouflaged, white, or silver; all with Red Stars.

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear near the target with 10-15 mi visibility. Broken cloud buildups to the south and west of the target over the mountains.

| | ORANGE 1 2 3 4 | MIG 1 - 11 |
|---|---|---|
| Altitude: | 6,000 ft | 6,000 ft |
| Heading: | 066° | 240° |
| Speed: | 550-600 KTAS | Unknown |
| Fuel State: | 10,000 lbs plus | |
| Flight Formation: | Standard Pod | Two elements of two |

## 5. INITIAL DETECTION

As ORANGE flight approached the pop-up point, heading 066°, at 6,000 ft and 550 KCAS, ORANGE Lead and 2 observed four MIG-17s approaching from the opposite direction at their 1-2 o'clock position. Two of the MIGs were 1500 ft above and two MIGs were 1500 ft below ORANGE flight.

## 12. NARRATIVE DESCRIPTION

ORANGE flight (four F-105Ds) was the first strike flight in a string of four F-105 and two F-4C flights fragged to bomb the Xuan Mai Army Barracks, 12 mi southwest of Hanoi. A F-105F WILD WEASEL flight preceded ORANGE flight into the target area by about 3 min and was jumped by MIG-17s upon entering the area (see Event III-114). ORANGE flight departed Takhli RTAFB, flew directly to GREEN ANCHOR for pre-strike refueling, directly to Channel 97 for a precise doppler navigation system fix, directly to 20°53'N/105°00'E, and then direct to the pop up point at 20°58'N/105°32'E with a planned right roll in on the target and a right roll off the target to egress over the reverse route.

As ORANGE flight passed the Black River (their push up power point), they lit the afterburner and accelerated preparatory to going into the pop up maneuver on the target. Shortly before the pop up point, ORANGE 3 and 4, who were flying pod formation with the element on the right (so that the element would be looking out over the valley toward Hanoi), saw an F-105F (believed to be BLUE 2, Event III-114) coming head-on from ORANGE 3's 12 o'clock and ORANGE 4's 11 o'clock position in a climbing left turn with a MIG-17 on his tail firing. The F-105F was climbing in a 20°-30° left climbing turn and passed within 3000 ft of the flight before it exited at the 3 o'clock position. ORANGE 3 observed the MIG-17 firing and saw smoke trailing from the F-105F. Two beepers were heard shortly

[redacted]

after. After the MIG fired and hit the F-105F, he entered a whifferdill and turned back on ORANGE flight but was no threat because of the range and ORANGE flight's high speed. ORANGE flight was at 6000 ft, 550-600 KCAS, headed east.

As the F-105F and MIG were passing, ORANGE Lead and 2 saw four MIG-17s (three dark colored and one silver) approaching from the opposite direction with two MIGs 1500 ft above ORANGE flight and two MIGs 1500 ft below. The MIGs apparently were in the right front quadrant because the two low MIGs pulled up in a wing over and started to come in at ORANGE Lead's 5 o'clock while the two high MIGs made a sweeping turn to the right and attempted to come in behind ORANGE 3 and 4. At this time, ORANGE Lead called to jettison and lead; 2 and 4 cleaned off the bomb racks and tanks retaining the ECM pods and SIDEWINDERS. ORANGE 3 and 4 did not see the four MIGs and ORANGE 3, thinking that ORANGE Lead was talking about the lone MIG chasing the F-105F, attempted to call lead and have the flight retain the ordnance since this lone MIG was no longer a threat at the airspeed of 550-600 kts. ORANGE 3 also feared for the safety of the aircraft since the flight was almost 200 kts over safe jettison speed. He elected to retain the ordnance and proceed to the target. ORANGE Lead and 2 broke right into the MIGs and narrowly missed having a mid-air collision with 3. The MIGs broke off the attack when ORANGE Lead and 2 turned into the pop and bombed the target. ORANGE 4 stayed on ORANGE 3's wing.

ORANGE Lead and 2 reversed back to the left to cover 3 and 4 in the pop; and as they turned from south to northeast at 6000 ft 550 kts, Lead saw two MIG-17s in loose formation at about 2000 ft altitude in his 10 o'clock position headed 080°. ORANGE Lead reengaged afterburner and broke into a right descending turn to attack the lead MIG who made a hard right break. ORANGE Lead cut the MIG off in the turn, obtained a good firing tone, and fired the AIM-9B at about 2000 ft range. The MIG continued the tight turn and the missile passed about 200 ft astern without detonating. The MIG then reversed back to the right and ORANGE Lead broke contact. ORANGE 2 attempted to break right with the MIG but was unable to turn with him and broke off to rejoin Lead.

During this timeframe, ORANGE 3 and 4 went through the pop up. ORANGE 3 selected a building and released his ordnance on the target. He then saw ORANGE 1 and 2 attacking the two MIGs and a third lone MIG-17 pull into their 6 o'clock. ORANGE 3 jettisoned the fuel tanks and empty MER rack as he pulled out in a shallow right turn to attack the MIG. As ORANGE 3 pulled into the MIG's 6 o'clock, the MIG broke into a hard right turn and came in behind ORANGE 3 and 4. ORANGE 3 called 4 to afterburner, entered a right turn toward the hills, and the MIG fell behind and broke off.

The flight rejoined over the hills and decided to come back into the area to look for other MIGs while the rest of the strike force attacked the target. As they were maneuvering in the target area, ORANGE Lead saw a MIG-17 (dark color with Red Star) turning from a heading of north toward east at 2000 ft. ORANGE Lead made a hard right turn to position himself inside of the MIG's turn, closed to 600 ft at the MIG's 5 o'clock, and fired about 200 rounds of 20 at the MIG. He did not observe any ordnance impact but did believe that the MIG was damaged. ORANGE Lead overtook the MIG and passed 75 ft over the MIG's canopy and broke away from the MIG which was no longer observed.

As ORANGE Lead was closing on the above MIG-17, ORANGE 3 observed a second MIG-17 climb up from below ORANGE Lead and pull into his 6 o'clock. ORANGE 3 rolled over and started to drop in behind the MIG but the MIG reversed hard to the right and down. ORANGE 3 turned hard right to stay inside of him but the MIG came back at ORANGE 3 in a quartering head-on turn. ORANGE 3 turned the M-61 cannon on at 1500 ft range and fired 500-600 rounds down to 100 ft range. The MIG flew through the stream of 20mm shells and ORANGE 3 saw many hits on the wing and along the fuselage with debris coming off of the MIG. The MIG passed over the canopy smoking and was lost in the large blind spot at the F-105s 6 o'clock at about 2000 ft altitude. ORANGE 4 reports that he was attempting to maintain position on 3 during the series of high "g" turns and maneuvers and was unable to keep track of the MIGs after the first encounter. However, other sources list this as a confirmed kill.

ORANGE 3 immediately dropped his nose in afterburner and went into a swirging right turn to keep his airspeed up and saw another MIG two miles to his left and going away at 1500 ft headed northwest, from 2500 ft. ORANGE 3 and 4 dove to the treetops at the MIG's 6 o'clock and closed using intermittent afterburner. ORANGE 3 was attempting to set the MIG up for a missile shot against a sky background. At this time, ORANGE 4 saw another MIG-17 turning in from the left and called 3 to break hard. ORANGE 3 did not hear the call due to the confusion on the channel and 4 again called for a break as the MIG selected 4 for a target and closed inside of 3000 ft. ORANGE 4 called once more for a break as the MIG was preparing to fire, and when no response came from 3, broke to the left. ORANGE 4 lit afterburner and was able to accelerate away from the MIG. ORANGE 4 could not contact ORANGE 3 to arrange a rendezvous so he headed west and departed the area. As ORANGE 3 closed to about 3000 ft on the MIG he was pursuing, the MIG broke hard left as if warned by radar or another MIG of ORANGE 3's approach. ORANGE 3 broke left with the MIG and at 1700 ft range attempted to fire the cannot but could only get about 10 sporatic rounds to fire as he jiggled the stick and recycled the trigger until at about 1000 ft range, with 50° angle off and 500 kts, ORANGE 3 saw a puff on the right wing about midway to the center of the wing. There was no flash, just a puff. As ORANGE 3 overshot the MIG's flight trajectory, he dumped the nose in afterburner and accelerated away. When he

leveled off, he again squeezed the trigger and the cannon functioned perfectly. Knowing that he had a partial capability with the cannon plus a SIDEWINDER missile, he swung around to the left to reenter the area.

As ORANGE Lead and 2 were maneuvering in the same general area on a southerly heading at 5,000 ft and 500 kts, ORANGE Lead saw a MIG headed northeast at 2,000 ft altitude. Lead made a hard left turn and descended to position himself behind the MIG. But the MIG entered a hard jinking maneuver and descended to 1,000 ft as ORANGE Lead closed to 3,000 ft and started firing in short bursts. At 1,500 ft, Lead saw sparkling impacts behind the canopy and the MIG entered a sharp descending turn from 1,000 ft of altitude or less. Lead passed over the MIG and made a hard turn but was unable to see any evidence of the MIG and estimated that the MIG was probably destroyed. Later this was changed to a confirmed kill. ORANGE 1 and 2 departed the area and returned to Takhli with no further incidents. While ORANGE 3 was maneuvering in the area near Hoa Binh, he saw an F-105F pursuing a MIG-17, fire on it, and hit the MIG with smoke coming from the MIG.

ORANGE 3 was flying southwest near the west bend of the Black River at Hoa Binh; he saw a lone silver colored MIG-17 at low altitude maneuvering as though trying to land in the field north of the city between the river and the mountains. The MIG was about 500 ft above the mountains, about 2,000-3,000 ft MSL and very slow, about 200 kts. ORANGE 3 dived into the MIG's 6 o'clock and observed that the MIG did not have gear down and was not smoking. When ORANGE 3 closed to about 3,000 ft range, the MIG broke hard right in a climbing maneuver. ORANGE 3 reefed his aircraft into a right turn but could not get a tone with the SIDEWINDER and elected to use the cannon. ORANGE 3 pulled the nose of the F-105 up until the MIG was blanked out under the nose and squeezed the trigger but again could only get a few sporatic rounds to fire as he closed on the MIG and jiggled the stick under the seven "g's". ORANGE 3 was greyed out but he could see the MIG coming out from under his nose and in a last attempt, fired the SIDEWINDER from about 200-500 ft range hoping that the missile would hit the MIG. The missile was not observed as ORANGE Lead overshot the MIG and passed through the MIG's jet-wash. The turbulence created by the jet-wash tore ORANGE 3's hand off of the stick and thumped his head down, causing him to momentarily lose control of the aircraft. He recovered in a descent at 500 ft AGL and heard the F-4C flight call a bogey at 3 o'clock low. Believing that he was the last F-105 in the area, he started to depart the area and found that he had less than 3,000 lb of fuel, barely enough to make Udorn without post-strike refueling. He had less than 1,000 lb on the post strike tanker but refueled and returned to Takhli with no further problems.

While enroute to the tanker, ORANGE 3 noticed a deep oval shaped gouge in the bottom left corner of the bullet-proof windshield. The gouge, extending from a few inches from the bottom of the pane toward the top, was about 4 in long, 1.5 in wide, and at least 1/4 in deep. ORANGE 3 felt that this was a bullet ricochet fired from one of the MIGs but did not recall a MIG that obtain head-on nose alignment. More probably the gouge was caused by debris coming off one of the MIGs. On return to Takhli, ORANGE 3 observed that his cannon was completely fired out.

ORANGE flight returned to base with no other damage than the windshield.

[redacted]

Event III-117

Aircraft Involved: Four F-105Ds and two A-1Es vs eleven MIG-17s

Results: One A-1E lost to MIG-17
One MIG-17 killed by F-105D
Four MIG-17s damaged

Vicinity of Encounter: 20°53'N/105°35'E (1st Encounter)
20°37'N/105°18'E (2nd Encounter)

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 April 1967/1702H (1st Encounter); 1718H (2nd Encounter)

BUFF flight (four F-105Ds) was the second strike flight fragged to attack JCS 22.00, the Xuan Mai Army Barracks at 20°53'N/105°35'E. The force consisted of four F-105D strike flights, two F-4C strike/cap flights, and one F-105F WILD WEASEL flight. The WILD WEASEL flight arrived in the target area first and was jumped by MIG-17s while inbound. The first strike flight (Event III-116 was attacked by MIG-17s in the target area. BUFF flight did not see any MIGs until they were outbound after bombing the target. BUFF flight's second MIG encounter occurred after post strike refueling when BUFF flight returned to the target area for rescap of BLUE 2 in Event III-114. SANDY flight (two A-1Es) responded to a downed pilot call and proceeded to the area of BLUE 2 in Event III-114, where they were jumped by four MIG-17s.

## 2. MISSION ROUTE

BUFF flight departed Takhli RTAFB and proceeded directly to GREEN ANCHOR for refueling, direct to Channel 97 at 19°28'N/103°43'E, direct to the Black River at 20°53'N/105°35'E. Egress was over the reverse route with a MIG encounter in the vicinity of 20°53'N/105°35'E and then direct to Channel 97 and GREEN ANCHOR. BUFF flight refueled and returned direct to 20°37'N/105°18'E where a second MIG encounter occurred. The flight again egressed directly to GREEN ANCHOR and subsequently recovered at Takhli. SANDY 01 and 02 departed Udorn RTAFB, flew direct to Channel 97, and orbited east of Channel 97 until called by RED CROWN to proceed to the 089 radial at 103 mi from Channel 97. The flight was jumped by four MIG-17s in that vicinity, 20°40'N/105°30'E, and SANDY 01 was lost to MIG fire. SANDY 02 egressed direct to Channel 97 and recovered back at Udorn RTAFB.

## 3. AIRCRAFT CONFIGURATIONS

<u>F-105D BLUE 1, 2, 3, 4</u>

6 - M117 bombs on centerline MER
2 - 450 gal fuel tanks on inbd wing stations
1 - QRC-160 ECM pod on outboard station
1 - M61 20mm cannon 1029 rds
BLUE 1 and 3 carried one AIM-9B IR missile on other outboard station.

<u>A-1E SANDY 01 and 02</u>

2 - CBU-22
5 - LAU-32
1 - LAU-32 WP
4 - M47
4 - 20mm M3 cannon with 200 rds each
1 - SUU-11 (7.62mm) 1600 rds

<u>MIG-17</u>

Unknown

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

<u>Weather</u>: Clear near the target with 10-15 mi visibility. SANDY 02 reported a 300 ft cloud layer starting 40 mi west of Hanoi to Channel 97. BUFF 1 stated broken cover to the south and west because "we were in the clouds on the way to 97 and during re-refueling".

| | Encounter 1 | Encounter 2 | |
|---|---|---|---|
| | BUFF | BUFF | SANDY |
| | 1 2 3 4 | 1 2 3 4 | 01 02 |
| Altitude: | 5,000 ft | 5,000 ft | 2,000 ft |
| Heading: | 250° | 080° about | Turning from W to N |
| Speed: | 500 KCAS | 700 KTAS | 150 KTAS |
| Fuel State: | 8000 lbs | 8,000 lbs | Unknown |
| Flight Formation: | Fluid 4 with element on right side | Element 1.5 n mi in trail | Wing |



[redacted]

5. INITIAL DETECTION

Encounter 1 - BUFF flight had been alerted to MIGs in the area by radio calls from other flights. They bombed the target and were egressing on a heading of 270° at 4,000 ft MSL altitude, 500 KCAS when BUFF Lead saw two MIG-17s at his 2 o'clock position; he headed south at about 2,000 ft altitude, 3,000-4,000 range.

Encounter 2 - BUFF flight used the UHF/DF to home in on SANDY 02. The MIGs were observed about 2 o'clock at several miles range with the elements making butterfly passes on SANDY 02. SANDY 02 was right on the deck.

6. ACTION INITIATED

Encounter 1 - BUFF Lead called the two MIGs crossing at 12 o'clock and his intent to attack. He entered a lazy left wing over descending to 1,500 ft with BUFF 2 crossing to his right side.

Encounter 2 - BUFF Lead and 2 flew through the middle of the flight of MIGs causing them to scatter. BUFF 3 and 4 swung in behind one element of the MIGs and engaged in a Lufberry chase. BUFF Lead and 2 then entered a wide turn and reengaged. SANDY 02 came under attack a few more times and then managed to duck under a 300 ft cloud layer and egress.

7. SITUATION DEVELOPMENT

Encounter 1 - BUFF 1 and 2 each jettisoned the empty MER rack and the two empty 450 gal fuel tanks, lit afterburner, and went into a medium bank, 2-3 "g's", descending turn and leveled out at 1500 ft about 3,000 ft behind the MIGs, closing at 600+ kts. BUFF 3 and 4 stayed high in trail and covered the lead element. The two MIGs, unaware that BUFF was behind them, made a left 90° turn toward the target area as BUFF Lead closed to 1500 ft range and prepared to fire. Just as BUFF Lead started to fire, he saw a flight of F-105s head-on and about 200 ft above him (see Event III-119). This diverted his attention and he momentarily lost track of the MIGs. The MIGs were reacquired over the town of Hoa Binh in a left turn. BUFF 1 closed to an estimated 800 ft, tracked one of the MIGs, and opened fire with the 20mm cannon. He immediately saw sparkles in the left wing root area. BUFF 1 also saw sparkles on the other MIG and realized that BUFF 2 was firing. The MIGs snapped into a hard left nose down spiral from about 1,000 to 1,500 ft, right over Hoa Binh.

BUFF 1 and 2 could not begin to match the turn so they rolled wings level and started back to Channel 97. The MIGs were not observed again.

As BUFF 1 and 2 broke off from the two MIGs, BUFF 3 saw a lone MIG at his 9 o'clock position about 1,000 ft low headed toward him. BUFF flight was in a left turn through north at 5,000-6,000 ft, 500 kts. The MIG "made an instantaneous turn into our 6 o'clock position", in "perfect gun range". BUFF 3 and 4 increased the rate of turn and BUFF 3 told 4 to "slide to the outside of the turn and high", and to jettison the tanks and go afterburner. The MIG, initially at 1,000-1,500 ft, had opened to about 2,500 ft, broke off rapidly to avoid the tanks and MER from the second element. The flight then rejoined and egressed to GREEN ANCHOR for post-strike refueling.

Encounter 2 - BUFF 1 and 2 attacked a MIG and fired an AIM-9B with good tone but probably inside minimum range. The missile passed about 5 ft under the MIG without detonating. BUFF 3 broke into the lead MIG that had gone back after SANDY 02. The sequence of aircraft was MIG 1, BUFF 3, MIG 2, BUFF 4, and two more MIGs behind BUFF 4. SANDY 02 was observed departing the area.

As BUFF 3 opened fire on MIG 1 and observed hits on the left wing and fuselage (also observed by BUFF 1 immediately after firing the missile), BUFF 4 called, "BUFF 3, break right, 3 - break right, F-105 - break right now; 17s firing on you". BUFF 3 observed the "big red balls" going past from the MIG 2, 500 ft behind him. BUFF 4 was firing on MIG 2 from 200 ft with a high angle off but missed. BUFF 3 at about 275 KCAS, was able to wallow into a right turn using full rudder and used full forward stick to drop the nose and dive into a cloud in a valley below him and escape the MIG.

BUFF 1 with 2 on his wing, attacked MIG 3 behind BUFF 4 and forced MIG 3 to break off to the right. BUFF 1 made a high speed yo-yo and reattacked, firing at the MIG from about 1,000 ft range as the MIG flew straight away. With the pipper on top of the canopy, "Sparkling" behind the cockpit area was observed immediately. BUFF Lead pulled up to avoid ramming the MIG, and the MIG blew up underneath him slamming his head down on his chest.

BUFF 3 returned to the engagement and saw an F-105 firing on a MIG with two MIGs behind him. One of these two MIGs was firing on the F-105. BUFF 3 attacked the two rear MIGs as he observed the F-105 hitting the MIG in front of him. BUFF 3 fired his AIM-9B and observed it turn directly for the MIG but was forced into a scissor maneuver with the second MIG and could not observe the results. During one of the crossovers, BUFF 3 fired at the MIG but missed and then dove for separation.

BUFF 1 called for egress and BUFF flight rendezvoused with the tankers. The tankers came pretty far north to pick up the fighters who were extremely low on fuel. BUFF

flight returned to Takhli RTAFB with no further problems. The second MIG engagement lasted about 6 min with an overall flight time of about 5 hrs.

## 8. ORDNANCE

| | (No. fired/No. hits) Cannon | Missiles | Remarks |
|---|---|---|---|
| BUFF 1 | 3/2 | 1/0 | 926 rds 20mm total. One MIG kill; 1 damage |
| BUFF 2 | 2/1 | - | Damage observed |
| BUFF 3 | 2/1 | 1/0 | Extensive damage observed |
| BUFF 4 | 1/1 | - | Damage observed |
| MIG 1 | - | - | --- |
| MIG 2 | 1/0 | - | --- |
| MIG 3 | 1/0 | - | --- |
| MIG 4-8 | Unknown | - | --- |

MIG firing does not include at least eight firing passes on SANDY 02 (the A-1H) or the MIG firing pass on SANDY Lead which resulted in a hit and loss.

## 9. EQUIPMENT PROBLEMS

BUFF 1 - Gun camera film did not work
BUFF 3 - Strike camera was inoperative

## 10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | NVN Missions | Remarks |
|---|---|---|---|---|
| BUFF 1 | 1300 | 900 | 61 | All TAC background |
| BUFF 2 | Unknown | - | - | --- |
| BUFF 3 | 1200 | 900 | 35 | All TAC background |
| BUFF 4 | Unknown | - | - | --- |
| SANDY 01 | Unknown | - | - | --- |
| SANDY 02 | Unknown | - | - | --- |

Comments on this Encounter

BUFF 1 - Flight felt MIG pilots were very aggressive and made no mistakes.

BUFF 1 - After refueling, the flight returned to the target area at 30,000 ft because "it was obviously a MIG day".

BUFF 1 and 3 - Need better turn capability in F-105.

BUFF 3 - Played their slow-speed game because of situation with SANDY 02 demanded it.

SANDY 02 - Missiles and F-4s would be no good in this "on deck hassle". Thankful for the F-105 gun.

SANDY 02 - Felt that as long as he could see the MIGs initiate their pass or just prior to firing, he could avoid them by maneuvering in the crags and valleys of the mountainous terrain. He does not feel that he could have crossed the 10 mi wide valley successfully while under attack and that the MIGs could have hit him in the karst formation where he stayed if they had teamed up on him from opposite sides.

Comments from Overall Experience

BUFF 3 - Don't ever, ever attempt to stay at low airspeed and turn with a MIG-17.

BUFF 1 - Missile should arm immediately after leaving the rail even if we lose a few aircraft in training.

SANDY 02 - A-1H has much better visibility than A-1E. Had to lean way forward and toward the right to see MIGs coming in from that direction.

SANDY 02 does not think the MIGs were very proficient.

## 11. DATA SOURCES

Project Interviews: BUFF 1, 31 May 1967; BUFF 3, 29 May 1967; SANDY 02, 24 October 1968
Messages, Reports:

OPREP-3 - 355TFW, DOTO 0-11274, 191757Z, April 1967
OPREP-3 - 432TRW, TUOC 2776, 191340Z, April 1967
Combat Loss Report - A-1E, 1845H, 19 April 1967.

[redacted]



## 12. NARRATIVE DESCRIPTION

Encounter 1

BUFF flight was the second strike flight of F-105s fragged to attack JCS 22.00, the Xuan Mai Army Barracks, located at the foot of the mountains about 12 mi west/southwest of Hanoi. Time on target was spaced about 2-3 min apart so that the flights were spaced about 20 mi in trail of each other. BUFF flight was about 4 mi to the right (south) of the flight in front of him (see Event III-116) and to the rear when that flight called they were under MIG attack. The members of BUFF flight strained to acquire the MIG targets but were unable to see them - primarily because the action approached the other flight from that flight's 12 o'clock. BUFF Lead determined that there was no threat to his flight and proceeded to the target.

After bombing the target, BUFF flight was egressing to the west crossing the Black River for the first time north of Hoa Binh, when they heard a second flight call that they were under MIG attack. The flight proceeded to the second check point on the Black River just to the east of Hoa Binh at about 4,000 ft, 500 KCAS, when BUFF Lead saw two MIG-17s at his 2 o'clock at about 2,000 ft altitude headed south. The MIGs proceeded south passing about 4,000 ft in front of BUFF flight who lit afterburner and executed a wingover to a left descending turn which was completed at about 1,500 ft, 3,000 ft behind the MIG-17s. BUFF flight was flying fluid four formation with the element on the right spread beyond normal pod formation distance for better MIG lookout. BUFF Lead was able to identify the MIGs by their shape and color.

Apparently the MIGs did not know that BUFF flight was behind them because they entered at 45° bank burn and turned to a heading of about 090°. BUFF Lead thought that the MIGs had seen the Thuds behind them and that the MIGs were turning to engage so BUFF Lead and 2 jettisoned the empty MER rack and the two empty 450 gal fuel tanks, retaining the QRC-160 and AIM-9B on the outboard stations. BUFF 3 and 4 turned with the lead element but stayed 2,000 ft high and to the rear for cover but did not clean their aircraft off at this time.

BUFF Lead with 2 on his right wing (BUFF 2 crossed over during the initial turn), closed at 500 to 600 KCAS, and just started to squeeze the trigger when his attention was diverted to a flight of F-105s coming head-on 200 ft above him (see Event III-119). BUFF did not have enough time to break from his course; but when he attempted to reacquire the MIGs, he could not pick them out of the ground clutter. The MIGs were silver with red stars on the tail and red flaps and ailerons. The next time he saw them they were in a 2 "g" left turn right over the town of Hoa Binh. BUFF Lead closed to 800 ft, put the pipper on the nose of the MIG, and fired a 2 sec burst. He immediately saw the left wing and wing root area start sparkling from the hits. BUFF Lead also saw sparkles on the Number Two MIG from cannon hits as BUFF 2 fired at MIG 2. BUFF Lead's sight was set at "guns air" with the radar set in "search and attack standby" which should have given him about 1,500 ft fixed range "'g' computing only". BUFF 2's sight setting is unknown. The MIGs were in a loose echelon formation with 30°-45° of bank and snapped into a steep nose-down spiral as they were hit. They were last observed in the spiral at about 1,000 ft altitude over the town of Hoa Binh. BUFF Lead stated, "It was absolutely impossible for us to follow them through that turn". No smoke or debris was seen coming off of the MIG.

Shortly after the lead element passed over the MIGs, BUFF 3, turning through north at 5,000-6,000 ft altitude and 500+ KCAS, saw a MIG-17 at his 9 o'clock position about 1,500 ft away and a little low "make an instantaneous turn into our 6 o'clock. BUFF 3 rolled further into the turn, gradually increasing tank and "g" so that BUFF 4, who was on the outside of the turn, could stay with him and called for BUFF 4 to go high, jettison ordnance, and go afterburner. At this time, the second element jettisoned the empty MER rack and the empty fuel tanks right in the MIG pilot's face. The MIG apparently lost some speed in the turn because his range had opened to about 2,500 ft; and at the last time he was seen, the tanks were headed right for him. BUFF 3 jinxed back and forth a couple of times to make sure there were no more enemy fighters and then rejoined the lead element, and the entire flight headed for Channel 97 and then to GREEN ANCHOR for post strike refueling.

On the way to the post strike refueling tankers, BUFF heard that a WILD WEASEL F-105 was down (Event III-114) but did not hear RED CROWN direct any support flights in to assist in the rescue attempt. BUFF flight volunteered to return to the area but RED CROWN was reluctant to grant permission because of the lack of external fuel tanks and the resulting short time on station. However, since no other aircraft were available to return to the area, BUFF was granted permission to take on a full internal load of fuel and return. When the flight completed refueling, they were about 200 mi southwest of the downed aircrew. BUFF Lead took the flight back into the area at 30,000 ft altitude to conserve fuel and because "it was obviously a MIG day".

BLUE Lead (Event III-114) was just arriving back in the area of the downed aircrew as BUFF flight was coming off the tanker. BUFF flight and BLUE Lead were in contact with each other and BUFF flight knew that BLUE Lead was under MIG attack. As BUFF flight was letting down about 20 mi west of the area, BLUE Lead called and said there were MIGs all over the area, and he cound not raise either of the aircrew on the radio. He was out of gas and would have to depart the area.

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As BUFF flight descended through 10,000 ft, SANDY 02 (A-1E wingman) called that four MIG-17s had jumped the flight and that SANDY 01 had been hit and was going in. He rather excitedly requested the F-105s to "come back and help me". At this point the story will digress and cover the actions of the A-1E flight which led up to this situation.

SANDY was a flight of four A-1Es which departed Udorn RTAFB and flew direct to their orbit position a few miles from Channel 97. Their arrival at this orbit position was timed with the air strikes further north so that they would be in the most optimum position to assist in any rescue attempts. Briefly stated, their mission was to proceed to the position of a downed aircrew immediately upon notification by CROWN (the rescue coordinator) and take charge of the rescue attempt, determining whether the position and enemy defenses were amenable to rescue attempt. On the scene they would vector the "Jolly Greens" in and coordinate enemy anti-rescue fire suppression using both their ordnance and that of any available jets in the area.

On this date, SANDY flight was orbiting east of Channel 97 when CROWN called the aircrew down at 20°44'N/105°34'E and for SANDY 01 and 02 to head toward the border and hold there a couple of minutes. Enroute, CROWN called and directed SANDY 01 and 02 to proceed to the 089° radial of Channel 97 for a distance of 103 mi (20°30'N/105°32'E), about 32 mi southwest of Hanoi and to hold west of the downed aircrew until some fighters arrived. SANDY 01 and 02 flew into the area at 11,000 ft, 140-160 KCAS, with SANDY 02 flying echelon formation about 100 ft left of SANDY 01. With the arrival of BLUE 1 (Event III-114), the A-1Es proceeded up to the area of the downed aircrew at 11,000 ft MSL. SANDY 02 saw the Thud burning and had located the position of one of the downed aircrew when BLUE 1, orbiting in the area, was jumped by MIGs. The SANDIES returned across a small valley to their position at 20°30'N/105°32'E (about 15 mi) and arrived at 1,000 ft AGL, about 2,500 ft MSL. They made a 180° turn to the right and were just rolling wings level headed north when SANDY 02 saw four MIG-17s at his 5 o'clock position, 3,000 ft high. The MIGs were in two elements of two with one element attacking each A-1E. SANDY 02 was on SANDY 01's left wing, level in altitude and about line abreast at a distance of 100 ft. The MIGs started firing 2-3 sec after 02 picked them up.

SANDY 02 called, "Break right" as he broke right over SANDY 01 into the MIGs. As 02 passed over 01, he observed 01 in a 15° right bank roll rapidly to the left with pieces of aircraft (or possibly but not likely ordnance) coming off of SANDY 01's left wing from about halfway out to the wing tip. The MIGs missed and overshot SANDY 02 and as he completed 180° of turn headed for the weeds, he saw SANDY 01 in a 120° banked spiral hit the top of a piece of karst. At this time he was calling CROWN appraising them of the situation and urgently requested help. CROWN called back and said, "They would send someone up". SANDY 02 did not observe a chute or beeper from 01.

As SANDY 02 rolled out on a southerly heading, the MIGs started making individual passes from the four cardinal compass points and appeared to be well disciplined in not interfering with each other's pass. They appeared to favor a quartering stern attack but did not let this interfere with their turn.

SANDY 02, at about 100 ft AGL, jettisoned all of his ordnance except the SUU-11 after the second MIG pass and with full power maneuvered around the Karst formation at a max airspeed of 140 kts slowing to 90 kts in the hard breaks. He was able to observe the MIGs as they started their individual passes and followed the policy of tightening the turn into the MIG as the MIG approached firing position. Upon rolling wings level after one of these passes, SANDY 02 saw a MIG approaching head-on, slightly above him, firing from 500 ft range. SANDY 02 clamped down on the trigger and fired the SUU-11 at the MIG without aiming but did kick the rudder back and forth hoping that the dispersion would get the MIG. However, no damage was observed. The MIGs made at least five firing passes before the F-105 flight arrived.

As BUFF flight returned to the area of the downed F-105F aircrew, they were in radio contact with BLUE Lead on GUARD Channel and learned that the SANDY flight was in the area and waiting for the arrival of the rescue choppers. BUFF 3 reported that he, "Thought he heard something to the effect 'SANDY 01, I'm hit; they're killing me; SANDY 01 is going in". No other flight members report hearing this. Shortly after, SANDY 02, who had been operating on the rescue frequency, came up on GUARD Channel and said that SANDY 01 had been shot down by MIGs and that at least four MIGs were attempting to shoot him down. SANDY 02 naturally sounded pretty excited. BLUE 1, the WILD WEASEL leader, answered him with, "Get the .... down on the ground, down on the deck and keep it moving. Just start turning and keep it moving". Sandy 02 replied, "I can't get away".

BUFF Lead told SANDY 02 to stay on the deck and keep turning, that the MIGs could not match his turn and to transmit for a DF. Both BUFF Lead and 3 were checking for the DF which indicated the 4-5 o'clock position. At this time, BUFF flight was down to about 5,000 ft traveling at about 700 kts in an attempt to close on SANDY 02. BUFF flight swung into a steep right turn with the DFs continuing to indicate right. After about 2 min, SANDY 02 saw the four F-105s at his 2 o'clock position at about 3.5 mi range, headed about west/northwest and called, "F-105s, I'm at your 3 o'clock; come right, come right, come right". SANDY 02 was headed south/southeast but had to take immediate evasive action and rolled out headed northwest. At this time, SANDY 02 saw the Thuds due west of him, about

one mile away and a little high in a tight right turn through north. The four F-105s were in loose trail with a MIG-17 behind them. SANDY 02 called, "F-105s break; one of those ..... are on your tail."

At the time of the first call in the above paragraph, BUFF 3 saw the fire from SANDY 01's aircraft and then SANDY 02 right on the treetops jinxing in hard turns with the four MIGs making gunnery-type passes on him. BUFF flight was perpendicular to SANDY 02's heading as they broke right into the MIGs with the second F-105 element trailing the first element by about a mile on the outside of the turn. BUFF Lead did not see the MIGs until he was relatively close to them and rather than pull of to attack a specific MIG, aimed the flight for the center of the MIG formation in an attempt to divert the MIGs from the A-1. The MIGs scattered as BUFF 1 and 2 went through their formation but one of them recovered and was rolling back in on SANDY 02. BUFF 3 saw this MIG and elected to rack the F-105 into a hard left turn to attack this MIG and immediately got into a low altitude left handed Luffberry at an airspeed below 300 kts. The order of aircraft was MIG, BUFF 3, MIG, BUFF 4, and two more MIGs.

BUFF Lead made a wide sweeping turn back and saw a MIG turn and head north toward Hoa Lac Airfield. The MIG was flying straight away as BUFF Lead pulled into the MIG's 6 o'clock position and fired an AIM-9B at an estimated range of 1,200 ft and 500 KCAS. The missile passed 5 ft under the MIG but did not detonate. (The proximity fuze probably did not have enough time to arm.) BUFF Lead was closing on the MIG with a clear blue sky for background and a good tone prior to firing. He then turned back to the right to enter the fray and immediately observed the Luffberry with BUFF 3 firing and hitting MIG 1.

Just as BUFF 3 started firing, BUFF 4 called, "BUFF 3 break right; BUFF 3 break right; F-105 break right now; MIG-17 firing on you". BUFF 3 had pulled 6-7 "g's" getting into the MIGs' 6 o'clock and as a result was slowed down to 275 kts and only able to pull 2-3 "g's" for tracking. However, the MIG was not pulling it in tight and BUFF 3 was able to track and hit the MIG along the left wing and just aft of the canopy on the fuselage. As he was firing, BUFF 3 saw the "Big orange balls going over the canopy and decided that it was time to break right; but when he attempted to reverse, the F-105 was sluggish to respond due to the high angle of attack. BUFF Lead finally fed in full rudder and forward stick and dove into a nearby cloud hoping that there "wasn't a mountain on the other side". The MIG continued to fire as BUFF 3 rolled the aircraft over and entered the cloud but was not behind BUFF 3 when he exited the cloud. During this time, BUFF 4 was firing at the MIG behind BUFF 3 from a range of 200 ft with a fairly high angle off but apparently missed. BUFF Lead observed the situation and thought that the MIG was going to blow up at any time but he did not observe any hits on the MIG either.

As BUFF Lead closed on the Luffberry, BUFF 4 called, "Somebody come help me; I have a MIG on my tail and I can't shake him". BUFF 2 called that BUFF Lead's tail was clear and BUFF Lead at 450-500 kts was easily able to slide in behind the MIG that was firing on BUFF 4. BUFF Lead had changed the gun sight switches to "Missiles air" prior to firing the AIM-9B but changed back to "Guns air" as he entered the Luffberry circle. BUFF Lead fired a short burst at the MIG and the MIG broke hard right. In order to avoid an overshoot, BUFF Lead reversed right into a high speed yo-yo; and as he was again sliding down behind the MIG, the MIG broke up. BUFF Lead in afterburner closed rapidly (about 200 kts overtake) to 1200 ft, placed the pipper on top of the canopy and opened fire. Immediate hits were observed behind the canopy on the fuselage; and as BUFF Lead closed to about 100 ft, the MIG started a slow roll. BUFF Lead snapped up hard to avoid a collision with the MIG and was passing over the MIG when a violent explosion occurred with fire on both sides of BUFF Lead's aircraft. The explosive force snapped BUFF Lead's head down on his chest and BUFF Lead, thinking that he had rammed the MIG, called, "I hit him; BUFF Lead is hit", and he received the reply, "Roger, BUFF Lead is hit bad". BUFF Lead pulled up, turned slowly to the southwest, and checked his aircraft over. After he had found no indications of damage, he called, "BUFF Lead is okay", and reentered the engagement.

The MIG-17s made at least three more firing passes on SANDY 02 after the arrival of the F-105s but they were not nearly so well organized. SANDY 02 continued to maneuver around the karst formations to frustrate the MIGs, fearing that he could not survive crossing the 10-mi wide valley which was between his position and the safety of the mountain ranges on the other side. BUFF Lead called, "SANDY you better go home; we are running out of gas and cannot stay much longer". By this time the MIGs were firmly engaged with the F-105s; and SANDY 02 started out across the valley at 160 kts, wide open. One MIG looked like he was starting a pass on SANDY 02 after he started out but the MIG never completed the run. SANDY 02 headed out on a southwest heading; and as he neared the far side of the valley, he saw a deep narrow valley in the vicinity of 20°28'N/105°12'E in the same direction with the tops in a broken cloud layer about 300 ft above the valley floor. He ducked under the cloud layer and followed the valley to a point 25-30 n mi east/southeast of Channel 97, climbing up one time in route to get a steer from SANDY 03 and 04. SANDY 02 recovered at Udorn with 30 min of fuel left.

When BUFF 3 exited the cloud he dove into to shake the MIG on his tail, he accelerated and climbed to 5,000 ft and turned back toward the engagement. The engagement was taking place between 3000 ft AGL and the tree tops. BUFF 3 saw an F-105 in a left turn (thought to be BUFF 2) firing at a MIG in front of him and with two MIG-17s behind him. BUFF 3 observed the F-105 hit the MIG as he rolled over and descended toward the MIG that was

[redacted]



firing on the F-105. At this time, BUFF Lead saw this situation with BUFF 3 having a MIG at his 2 and 10 o'clock positions. BUFF Lead dove down and fired a short burst at one MIG from a fairly high angle off just as the MIGs broke hard right into BUFF Lead. BUFF Lead found one of the MIGs coming right back at him, chased by BUFF 3.

As the MIGs broke right in front of BUFF 3, BUFF 3 reversed right and started tracking one of the MIGs but did not think he could hit the MIG with the cannon because of the high rate of turn and the range. BUFF 3 then fired the AIM-9B from 2,500 ft range, co-airspeed at about 350 kts, at 2,500 ft altitude and a 20° angle off. BUFF 3 waited until the MIG was above the horizon and then after obtaining a good growl tone, "pulled the nose up just a little bit ahead of the MIG to give the missile a better chance" and fired. The missile went directly for the MIGs tailpipe but BUFF 3 did not observe the results because the other MIG broke into him and he was forced to counter break into the MIG.

BUFF 3 and the second MIG entered a series of scissor maneuvers with BUFF 3 chopping power and throwing speedbrakes in an attempt to keep the MIG out of his 6 o'clock. BUFF 3 felt that afterburner, unloading, acceleration, and egress would have been the better course of action if it were not for the A-1 in the area and the requirement to keep the MIGs engaged. The two adversaries rolled out line abreast at a distance of 600 ft and looked at each other for a few seconds with an airspeed below 300 kts at 1,500 ft of altitude in mountainous terrain. BUFF 3 was wondering what to do next as he attempted to roll over the top of the MIG on his right. The MIG countered by rolling down and left under BUFF 3 and then turned back to the right. But BUFF 3 was slowing down faster than the MIG; and as the MIG came back to the right, BUFF 3 dumped the nose, lit the afterburner, and fired at the MIG as he passed in front of him. BUFF 3 continued to descend to the treetops. At this time, BUFF Lead called to disengage and BUFF 3 crossed the valley and continued to accelerate as he climbed up into the mountains. BUFF 3 accelerated in afterburner until he had 600 kts in order to outrun the MIG.

BUFF Lead called for a fuel check and found that the flight was 2,000 lbs below the Bingo established on the way in. The flight leveled off at 26,000 ft with BUFF Lead the high man at 2,000 lbs of fuel and BUFF 3, the low man at 1,000 lbs of fuel, not enough to return to Udorn and the relief tanker 100 mi away. The tanker reported at Channel 97 and when BUFF Lead asked if the tanker could come any faster, the tanker said he had it firewalled in their direction. BUFF Lead estimates that the tanker probably picked them up over North Vietnam. BUFF 3 estimates that he started taking on fuel with less than 30 sec of fuel left. BUFF 3 refueled first.

As the flight closed at high speed toward the tankers, BUFF 3 started to overshoot and used all available drag devices to decelerate and was just sliding under the tanker as the tanker entered a cloud. The tanker boomer came to the rescue by giving close-in vectors to BUFF 3 for hook-up. At this time, BUFF Lead was down to 800 lbs and was able to hook up on the second tanker. All aircraft returned to Takhli RTAFB with no damage after a 4 hr and 15 min mission. There was no damage on SANDY 02 aircraft either.



[redacted]

[redacted]

Event III-118

Aircraft Involved: Four F-105Ds vs two MIG-17s
Result: No damage
Vicinity of Encounter: 20°56'N/105°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 April 1967, 1700H

PURPLE flight (four F-105Ds) was the third strike flight fragged to attack JCS 22.00. See Event III-116 for further details.

2. MISSION ROUTE

Same as Event III-116.

3. AIRCRAFT CONFIGURATIONS

F-105 PURPLE 1, 2, 3, 4

Same as Event III-116.

MIG-17 1, 2

Silver

MIG-17 3

Olive Drab

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Altitude: 4,000 ft
Heading: Unknown
Speed: Unknown
Fuel State: Unknown

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| PURPLE (Lead) | 5650 | 370 | Approximately 75 |

11. DATA SOURCES

Messages, Reports

355TFW, 201121Z, DOTO-0, 11296, April 1967 SECRET

12. NARRATIVE DESCRIPTION

PURPLE flight on ingress to the target spotted two silver MIG-17s at 20°56'N/105°20'E at an altitude of 7,000-8,000 ft. At the time PURPLE flight was crossing the Black River at 20°56'N/105°20'E, the MIGs were in a left hand turn and attempted to roll in behind PURPLE; however, PURPLE flight continued to the target and the MIGs broke off.

On egress from the target, PURPLE 4 spotted one camouflaged MIG-17, olive drab in color. He was sighted at PURPLE 4's 8 o'clock position, approximately 3,000-4,000 ft behind PURPLE Lead. PURPLE 2 and 3 attempted to move into firing position but the MIG broke right and disappeared from view as he passed to the left of PURPLE 2 and 3. There were no further sightings and the flight returned to Takhli.

[redacted]

[redacted]

Event III-119

Aircraft Involved: Four F-105Ds vs seven MIG-17s

Result: No damage

Vicinity of Encounter: 20°45'N/105°05'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 April 1967/1700H.[1]

TAN flight was one of approximately ten flights striking JCS 22.00, the Xuan Mai Army Barracks at 20°53'N/105°35'E, about 15 mi southwest of Hanoi. Encounters by other flights are described in Events III-114, -116, -117, - 118, -120.

## 2. MISSION ROUTE

The mission route was not given but appears to be from Takhli RTAFB, to refueling rendezvous, to Channel 97 at 20°28'N/103°43'E, and then direct to the target with planned egress over the reverse route.

## 3. AIRCRAFT CONFIGURATIONS

Not given but most probably 6 x 750 bombs centerline, 2 x 450 gal fuel tanks on the inboard pylons with TAN Lead and TAN 3 carrying 1 x AIM-9B and 1 QRC-160, and TAN 2 and 4 carrying 2 x QRC-160.

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear but reduced visibility (approximately 5 mi) in haze at the lower altitudes.

| | TAN 1 2 3 4 |
|---|---|
| Altitude: | 5,000 ft |
| Heading: | 066° |
| Speed: | 540 kts |
| Fuel State: | Unknown |
| Flight Formation: | Line abreast formation, No. 3 on the right. |

## 8. ORDNANCE

(No. fired/No. hits)

| | Cannon | Remarks |
|---|---|---|
| TAN 1 | 2/0 | Fired two bursts; both were too far out; no hits |

## 9. EQUIPMENT PROBLEMS

None reported.

## 10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| TAN 1 | approx 1200 | 825 | 71 | All TAC background |
| TAN 2 | - - - - - - - - | not interviewed | - - - - - - - - | |
| TAN 3 | approx 5000 | 850 | not given | Most of time in fighters. Flew 105 F-80 missions in Korea. |
| TAN 4 | - - - - - - - - | not interviewed but was an experienced F-105 pilot from Germany | - - - - - - - - | |

Comments on this Encounter

TAN 3 - Because of the MIG activity, there was a lot of talking on the radio and TAN 3 had difficulty in warning rest of flight on presence of MIGs. As a result, when he broke to engage a MIG that was attacking another F-105, he became separated from the rest of his flight, including his wingman No. 4, who did not see him break away. Thus, No. 3 did not drop his ordnance on target but was forced to jettison it when he discovered that he was without a wingman and could not continue to the target alone. One of the earlier flights (ORANGE flight) had jettisoned their ordnance load (see Event III-116) and did most of the radio calling thus, in effect, jamming the channel.

[1]Time estimated.



[redacted]

Comments from Overall Experience

TAN 1 - Normally has seen MIGs in a low position waiting on a known ingress or egress route or at least in an area where they can cover one or more of these. Generally two to four MIGs are orbiting. This type of activity has increased since the U.S. has started to bomb airfields. When the MIGs see the ordnance drop, they disengage. Occasionally the F-105s have been able to fool them by dropping the wingtanks. The F-105s like to keep their tanks in case a RESCAP situation develops since the wingtanks provide additional endurance on station.

## 11. DATA SOURCES

Project Interviews: TAN 1, 29 May 1967; TAN 3, 29 May 1967
Messages, Reports:

355TFW 20 1121Z April 67 OPREP 3 DOTO-0 11296 SECRET.

## 12. NARRATIVE DESCRIPTION

TAN flight was the last flight of the strike force and had been alerted to the presence of MIGs in the target area by MIG warnings and radio chatter of other flights engaged with MIGs. TAN flight initially sighted four MIG-17s at 3 o'clock low while inbound to the target. TAN Lead told everyone to hold their ordnance and continue in to the target. The MIGs were at a range of about 1 n mi and, although they started to turn into TAN flight, it was more or less as a token try since TAN flight was inbound at high speed and the MIGs were positioned for the egress route rather than ingress. The MIGs could not press the attack and TAN flight continued in and all aircraft except TAN 3 dropped ordnance on the target. (TAN 3 separated from the flight subsequent to this sighting and rejoined on egress. TAN 3's individual MIG encounter follows this flight narrative.)

TAN flight came off the target slightly south of ingress route (near Hoa Binh). As they came back to the ridge line, they encountered several MIG-17s. TAN 1 pursued a MIG at his 2 o'clock position thinking he was in a tail chase on this MIG. TAN 1 began firing "way too far out"; and when he quickly realized that the MIG was approaching head-on rather than going away on the same heading, he stopped firing and broke off this encounter.

Then a second MIG came across TAN 1's nose. TAN 1 did not sight him until he started crossing his nose and then fired a short burst, hoping to hit him but does not believe he did. MIG 2 continued on his way and TAN flight continued their egress.

A third MIG was approaching TAN 1 head-on and he rolled inverted and started "coming down" to fire and stopped when he saw F-105s right in trail in the way (BUFF flight - see Event III-117 prior to RESCAP). TAN flight disengaged and proceeded to Channel 97. (All three of the above encounters happened in about a minute and a half period of time.)

TAN 3's Individual Encounter

TAN 3 reported that while inbound to the target after the initial sighting, he saw an F-105 with two MIG-17s chasing him (later identified as BLUE 4 - see Event III-114. They were coming from above and went down past TAN 3's 6 o'clock position. TAN 3 was at 5,000 ft; the MIGs were very close to BLUE 4 and the formation passed TAN 3 within 2,000-3,000 ft. "There was so much chatter on the radio at the time," that TAN 3 was unable to call out the MIGs or call for a break, but he pulled straight up and finally was able to get off a call that there was an F-105 behind them in trouble with MIGs. TAN 1 and 2 did not see TAN 3 break and , unknown to TAN 3, TAN 4 also failed to see the break.

TAN 3 pulled behind the MIGs and they broke off BLUE 4. One MIG went northeast towards the rest of the flights and the other was below TAN 3 and scissored for a few turns. TAN 3 still had his ordnance and was undecided what to do (i.e., drop bombs or pursue MIG). He still thought that TAN 4 was with him.

The MIG turned and headed back up the Black River in a northwesterly direction. When TAN 3 called, "Okay No. 4, let's press on to the target," TAN 4 advised TAN 3 that he was still with the lead element. TAN 3 then jettisoned his ordnance and attempted to follow the MIG but lost him in the haze.

He then went north and found the flights of F-105s coming off the target. Although they were still calling off MIGs at various clock positions, TAN 3 could not find any MIGs. TAN 3 turned and left target area. He caught up with the rest of TAN flight as they approached Channel 97.

[redacted]

Event III-120

Aircraft Involved: 1) Four F-4Cs vs four poss. MIG-17s
2) Four F-4Cs vs two MIG-17s
3) Four F-4Cs vs two MIG-17s

Result: No damage

Vicinity: 1) 20°55'N/105°22'E
2) 20°40'N/105°30'E
3) 20°53'N/105°35'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 April 1967/1709H, 1714H, 1715H

BLUE Flight and GREEN Flight consisting of four F-4C aircraft each attacked target JCS 22.00 at 20°51'N/105°34'E. BLUE Flight preceded GREEN Flight by approximately 4,000 ft. They were part of a larger strike force, which included eight flights of F-105s, of which four had MIG encounters (see Events III-116, -117, -118, 119, and an IRON HAND flight (see Event III-114).

## 2. MISSION ROUTE

Danang to WHITE ANCHOR, to Channel 97, to 20°58'N/105°21'E to target. Return to 20°30'N/105°25'E to 20°10'N/104°54'E to WHITE ANCHOR to Danang. BLUE Flight which had hung ordnance jettisoned it in Ordnance Jettison area 16°05'N/108°38'E after leaving tanker and before returning to Danang.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4 / GREEN 1, 2, 3, 4

6 - M-117 bombs
4 - AIM-7 (SPARROW)
1 - ALQ-71
2 - 370 gal wing tanks
1 - 600 gal centerline tank
TACAN on, IFF (GREEN 3) off

MIG-17

Part 1 - silver color, no marking
Part 2 - silver color, one with stars on wings, one - no marking

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear

(Part 1 unknown)

| Part 2,3 | BLUE 1 2 3 4 | GREEN 3 |
|---|---|---|
| Altitude: | 10,000 ft | 5,000 ft |
| Heading: | 200° | 185° |
| Speed: | 500 KTAS | 520 KTAS |
| Fuel State: | unknown | 8-9,000 lb |

Flight Formation:

Part 1 BLUE: Pod formation
Part 2 BLUE: Flight had just come off the target, formation unknown
Part 3 GREEN: Egressing target - GREEN 3 and 4 about 4,000 ft behind lead element - straight and level - not yet in Pod formation.

## 5. INITIAL DETECTION

Part 1

Just prior to striking target, BLUE Flight sighted four silver aircraft, possible MIG-17s, approximately 7 miles abeam on reciprocal heading, low. Estimated position of suspected MIG: 20°55'N/105°22'E.

Part 2

BLUE Flight sighted one MIG-17, silver, no markings, at flight's 4 o'clock position, low, and MIG 2 at 9 o'clock position, 2,000 ft from BLUE 2. MIG altitude estimated as 2,000 ft AGL, heading of 202° true.

Part 3

GREEN 3 encountered a MIG-17 at his 10 o'clock position, low, at a range of 4,000 ft. The MIG was flying at 400 kts at an altitude of 2,000 to 3,000 ft AGL on a heading of 360° in a left turn.



[redacted]

6. ACTION INITIATED

Part 1

No action was taken by either BLUE Flight or the silver aircraft.

Part 2

The flight came off target and proceeded straight ahead. The MIG-17s appeared to be in a steep bank attempting to turn on BLUE 4, but broke off when they overshot the turn.

Part 3

GREEN 3 pulled up and directed GREEN 4 to follow, however, GREEN 4 did not receive MIG call and proceeded to post-strike join-up point. GREEN 3 then engaged MIGs.

7. SITUATION DEVELOPMENT

Part 2

After overshooting the turn, the MIGs broke right and back into the heavily defended area of JCS 22.00. For this reason BLUE Flight did not pursue the MIGs.

Part 3

GREEN 3 then attacked MIGs, firing four AIM-7s in boresight; all missiles failed to hit targets.

8. ORDNANCE

(No. fired/No. hits)

| | AIM-9 | Remarks |
|---|---|---|
| GREEN 3 | 4/0 | Missiles fired in boresight mode, interlocks out. Target was at 200 ft AGL. Missiles fell short and impacted ground. |

No other ordnance was expended.

9. EQUIPMENT PROBLEMS

GREEN 3 made several radio calls but these were not received by GREEN 4. There was a lot of activity on the air since approximately 40 aircraft were using the same frequency.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| GREEN 3 | | | | |
| Front | 3,015 | 768 | 115 | Instructor at McDill for two yrs teaching AIM-7. Participated in "Charging SPARROW" program. |
| Back | 616 | 330 | 95 | Participated in "Charging SPARROW" program. |

Comments on this Encounter

GREEN 3 (Front):

1. Pelt the APQ-100 was poor radar for this mission because of ground return problem. In an overtake situation radar has tendency to lock on ground return. Furthermore, the narrow beam used for search results in a low probability of intercept due to long scanning cycle.

2. Had no difficulty arriving at MIG's 6 o'clock position using vertical maneuvers, but at low altitude of encounter (MIG was at 200 ft AGL) could not keep radar locked. Carrying AIM-9 or gun would have been helpful.

3. Could have carried AIM-9s -- would only require a spacer -- the drag penalty would not be significant, perhaps another 10 percent for four missiles.

11. DATA SOURCES

Project Interview: GREEN 3 (Front), 22 June 67

Messages, Reports:

366TFW 211130Z OPREP-3, FASTEL 573, April 1967
366TFW 200330Z OPREP-3, FASTEL 574, April 1967
366TFW 200330Z OPREP-3, FASTEL 573, April 1967 (superseded by message 1 above)
366TFW 230500Z DOC 00121, April 1967
7AF 201607Z DIO 22957 April 1967

12. NARRATIVE DESCRIPTION

Part 1:

See Item 5.

Part 2:

BLUE Flight, at 12,000 ft, heading 100°, 500 KTAS, sighted the target. BLUE lead rolled in on target at a 45° dive angle. At 8,000 ft altitude, heading 180°, Lead released six M-117s. He was followed by BLUE 2, 3, and 4, each dropping six bombs except for BLUE 2 who retained three hung M-117s. Minimum altitude attained was 5,000 ft. Flight remained at 5,000 ft for a time then climbed on new heading of 235°. While flying at 10,000 ft the flight observed two MIG-17s with no markings, silver in color. MIG 1 at flight's 4 o'clock position and MIG 2 at flight's 9 o'clock position, low at 2,000 ft. MIGs were flying at unknown speed on a heading of 202°. MIGs appeared to be in a steep bank trying to close on BLUE 4, but broke off when they overshot turn. They then immediately broke right and back into the heavily defended area of JCS 22.00. For this reason, BLUE Flight did not offer pursuit. No ordnance was expended by either side.

Part 3:

GREEN Flight, while flying at 14,000 ft altitude, airspeed 480 kts, heading 100°, at 20°51'N/105°34'E, sighted target JCS 22.00. Lead and GREEN 2 rolled in on target at a 45° dive angle. At 8,000 ft altitude heading 180°, Lead and GREEN 2 released six M-117 bombs. GREEN 3 and 4 followed, using same tactics, releasing five bombs each. Minimum altitude attained was 5,000 ft. At this point, GREEN 3, on a heading of 185°, encountered a MIG 17. The enemy aircraft was at 10 o'clock low, in level flight approximately 4,000 ft away. The MIG was flying at a speed of 400 kts at an altitude of approximately 2,000 to 3,000 ft AGL on a heading of 360° in a left turn. This was about 5 miles south of the target and GREEN Flight was just beginning to reform. GREEN 3 noticed that the MIG was attacking GREEN 4. He called GREEN 4 to advise him that he was under attack and did an over-the-top barrel roll to the left. The MIG reversed to the right and rolled out heading north. Apparently GREEN 4 did not receive the MIG call and proceeded straight ahead. He was called again, but GREEN 3 still received no response from GREEN 4. GREEN 4 proceeded to the post-strike join-up point. GREEN 3 descended to the MIG's 6 o'clock position, slightly lower than the MIG, who was then at about 5,000 ft altitude and more or less straight-and-level. He obtained a full system lock-on at 1-1/2 miles with approximately an 80 kt rate of closure. At this time an F-105 closed in front of GREEN 3 and fired at the MIG, striking the MIG's left wing with cannon fire. (See Event III-114) The MIG was observed to make a hard roll and descended in a hard turn to the right. The MIG's altitude was approximately 2,000 ft AGL when descent was initiated and pull-out was made at about 200 ft AGL in a right hand turn. The F-105 disengaged to the left. GREEN 3 continued tracking and attempted to fire a missile but the AIM-7 did not fire as the radar broke lock at that point. The MIG remained on the deck and was orbiting at an altitude of about 100-200 ft AGL. GREEN 3 set up a highspeed yo-yo on him and tried to break him out of the ground return with the radar, but could not do it. GREEN 3 returned to boresight and interlocks out. Two more lock-ons were made, but immediately broke lock. GREEN 3 fired without a lock-on in boresight as minimum range was very close if not already exceeded. The AIM-7 went down and left. The MIG reversed and started a hard left turn, still at 200 ft AGL. To prevent an overshoot, GREEN 3 nosed into the MIGs 6 o'clock position with 1-1/2 miles separation at 5,000 ft. He then started down, going to idle, trying to lock-on from boresight. Again, the radar would try to lock-on but would continue to cycle to a break lock. GREEN 3 descended to the MIG's altitude, closing to about one mile. At this point, tracking in boresight, he fired a second AIM-7 missile. The AIM-7 was observed to strike the ground and explode between 200 to 400 ft to the left and behind the MIG. The MIG made a hard turn to the right and as GREEN 3 was about to overshoot, he started another high-speed yo-yo reversing right.

At this point, another MIG-17 entered the encounter at GREEN 3's 2 o'clock position. MIG 1 reversed back to the left, remaining at 200 ft. MIG 2 went over the top of the first MIG at about 180° out of phase. At the top of GREEN 3's high-speed yo-yo, he reversed to the left and into the first MIG's 6'o'clock position with 1-1/2 miles of separation. GREEN 3 started down very steeply in idle and pulled out at the MIG's altitude. He made another lock-on at one mile and closing and fired a third AIM-7, which impacted the ground but did not explode. MIG 2 was maneuvering towards GREEN 3's 7 o'clock position, whereupon GREEN 3 executed another yo-yo and continued a hard right turn, closing on MIG 1. GREEN 3 descended toward the second MIG, because MIG 2 was higher (approximately 500 ft AGL and in a better position to attack). MIG 2 was at 90° to GREEN 3's course in a right hand turn. GREEN 3 made a boresight lock-on but by then the MIG was head-on. He fired a fourth AIM-7 at a range of one mile. Almost immediately, the radar again broke lock. GREEN 3 continued tracking with his reticle, but the missile went left and short. GREEN 3 then reversed to the right, pulled up in a steep climb and disengaged, joining the remainder of the flight and returned to base. At no time did the MIGs fire any ordnance. GREEN 3 had to disengage at this point because he had exhausted his ordnance.

[redacted]

Event III-120

Missile Firing Parameters

| | Missile 1 | Missile 2 | Missile 3 | Missile 4 |
|---|---|---|---|---|
| Airspeed at launch, KTAS | 450 | 450 | 500 | 500 |
| Altitude at launch, ft AGL | 500 | 200 | 200 | 500 |
| G-loading at launch | 1 | 1 | 1 | 1 |
| Aircraft target altitudes | - | level left turn | level left turn | level |
| Overtake velocity, kts | 90 | 100 | 100 | 901 |
| Relative angle of attacking Aircraft to target flt path | 10° | 10° | 10° | 0° |
| Range and angle-off of target | 3000',10° 6 o'clock | 10°/1 1/4 nm | 10°/6 o' clock/1 nm | headon 1 nm |
| Miss Distance and direction | - | - | - | - |
| Radar lock-on | - | - | - | yes-broke lock |
| Launch mode | Interlocks out, boresight mode, kept enemy in gunsight reticle to missile impact | | | |
| MIG warning received | GCI | GCI | GCI | GCI |
| Method of Acquisition | Visual | Visual | Visual | Visual |
| Cdr evaluation | AIM-7E does not have a capability against targets in described environment. Ground return presented on APQ-100 radar negates lock-on capability at low altitude. The MIG-17 was easily out-maneuvered using high-speed yo-yo tactics. | | | |

Event III-121

Aircraft Involved: Four F-105s vs three MIG-17s

Results: No Damage

Vicinity of Encounter: Unknown

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 April 1967/0856H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight inbound to ALPA target saw two MIGs at 3 miles range; MIGs went into afterburner, began roll-in, and disappeared; flight saw another MIG while egressing; MIG passed 3000 ft overhead without hostile action.

Event III-122

Aircraft Involved: Four F-105s vs one MIG-21

Results: No Damage

Vicinity of Encounter: Unknown

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 April 1967/0913H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

MIG observed at 11,000 ft, 6 miles range; MIG began attack, but F-105s turned into it; MIG broke off; point of closest approach was 4 miles.

[redacted]

[redacted]

Event III-123

Aircraft Involved: Four F-105s vs two MIGs, two MIG-17s and one MIG-21

Results: Sighting only

Vicinity of Encounter: 21°22'N/107°02'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 April 1967/1629H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight saw two MIGs while inbound before cloud intervened; Two minutes later, two MIG-17s seen at 10 miles; flight continued on course and lead saw one MIG-21 inverted before cloud intervened.



[redacted]

Event III-124

Aircraft Involved: Four F-105s vs two MIG-17s

Results: Sighting only

Vicinity of Encounter: 20°28'N/107°26'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 April 1967/1653H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight egressing at 19,000 ft saw two silver MIGs headed north from the vicinity of orbiting tanker; no hostile actions.

Event III-125

Aircraft Involved: Four F-105s vs six MIG-17s

Results: No damage

Vicinity of Encounter: 60 miles NE of Hanoi

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 April 1967/1534H

11. DATA SOURCES

Messages, Reports:

DIA Summary of Air Engagements over North Vietnam, 2 May 1967

12. NARRATIVE DESCRIPTION

F-105 attacked by MIG. No ordnance expenditure reported.

Event III-126

Aircraft Involved: Two RF-4Cs vs one MIG-21

Results: No Damage

Vicinity of Encounter: 20°25'N/103°48'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 April 1967/1635H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Photo flight at 30,000 ft saw MIG at 3 miles range; MIG made several attempts to gain position, but was outmaneuvered and finally broke off; X-band strobing received throughout encounter.

[redacted]

Event III-127

Aircraft Involved: Four F-105s vs four MIG-17s
Results: No damage
Vicinity of Encounter: Hon Gay

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 April/1542H

II. DATA SOURCES

Messages, Reports:

DIA Summary of Air Engagements over North Vietnam, 2 May 1967

12. NARRATIVE DESCRIPTION

F-105s attacked by MIGs. F-105s evaded attack. No ordnance expenditures reported.



[redacted]

[redacted]

Event III-128

Aircraft Involved: Four F-105s vs two unidents

Results: Sighting only
Vicinity of Encounter: 21°13'N/107°25'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 April 1967/1635H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight at 17,000 ft saw two silver unidents at 3 o'clock; no attempt at engagement.

Event III-129

Aircraft Involved: Four F-105s vs one MIG-21

Results: Sighting only
Vicinity of Encounter: 20°08'N/107°25'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 April 1967/1638H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight inbound over Gulf of Tonkin at 16,000 ft saw MIG 4 o'clock high; MIG passed above and behind; MIG silver.

Event III-130

Aircraft Involved: Four F-105s vs two MIG-21s

Results: No Damage
Vicinity of Encounter: 21° 6'N/104°55'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 23 April 1967/1622H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flak suppression flight inbound to ALFA target saw two MIGs 9:30 o'clock high; MIGs dived toward flight, but were engaged by MIG CAP flight Event 118.

[redacted]

[redacted]

Event III-131

Aircraft Involved: Eight F-105s vs six MIG-21s and three unidents

Results: No Damage

Vicinity of Encounter: 21°45'N/105°30'E

1. **PRIMARY MISSION AND TACTICAL SITUATION**

**Date/Time:** 23 April 1967/1623H

11. **DATA SOURCE**

CINCPACFLT Staff Study 6-68.

12. **NARRATIVE DESCRIPTION**

Two flights inbound to same ALFA target incident of Event 647; one flight observed maneuvers of other with MIGs; flight which maneuvered was inbound at 20,000 ft when two MIGs seen at 8 miles; MIG CAP in Event 118 engaged these MIGs, which were the same MIGs seen in Event 647; 2 minutes later, flight saw a lone MIG which began tail attack, but broke off when F-105s punched tanks; a single MIG was seen three minutes later; MIG did not maneuver; three unidents seen 10 minutes later beneath flight; two MIGs seen 15 minutes later; flight began climb to engage, but broke off due to low fuel.



[redacted]

[redacted]

Event III-132

Aircraft Involved: Three F-4Cs vs four MIG-21s

Result: One MIG destroyed

Vicinity of Encounter: 22°05'N/105°05'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 23 April 1967/1655H

BLUE flight on a CAP/STRIKE mission took the place of a F-105 flight that had aborted due to pod loss to strike target. While ingressing to target BLUE flight encountered two flights of two MIGs each.

2. MISSION ROUTE

From Danang refueling in and out and back to Danang.

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3

6 M117 bombs
Wing tanks
4 AIM-7 missiles

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Generally clear, one cirrus trailing a cumulus-nimbus thunderhead to the west of Thia Nguyen Steel Mill.

Altitude: 15,000 to 18,000 ft
Speed: 450 kts
Fuel State: Full internal

Flight Formation: 3-ship formation

5. INITIAL DETECTION

First flight of two MIGs sighted after several warnings. In addition to general Geo-Ref warnings, other flights preceding BLUE flight called MIGs. BLUE 1 reported that the first two MIGs crossed in front in a zoom type climb from right to left. BLUE 3 reported that the two MIGs were coming in from the left 9 o'clock position. Both reported that the second flight of two MIGs came in from the right. It is the latter two with which this event is primarily concerned.

6. ACTION INITIATED

Reversed to attempt engagement.

7. SITUATION DEVELOPMENT

After detecting the first flight of two MIGs, BLUE flight jettisoned bombs and wing tank and started "left turn to pursue." (BLUE 1's statement). The MIGs apparently saw BLUE flight and "started a diving turn back to our left" and having higher air speed at the time were able to separate on a heading of approximately 180° from that of BLUE flight. BLUE flight reversed to the right to rejoin strike force and detected two more MIGs "passing off our right wing" about 3,000 to 4,000 ft. At the time of the second acquisition BLUE flight was at approximately 24,000 ft, about Mach .9, heading east with about 9500 lb fuel. BLUE flight turned to engage MIGs. BLUE 1 was able to obtain full lock-on against MIG 3 losing sight of MIG 4. BLUE 1 fired an AIM-7 at MIG 3 which guided and followed MIG 3 into thin cirrus-type clouds. BLUE 1 did not follow with flight into the clouds because of the presence of SAM activity and the high altitude. BLUE 3, crossing back of BLUE 1, detected MIG 4 above at about 32,000 to 34,000 ft, pulling contrails in a left turn toward the north at about 10 or 11 o'clock position. BLUE 3 pursued MIG 4 achieving full system lock and fired one AIM-7 which impacted on the right aft fuselage and detonated causing at least severe aircraft structural damage. Enemy aircraft slowed, turning over from about 30,000 to 32,000 ft and descended impacting ground. No chute was observed.

8. ORDNANCE

(No. fired/No. hits)

| | AIM-7 | Remarks |
|---|---|---|
| BLUE 1 | 1/? | Fired full system. |
| BLUE 2 | 1/1 | Fired full system. |
| BLUE 3 | 0/0 | |

9. EQUIPMENT PROBLEMS

None reported.

[redacted]

## 10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 3400-3600 | 220 | 91-92 | Strategic Fighter Wing 55-56. Flew F-84Gs, F-84Fs and F-101As. Instructed 4 years on F-105. Then went to Air Commander and through RTU to F-4C. |
| BLUE 3 | 3500 | 200 | | TAC fighter. F-84 in Korea. F-100 and F-4C School. |

Comments on this Encounter:

BLUE 1: "At the air-to-air ranges we were working this day the SPARROW was the best weapon. I don't think SIDEWINDERS would have done any better for us. But I was shooting against a blue sky and good radar. We've had other engagements pointing down at low altitude. The SPARROWs just ain't any good down there."

BLUE 3: "The one thing I learned is that you can't afford to be complacent up there. You have to keep looking around. He (MIG 4) thought he was out of the fight, home free. He made no evasive maneuvers. I don't think he ever saw me or knew what hit him."

## 11. DATA SOURCES

Project Interviews: BLUE 1 and BLUE 3 (front)

Messages: OPREP-3 366TFW FASTEL 705 April 1967
OPREP-3 366TFW FASTEL 711 April 1967

## 12. NARRATIVE DESCRIPTION

BLUE flight of three F-4Cs were on a CAP/STRIKE mission against JCS 76.00. Prior to channel 97 another flight of F-105s aborted and BLUE flight took their place. While ingressing to target at about 22°05'N/105°05'E BLUE flight sighted two MIGs. Prior to the sighting they had heard several MIG warnings from central Geo-Ref and other flights in the strike force. There is some inconsistancy as to whether the MIGs passed from right to left or vice versa. However, since BLUE flight was unable to engage these two MIGS the direction is not too pertinent. BLUE flight jettisoned bombs and tanks and started a turn to pursue MIGs. Lead was passed to BLUE 3 who was on the left. "The MIGs saw us. They immediately started a diving turn back to the left; in other words, it made our turn so that we weren't going to make any money on them at all because they had more speed than we did at the time." The MIGs ended up heading 180° from BLUE flight. BLUE 1 resumed the lead and called a reverse to rejoin strike force and sighted two more MIGs passing off the right wing. The MIGs were described as having a long cylindrical fuselage, and delta wings with wing "fenkes" on the leading edge. The vertical stabilizer was wide with a blunt top. The horizontal stabilizers were swept back. The canopy resembled an F-100. A slight ridge-line ran down the spine of the fuselage. They were bright silver in color. No markings of any type were observed. The aircraft were MIG-21s. At the time of sighting the second two MIGs, BLUE flight was now at about 24,000 ft and at approximately Mach .9. BLUE 1 led the turn pursuing MIG 3 which was now about 1-1/2 to 2 miles ahead and in a climb. In turning to pursue, the MIGs went afterburner and MIG 3's wingman began sliding outside. BLUE 1 lost sight of MIG 4. BLUE 1 maintained near level flight in order to gain speed at the same time trying to reduce the angle-off and obtain a boresight lock-on. Picking up speed with afterburner, BLUE 1 started climbing also and was able to pull lead and get his pipper on the MIG, who apparently did not see him and continued in at t a 30° bank climbing turn. BLUE 1 began to pull up on the MIG and after obtaining a bo - sight lock-on switched to full system and maintained the lock-on. The range gates were right, the ASE circle was right, the in-range light on, I had interlocks in and we had a negative closure rate 60 to 80 kts on him." BLUE 1 noticed that with the negative closure rate he was approaching maximum range and "squeezed the trigger." After a momentary delay the missile launched so the interlocks had been satisfied. The missile was observed to go straight ahead building up speed apparently locked onto the MIG which at this time was high enough to be pulling contrails. BLUE 1 fired at about 27,000 ft with 20° noseup pulling approximately 1-1/2 g's at speed of about Mach .95. The MIG was doing about 1.1 (BLUE 1's estimate). The missile apparently tracked well and followed the MIG into a cirrus cloud with the missile about 1500 to 2000 ft behind and closing. BLUE 1 took evasive action to miss the cloud and lead his flight down to an altitude where they could maneuver SAMs if necessary. While BLUE 1 was firing on MIG 3, BLUE 2, who was on the outside, had fallen behind in trail estimated to be 6 or 7 miles. BLUE 3 crossing back over BLUE 1's left wing looked up to follow the missile and sighted MIG 4 in a gradual turn at the contrail lev l. BLUE 3 went afterburner and closed rapidly obtaining a radar lock-on. Closing range f.. , still locked on, BLUE 3 "pulled up just on a simulated perch position. All parameters met." He fired an AIM-7 which initially appeared to be going to the right of MIG 4 but made a mid-course correction, detonating on the right aft fuselage. The hit

was also observed by BLUE 1. The MIG slowed rapidly, turned over and descended to impact on the ground. BLUE 3 followed it down and did not see the pilot eject, but the canopy was turned away from him most of the time.

[redacted]

Event III-133

Aircraft Involved: Four F-4Cs vs one MIG-17

Result: No engagement

Vicinity of Encounter: 21°33'N/105°51'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 23 April 1967/1652H

BLUE Flight of four F-4Cs from 366TFW on Strike Mission JCS 76.00 (Thai Nguyen Iron and Steel Complex)

2. MISSION ROUTE

Depart Danang, refuel prior to target area.

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

4 - ALQ-71
24 - XY 17M bombs
16 - AIM-7
2 - External fuel tanks

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

| | BLUE Flight | MIG 17 |
|---|---|---|
| Altitude: | 14,000 ft AGL | 1000 ft AGL |
| Heading: | 060° | 170° |
| Speed: | 500 KIAS | |

5. INITIAL DETECTION

BLUE 3 prior to roll in on target sighted one silver MIG-17 at his 9 o'clock position low with approximately a reciprocal heading.

6. ACTION INITIATED

Since MIG had approximately a 2 mile vertical separation with reciprocal heading, BLUE 3 elected to strike target rather than attempt to engage MIG.

7. SITUATION DEVELOPMENT

BLUE Flight rolled into target. MIG was lost to view almost immediately. MIG exhibited no hostile intent but seemed primarily interested in clearing target area.

8. ORDNANCE

None expended.

9. EQUIPMENT PROBLEMS

None reported.

10. AIRCREW COMMENTS

No interviews.

11. DATA SOURCES

366TFW DNG 23 April 1967, Change 1 to OPREP 3.



[redacted]

[redacted]

Event III-134

**Aircraft Involved:** One F-4C vs one MIG-21

**Results:** No Damage

**Vicinity of Encounter:** 21°05'N/103°47'E

**1. PRIMARY MISSION AND TACTICAL SITUATION**

**Date/Time:** 24 April 1967/0945H

**11. DATA SOURCE**

CINCPACFLT Staff Study 6-68.

**12. NARRATIVE DESCRIPTION**

Flight of four F-4s on RESCAP for F-4 downed in Event 118 incident; when headed for tanker at 29,000 ft, No. 4 saw MIG closing from 5 o'clock; No. 4 turned, losing contact in turn.

Event III-135

**Aircraft Involved:** Four F-105s vs one MIG-17 and six MIG-21s

**Results:** Sighting only

**Vicinity of Encounter:** 21°35'N/105°45'E
21°20'N/104°15'E

**1. PRIMARY MISSION AND TACTICAL SITUATION**

**Date/Time:** 24 April 1967/1615H

**11. DATA SOURCE**

CINCPACFLT Staff Study 6-68.

**12. NARRATIVE DESCRIPTION**

Armed recce flight made two sightings; one MIG-17 and one MIG-21 seen at first coordinates shown, and five MIG-21s at second.

[redacted]

[redacted]

Event III-136

Aircraft Involved: Two F-105Ds and two F-105Fs vs four MIG-17s

Result: No damage

Vicinity of Encounter: 21°30'N/105°00'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 24 April 1967/1612H

BLUE Flight of four F-105s was an IRON HAND patrol up and down both sides of Thud Ridge. Flight was from 15th Squadron 388 TFW Korat.

2. MISSION ROUTE

BLUE 3 and 4 recovered at Udorn with low fuel.

3. AIRCRAFT CONFIGURATIONS

| F-105D | F-105F |
|---|---|
| 1 - AIM 9 | 1 - AGM-45 |
| 6 - Mk-82 | 2 - CBU-24 |

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Cloud cap over end of Thud Ridge, otherwise clear.
Altitude: 6000 ft
Heading: 134°
Speed: Unknown

5. INITIAL DETECTION

Observed four MIG-17s in a loose fingertip formation at range of 6 to 7 miles at 9 o'clock. The MIG-17s were lower at 3000 to 4000 ft, heading 300°.

6. ACTION INITIATED

BLUE Flight continued on course and MIGs were lost to sight on other side of Thud Ridge.

7. SITUATION DEVELOPMENT

After making a turn around Thud Ridge, BLUE Flight on a heading of approximately 310°, observed two MIG-17s closing from the 7 o'clock position at range estimated about 4000 ft. BLUE 1 called MIGs and went afterburner, breaking up over the ridge and into the clouds in an essentially 270° turn, coming down over the west side of the ridge heading 215°, sighting the other two MIG-17s heading 150° and just about abeam about 1000 ft below. BLUE 1 was unable to pull lead on MIG 1 but was able to on MIG 2.

8. ORDNANCE

BLUE 1 - 337 rounds 20mm (M-61)

Sight set with 154 mils depression and not computing (air-to-ground mode.)

9. EQUIPMENT PROBLEMS

After 100-125 rounds, gun malfunctioned firing from one barrel only - a less effective rate of fire.

10. AIRCREW COMMENTS

There should be a simpler way to change switches when going from the air-to-ground to air-to-air mode.

11. DATA SOURCES

Project Interviews: Red Baron Interview BLUE 1, front and back
Messages, Reports:

OPREP 3 355 TRV Takhli DO11295 24 April 1967

12. NARRATIVE

BLUE Flight flying flak and SAM suppression mission up and down both sides of Thud Ridge sighted four MIG-17s and later encountered the apparently same MIGs resulting in a brief firing pass by BLUE 1. BLUE 2 never did get into position to fire his AIM-9. The MIGs never acquired a firing position against BLUE Flight. BLUE 1 fired 337 rounds of 20mm (M61) at MIG 2 ranging from 1200 ft down to 800 ft at 80° to 90° deflection. However, for approximately the last two-thirds of the rounds expended, BLUE 1's gun was malfunctioning and firing through one barrel only. BLUE 1 did observe the MIG to snap violently to the right. MIG went afterburner headed south. BLUE jettisoned tanks and ordnance and led his flight out of the area as his mission was completed since the strike force was also egressing the area. [redacted]

[redacted]

Event III-137

Aircraft Involved: Two F-4Bs vs seven MIG-17s
Result: Two MIGs destroyed (probable)
Vicinity of Encounter: Near Kep Airfield

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 24 April 1967/1645H

Two F-4Bs (BLUE flight) retiring from TARCAP Station after strike at Kep Airfield received airborne reports of MIGs in the immediate area.

2. MISSION ROUTE

YANKEE STATION to strike Kep Airfield, JCS 9.1.

3. AIRCRAFT CONFIGURATIONS

F-4B BLUE 1, 2 SIDEWINDERS AIM-9D
Probably SPARROWS

MIG-17 Air-to-Air missiles

5. INITIAL DETECTION

After receiving airborne warning, BLUE flight reversed course and observed a flight of four MIGs low over the ground and another flight of three MIGs directly ahead, apparently on reciprocal heading.

6. ACTION INITIATED

BLUE flight made a hard reversal to reacquire MIG after it passed head on at approximately 100 ft range. It was observed to be silver with a single red star on fuselage.

7. SITUATION DEVELOPMENT

BLUE 1 launched AIM-9D at MIG 1 from approximately 3000 ft range, 6 o'clock position. Missile observed to detonate on MIGs right wing. MIG began smoking and descent towards ground. BLUE 2 called BLUE 1 to break because of attack by another MIG. BLUE 1 broke left and up. Crew observed an air-to-air missile pass approximately 500 to 1000 feet abeam. After BLUE 1 broke away, BLUE 2 was able to launch an AIM-9D at MIG 2 which had attacked BLUE 1. Missile was observed to enter tailpipe of MIG 2 but apparently did not detonate. MIG 2 began smoking and descending toward ground. MIG 3 (MIG 2's wingman) broke away retiring toward the southwest at low altitude.

8. ORDNANCE

BLUE 1 & 2 each fired one AIM-9D SIDEWINDER

MIG 2 fired at least 1 AA Missile

9. EQUIPMENT PROBLEMS

BLUE 2's wing fuel was observed after the engagement to be not transferring aft.

11. DATA SOURCES

CTG 77.5 251638Z April 67
CTG 77.5 241045Z April 67
Letter from W. L. Kurtze Subject Missile Firing, 27 April 1967

12. NARRATIVE DESCRIPTION

BLUE flight of two F-4Bs retiring from TARCAP station after a strike at Kep Airfield where heavy ground fire and SAMs were observed, received airborne warning of MIGs in the immediate area. BLUE flight reversed course and observed a flight of four MIGs low against the ground and another flight of three MIGs directly ahead. MIG 1 passed through BLUE flight approximately 100 ft away. It was observed to be silver with a single red star on the fuselage. BLUE flight made a hard reversal to reacquire MIG and maneuvered towards its 6 o'clock. At approximately 3000 ft range BLUE 1 (Lead) launched an AIM-9D observing missile detonating on MIG 1's right wing. "A ball of fire and debris were seen." MIG 1 commenced smoking and descending toward the ground. Lead's wingman called BLUE 1 to break as he was under attack by the other two MIGs. BLUE 1 broke left and upwards and its crew observed an air-to-air missile pass about 5,000 to 10,000 ft abeam. When Lead broke away, BLUE 2 was able to launch an AIM-9D which guided up the tailpipe of MIG 2, but did not detonate. "The MIG rolled over trailing streams of smoke and headed toward the ground." MIG 3 broke away and retired toward the southwest at low altitude.



[redacted]

[redacted]

Event III-137

BLUE 2 then observed a low-fuel warning and discovered that his wing fuel was not ransferring. "After a thorough re-check of aircraft switches" BLUE 2 headed towards the earest coastout point, towards the tanker. Radio contact was made with the tanker but istance and altitude separation prevented rendezvous. Prior to fuel exhaustion crew jected and were picked up twenty minutes later and delivered back to YANKEE STATION in xcellent condition.

[redacted]

[redacted]

Event III-138

Aircraft Involved: Four F-105s vs six MIG-21s and one MIG-17

Results: Sighting only

Vicinity of Encounter: 21°30'N/105°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 24 April 1967/1619H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight saw several MIGs, but no attempts made at engagement; while inbound, one MIG-21 seen 2 miles away; 5 minutes later, after hitting target, one MIG-17 seen at 2 miles; one MIG-21 seen 12 minutes later, and four more seen the following minute.

Event III-139

Aircraft Involved: Four F-4Cs vs three MIG-17s

Results: Sighting only

Vicinity of Encounter: 21°05'N/105°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 24 April 1967/1700H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight saw MIGs at 1000 ft when in bombing run; MIGs scattered from formation when ordnance hit ground.

Event III-140

Aircraft Involved: One A-6A vs one MIG

Results: No Damage

Vicinity of Encounter: 21°22'N/106°23'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 24 April 1967/1700H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Member of airfield strike flight downed by AA; wingman orbited position of downed crewman until warned by downed crewman that MIG was attacking; orbiting aircraft out-maneuvered and evaded.

[redacted]

Event III-141

Aircraft Involved: Four F-105s vs ten MIG-17s and two MIG-21s

Result: No damage

Vicinity of Encounter: 21°08'N/105°51'E

## I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 25 April 1967/1002H

Four F-105s (BLUE Flight) were attacking an Alfa target. Other aircraft striking the same target are those of Events III-141, -143, and -148.

## B. ORDNANCE

(No. fired/No. hit)

| | 20mm | |
|---|---|---|
| BLUE | 1/0 | 200 rounds |

## II. DATA SOURCES

CINCPACFLT Staff Study 6-68

## 12. NARRATIVE DESCRIPTION

BLUE Flight was engaged by four MIG-17s (which may have been the same as those of Events III-141, -143, and -148) on ingress and one MIG fired from 3 o'clock but missed. BLUE 4 fired 200 rounds at a passing MIG but achieved no hits.

The MIGs tried to reverse and pursue but could not catch the F-105s as they rolled in on the target.

Six more MIG-17s and two MIG-21s were seen orbiting over Phuc Yen.

Event III-142

Aircraft Involved: Four F-105s vs one MIG-17

Result: Sighting only

Vicinity of Encounter: 21°08'N/105°52'E

## I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 25 April 1967/Approximately 1005H

Two flights (BLUE and GREEN) of F-105s were part of a strike mission against the Hanoi transformer site (JCS 82.24 Strike). BLUE Flight was attacked by MIGs on ingress and was forced to jettison ordnance 2 miles prior to reaching the target.

GREEN Flight reported ordnance delivered all around the target area. No hits were observed in the target area.

Both flights reported heavy 37/57/85mm AA fire as well as SAM and MIG harassment. Numerous MIG sightings in the vicinity of Phuc Yen airfield.

## II. DATA SOURCES

Messages:

355 TFW OPREP-3 250930Z April 67

## 12. NARRATIVE DESCRIPTION

See Events III-144 and -151

[redacted]

Event III-143

Aircraft Involved: Four F-105s vs one MIG-17

Result: No damage

Vicinity of Encounter: 21°08'N/105°50' E

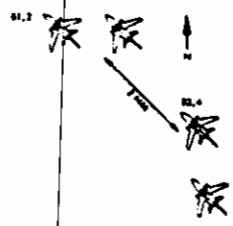
1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 25 April 1967/1002H

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 6,000 ft | | | |
| Heading: | 320° | | | |
| Speed: | 480 kt | | | |

Flight Formation



5. INITIAL DETECTION

BLUE 3 sighted a silver MIG-17 at the 12:30 o'clock position at a range of approximately 2 miles, in a left turn with 30° of bank.

6. ACTION INITIATED

As he continued his left turn into BLUE 3, the MIG was observed to be in afterburner. At a range of approximately 750 ft, BLUE 3 fired at the MIG which was now in a very hard left turn. Possible hits were reported.

7. SITUATION DEVELOPMENT

BLUE 3 broke off to the right and headed for Thud Ridge.

8. ORDNANCE

(No. fired/No. hits)

| | MK-61 20mm | Remarks |
|---|---|---|
| BLUE 3 | 198-0 | Possible hits |

9. EQUIPMENT PROBLEMS

None reported.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 2 | 1000 | 150 | 50 |

11. DATA SOURCES

Project Interviews: BLUE 2, 8 June 1967.

Messages:

388 TFW OPREP-325053Z Apr 67

12. NARRATIVE DESCRIPTION

See Event III-148.



[redacted]

[redacted]

Event III-144

Aircraft Involved: Four F-105s vs several MIGs
Result: Sighting only
Vicinity of Encounter: 21°08'N/105°52'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 25 April 1967/Approximately 1000H

This flight of four F-105s was part of a strike against the Hanoi transformer sight (JCS 82.24 Strike).

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 3 | 1200 | 900 | 40 |

11. DATA SOURCES

Project Interviews: BLUE 2
Messages:

355 TFW OPREP-3 250930Z April 67

12. NARRATIVE DESCRIPTION

On the way into the target BLUE Flight encountered heavy flak. BLUE 2 was shot down by 85mm AAA. BLUE 3 became separated from the rest of the flight as he proceeded to the target area. While at about 10,000 ft BLUE 3 sighted a MIG-17 approaching his 6 o'clock position. As he broke to the right, BLUE 3 jettisoned his bombs and headed out of the area. In the vicinity of Phuc Yen he saw three or four more MIG-17s. Continuing toward Thud Ridge, two more MIG-17s approached the 6 o'clock position on BLUE 3. He engaged afterburner and evaded the MIGs. Airspeed and altitude at this time were over 500 kts and about 6,000 ft, respectively. The MIGs were silver in color. (See Events III-141 and III-151.)

Event III-145

Aircraft Involved: Three F-105s vs three MIG-17s
Results: No damage
Vicinity of Encounter: 21°00'N/105°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 25 April 1967/1005H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight at 8000 ft after pulling off same ALPA target as Events III-143, -148, -138 saw three MIGs in a descending left turn; MIGs continued turn and departed.

Event III-146

Aircraft Involved: Four F-105s vs two MIG-17s
Results: Sighting only
Vicinity of Encounter: 21°05'N/105°53'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 25 April 1967/1005H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight striking same ALPA target as Event III-135 sighted two MIGs.

[redacted]

[redacted]

Event III-147

Aircraft Involved: Two F-8Es vs two or more MIG-17Ds

Result: Possible damage to one MIG

Vicinity of Encounter: Haiphong

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 25 April 1967/1109H

BLUE 1 and 2 were one of three sections of F-8s assigned the mission of flak suppression in support of a strike group.

## 2. MISSION ROUTE

Departed YANKEE STATION and proceeded to the target in the vicinity of Haiphong. (JCS target 45)

## 3. AIRCRAFT CONFIGURATIONS

F-8E BLUE 1, 2

8 - ZUNI Rockets (Vt fuzed)
4 - MK-12 20mm guns (284 rds)
ALQ-51; APR-27; IFF/Stby; TACAN/On; Radar/IR mode

MIG-17D MIG 1, 2

Dull silver color
Afterburner

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

| | BLUE 1 | BLUE 2 | MIG 1 | MIG 2 |
|---|---|---|---|---|
| Altitude: | 3,000 ft | | 500 ft | |
| Heading: | Northerly | | 170° | |
| Speed: | 350 KIAS | | --- | |
| Fuel State: | 5,500-6,000 lb | | --- | |

## 5. INITIAL DETECTION

The MIGs were initially sighted by the strike flight leader. BLUE 1 acquired visual contact with the MIG at 1 o'clock, 70° down at a range of approximately 3,000 ft. The altitude of the MIG was 500 ft.

## 6. ACTION INITIATED

As the MIG made a gentle left turn toward the strike group, BLUE 1 maneuvered into the 6 o'clock position on the MIG, tracked, and fired a burst of 60 rds of 20mm. This burst was fired at a range of 1,500 ft while in a 2 g tracking run. Sparkles, indicating hits, were observed near the left wing root and in the left mid-fuselage. When the MIG saw the tracers he broke hard right.

## 7. SITUATION DEVELOPMENT

BLUE 1 closed the range to 1,100 ft but his guns would not fire. He then increased his lead to 100 MILS and fired two VT fuzed ZUNI rockets. A second pair of rockets were fired and observed to pass the MIG low at 6 o'clock. The MIG reversed his turn. BLUE 1 reestablished a tracking lead and fired a third pair of rockets. One rocket detonated approximately one-half wing span distance from the MIG at 4 o'clock. No reaction from the MIG was observed. BLUE 1 fired the last pair of rockets and then departed after tracking the MIG for approximately 2-1/4 minutes.

While BLUE 1 was attacking MIG 1, MIG 2 was trying to maneuver behind BLUE 2 and after the second turn reversal ended up on the outside of the turn. BLUE 2 engaged the MIG, attained a firing position, fired 20mm and six rockets with no success.

## 8. ORDNANCE

(No. fired/No. hits)

| | 20mm | ZUNI | Remarks |
|---|---|---|---|
| BLUE 1 | 60 rds/prob. | 8/0 | Observed probable 20mm hits. One rocket detonated approximately 20 ft from a MIG. |
| BLUE 2 | Unknown | 6/0 | |

## 9. EQUIPMENT PROBLEMS

BLUE 1. Guns jammed after firing one short burst of 20mm. Post flight inspection revealed two extractor springs broken, one feeder mechanism failure and one ammo chute jammed.



[redacted]

## 10. AIRCREW COMMENTS

Comments on this Encounter

BLUE 1. F-8 had sufficient maneuverability to turn with the MIG. Estimated no more than 4 g required in this engagement. Used afterburner fully modulated to the minimum output position.

## 11. DATA SOURCES

Project Interviews: BLUE 1, date unknown.
Messages:

CTG 77.7 OPREP 3 250645Z April 67

## 12. NARRATIVE DESCRIPTION

Three sections of F-8s were to provide flak suppression for a strike group of A-4s. As the group approached the target area, the strike leader sighted the MIGs below the strike group. The F-8s engaged the MIGs allowing the strike group to continue to the target.

After engaging the MIGs in close combat for approximately 2 1/4 minutes, the F-8s disengaged due to no usable ordnance. Upon departure, one MIG was observed to be trailing light grey smoke from the left wing root.

During this same time, approximately 15 SAMs were fired at the strike group that was only 2 to 4 miles away from the MIG engagement.

See Event III-150.

[redacted]

Event III-148

Aircraft Involved: Four F-105s vs three MIG-17s

Result: No damage

Vicinity of Encounter: 21°03'N/105°53'E.

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 25 April 1967/1000H

Four F-105s, BLUE Flight, were providing flak suppression during a strike against the Hanoi railroad yard.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4

2 - 450 gal external fuel tanks
1 - QRC 160 pod (B2 and B4 had 2 pods)
1 - SIDEWINDER (AIM-9B on B1 and 3)
1 - MK 61 20mm gun

MIG-17 MIG 1, 2, 3

Silver color/M-1, 2
Camouflaged, possibly/M-3

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear sky, good visibility, BLUE Flight was recovering from an ordnance delivery run in which CBU-24/29 were dropped on flak sites.

Altitude: Approximately 6,000 ft
Heading: SW-W
Speed: 550-600 kts

5. INITIAL DETECTION

BLUE 2 first sighted MIG 1 low at 9 o'clock at a distance of approximately 1 1/2 miles.

6. ACTION INITIATED

BLUE 2 continued outbound to rendezvous with BLUE 1 and to establish the ECM Pod formation as MIG 1 was no immediate threat. At about this time three SAMs detonated about 3 miles off to the left. BLUE 2 turned right to look for BLUE 3 and 4 and saw two MIGs in trail at a range of about 1,500 ft. The lead MIG fired at BLUE 4 without success.

7. SITUATION DEVELOPMENT

The range between BLUE 4 and the MIGs was increasing and they were no longer a threat. BLUE 2 resumed his outbound heading and reacquired a visual contact of MIG 1. By this time the MIG had closed to a range of 3/4 mile and 4,000 ft below BLUE 2. At this time BLUE 2 became concerned with the improving accuracy of an 85mm AA gun firing at him with the rounds bursting between him and the MIG. BLUE 2 broke right to get away from the AA but observed heavier flak in that direction so reversed back to the left. Now the MIG had closed to a distance of 1,500 ft, slightly back of 9 o'clock and approximately 500 ft low. The MIG appeared to be tracking BLUE 1 at this time. Eventually the MIG broke away without firing at BLUE 1 or 2.

8. ORDNANCE

MIG 2 fired guns at BLUE 4 without scoring a hit.

9. EQUIPMENT PROBLEMS

None reported.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 2 | 3800 | 700-800 | 40 |

Comments on this Encounter

BLUE 2. Impressed with the turning maneuverability of the MIG-17, and with the density of the flak over Hanoi.

11. DATA SOURCES

Project Interview: BLUE 2, 6 June 1967.
Messages: 388 TFW OPREP-3 250342Z April 67.



[redacted]

[redacted]



12. NARRATIVE DESCRIPTION

Four 105s were on a flak suppression mission in the vicinity of Gia Lam air base. While recovering from the ordnance delivery run three MIG-17 fighters attacked the F-105s. MIG 1 was observed by BLUE 2 to maneuver to a 6 o'clock position on BLUE 1. BLUE 2 turned into the MIG and closed to within 300-400 ft with the MIG at 9 o'clock. When the MIG saw BLUE 2 he broke left and down. The F-105 tried to follow the MIG but by the time the MIG had turned beyond 150° the F-105 (BLUE 2) had turned only 20°-30°. The MIG disengaged and headed toward the heavy flak area over Hanoi.

Although MIG 2 fired at BLUE 4, MIG 2 and 3 were quickly left behind as BLUE 3 and 4 accelerated and outran the MIGs.

See Event III-143.

[redacted]

[redacted]

Event III-149

Aircraft Involved: Two EB-66s, and two RF-4Cs vs three MIG-21s

Result: No damage

Vicinity of Encounter: 21°10'N/104°00'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 25 April 1967/1017H

Three EB-66s aircraft (GREEN flight) with four F-4C escorts (BLUE flight) were on an ELINT/ECM mission over North Vietnam. At the time of the encounter GREEN 1 and BLUE 1 and 2 were at the northern end of a North-South orbit. BLUE 3 and 4 were escorting GREEN 2 and 3.

2. MISSION ROUTE

The time that GREEN flight was at various points in its track are given in Table 1.

TABLE I(S)

| LOCATION | TIME(H) |
|---|---|
| Depart Takhli | 0840 |
| 17°22'N/103°57'E | 0916 |
| Fighter rendezvous at 19°50'N/104°00'E | 0936 |
| 21°47'N/104°14'E | 0951 |
| Orbit through IP at 21°08'N/103°54'E | 1015 |
| Encounter | 1017 |
| Arrive Takhli | 1121 |

11. DATA SOURCES

432 TRW 250730Z April 1967 OPREP-3 FASTEL 308

12. NARRATIVE.

At 1011H, when at 21°25'N/104°15'E at 30,000 feet, heading 188 degrees, GREEN 2 notified BLUE 3 and 4, his cover, to set up an orbit in a clear area while GREEN 2 and 3, in a close formation, entered a hazy cloud deck. They were instructed to rejoin on the other side of the weather.

Upon completion of a turn to the North, while in the haze, GREEN flight learned that all the strike flights which they were supporting had returned to base. Therefore, at 1015H, GREEN 2 notified BLUE 3 and 4 that GREEN 2 and 3 were departing their orbit on aheading of 215 degrees. VHF communications jammers were off as was normal in turns to clear UHF for periodic listenings for warnings.

Minutes later, without indications on the APS-54, GREEN 3 called contrails high at 12 o'clock, on the same heading. GREEN flight was at 21°10'N/104°00'E and the time was 1017H. GREEN 2 saw three contrails 600-700 feet above, forward and weaving as if the aircraft were attempting to slow down. GREEN 2 identified three silver MIG-21 aircraft since they continued to turn silhouette up while weaving.

The number two MIG broke down into a right turn for spacing for a left, high side pass, into GREEN 2's 8 o'clock position. The number three MIG broke left and down but hazy clouds obscured further view. Later BLUE 3 stated the third MIG attempted a pass also. The number one MIG remained weaving 600-700 feet above GREEN flight. GREEN 2 and 3 dived down in a cirrus cloud deck patched with cumulus dropping 200 units of RR-44 chaff and 50 units of RR-59. They then took up a heading of 180-220 degrees at 24,000 feet and remained in the clouds for about 20 minutes climbing gradually to 28,000 feet to maintain cloud cover.

MIG warnings were not received nor did BLUE flight see the MIGs until after the initial encounter.

Subsequent MIG warnings were heard as shown in Table 11.

TABLE II

Mig Warnings (s)

| Origin | TimeH | Location |
|---|---|---|
| MISMATCH | 1038 | QG-3 |
| MOTEL | 1045 | QG-3 |
| MOTEL | 1048 | AG-4 |



[redacted]

[redacted]

Event III-150

Aircraft Involved: Two A-4Cs vs two MIG-17s
Result: One A-4C lost
Vicinity of Encounter: 20°48'N/106°41'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 25 April 1967/1112H

The two A-4s (BLUE 1 and 2) were part of a strike against the Haiphong ammunition depot. A total of 25 attack aircraft participated in the strike. As the strike group approached, the multiple SAMs were observed and heavy barrage and tracking 37/57/85mm AA fire was encountered throughout the strike. Two MIG-17 aircraft were observed to take off from Kien An airfield.

2. MISSION ROUTE

The strike group departed YANKEE STATION and proceeded to the target area.

3. AIRCRAFT CONFIGURATIONS

A-4C BLUE 1, 2

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear sky with 10-mi visibility in light haze.

| | BLUE 1 | BLUE 2 |
|---|---|---|
| Altitude: | 3,000 ft (approximately) | |
| Heading: | | |
| Speed: | 450 kts | |
| Fuel State: | | |

Flight Formation

Section of two airplanes

5. INITIAL DETECTION

While in his bombing run, BLUE 1 sighted two MIGs approaching the 6 o'clock position on his section.

6. ACTION INITIATED

BLUE 1 released his bombs and called a break to the right. BLUE 2 released his bombs and broke right behind his leader as the flight descended to 2000 ft.

7. SITUATION DEVELOPMENT

BLUE 1 called BLUE 2 to "pull harder", tighten his turn, and he then reversed his turn. After several turns the A-4s were scissoring with each other, providing mutual defense. BLUE 2 jettisoned his bomb racks during the defensive maneuvering. Because a MIG was firing at him and he had to execute a hard turn, approximately 4 g, BLUE 2 last saw BLUE 1 trailing light grey smoke. It was estimated that the MIG fired three one-second bursts at BLUE 2, after maneuvering in high-g turns down to approximately 1000 ft.

8. ORDNANCE

The MIGs fired on both BLUE 1 and 2 an unknown number of rounds.

9. EQUIPMENT PROBLEMS

None reported

10. AIRCREW COMMENTS

BLUE 2. "Could not evade the MIG at maximum speed, no afterburner. When attack aircraft have inferior capability compared to enemy aircraft, CAP cover has to be very good."

11. DATA SOURCES

Messages, Reports:

CTG 77.7 OPREP 3 250620Z April 67
CTG 77.7 OPREP 5 251810Z April 67/008
Modified Aircraft Combat Loss Report (Navy)

12. NARRATIVE

As the strike group approached the target area, heavy AA fire and SAMs were encountered. Prior to roll-in for the bombing attack the strike leader observed four MIG-17s at an altitude of approximately 1000 ft. While BLUE 1 and 2 were in their bombing run, BLUE 1 saw

[redacted]

[redacted]



two MIGs maneuvering into his 6 o'clock position. He released his bombs and called a right break. After heavy maneuvering BLUE 1 and 2 ended up in a scissors. BLUE 2 last saw BLUE 1 trailing light smoke. Other members in the strike saw BLUE 1 burst into flame and crash.

A red star was observed on the wing of the MIGs.

The TARCAP was not with the strike group but was maintaining an "on call" station just off the coast. Although the TARCAP attempted to locate and engage the MIGs, no contact was made.

See Event III-147.



[redacted]

[redacted]

Event III-151

Aircraft Involved: Four F-105Ds vs four MIG-17s
Result: Sighting only
Vicinity of Encounter: 21°13'N/105°50'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 25 April 1967/Approximately 1005H

This flight of four F-105Ds (BLUE Flight) was part of a strike against a transformer plant north of Hanoi. Heavy defenses, including SAMs, flak and MIGs were encountered in the target area.

2. MISSION ROUTE

The flight approached the northern end of Thud Ridge from the west and headed southeasterly down Thud Ridge into the target area.

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 2, 3, 4

Armed with bombs and equipped with external fuel tanks.

MIG-17 MIG 1, 2, 3, 4

Dull, silver color
External fuel tanks.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Considerable bad weather enroute to the target area. In the target area the weather was clear with good visibility.

| | BLUE 1 2 3 4 |
|---|---|
| Altitude: | 6-7,000 ft |
| Heading: | Southeasterly |
| Speed: | 500 kt CAS |
| Fuel State: | 10,000 lb |

Flight Formation

Approximately line abreast

5. INITIAL DETECTION

BLUE 3 and 4 sighted four MIGs at about 9:30 o'clock at a range of approximately one mile with about 90° angle off headed towards the F-105s. MIG warnings had been received.

6. ACTION INITIATED

While in an echelon formation, the MIGs jettisoned their external tanks and rolled into a turn to close to the 6 o'clock position on BLUE Flight. When BLUE Flight saw the MIGs they engaged afterburner and accelerated to 550 kt CAS in a shallow dive descending approximately 2000 ft.

7. SITUATION DEVELOPMENT

The F-105s opened the range on the MIGs and continued into the target area.

8. ORDNANCE

No air-to-air ordnance fired by either the F-105s or the MIGs.

9. EQUIPMENT PROBLEMS

None reported.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 4 | 640 | 375 | 60+ | Went directly to F-105 from flying school. |

Comments from Overall Experience

BLUE 4: "The F-105 is a fantastic airplane for this mission."

"On VFR strike missions you don't need two people."

[redacted]

[redacted]

Event III-151

11. DATA SOURCES

Project Interviews: BLUE 4, 30 May 1967.

12. NARRATIVE DESCRIPTION

As stated in paragraphs 5, 6, 7.

See Events III-137 and III-144.

Event III-152

Aircraft Involved: Four F-105s vs four MIG-17s

Results: Sighting only

Vicinity of Encounter: 21°08'N/105°51'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 26 April 1967/1616H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight striking same target as Events III-157 and -153 saw MIGs orbiting north of target; may have been same MIGs as some of those in referenced incidents.

[redacted]

[redacted]

Event III-153

Aircraft Involved: Four F-105s vs eight MIG-17s and one MIG-21

Result: No damage

Vicinity of Encounter: 21°20'N/105°37'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time 26 April 1967/1617H

Four F-105Ds (BLUE Flight) were part of a strike force attacking the Hanoi transformer yard (JCS 82.24). The strike force consisted of 20 F-105s of which four were IRON HAND, and four F-4Cs as MIGCAP (Event III-157). The encounters of the strike aircraft with MIGs are described in Events III-153, -157, and 156. At approximately the same time (1630H) another group of eight F-105s was conducting a strike against the Hanoi railway and highway bridge (JCS-13.00).

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 4,500 ft | | | |
| Heading: | 150° | | | |

5. INITIAL DETECTION

On ingress to the target BLUE Flight observed four MIG-17s on a 290° heading at 4,500 ft.

6. ACTION INITIATED

As MIGs crossed in front of flight, BLUE 3 fired a M-61 three-second burst at one MIG. No damage noted.

7. SITUATION DEVELOPMENT

At this point two of the MIGs broke right to come in behind flight and the other two turned left and down. BLUE 1 and 2 turned in behind two MIGs, following them down to approximately 2000 ft. It was estimated that the MIGs were flying at a maximum speed of 480 kts. BLUE 1 tried firing but gun failed to fire. BLUE 2 pulled to within 1000 ft of one MIG and fired a one-second burst before breaking off. No damage was noted. BLUE 1 and BLUE 2 overshot the MIGs due to considerable overtake speed. The MIGs broke away and the BLUE Flight proceeded to target.

On egressing just after pulling off the target the BLUE Flight crossed Phuc Yen Airfield, at 3000 ft, heading 360°, speed of 630 kts. They observed four MIG-17s on approximately 140° heading at their 11 o'clock position, and same altitude. The MIGs were in a left turn, descending in scattered trail formation. Leading MIG was firing at F-105s (probably Event III-154) which were just west of the Ridge Line and proceeding north. The MIGs passed in front of BLUE Flight and BLUE 3 fired at one MIG. Another MIG turned to position himself approximately 6000 ft behind BLUE 2. The MIG began firing but the range was excessive and he was under leading. While BLUE 2 was in a left turn with MIG still in position, BLUE 1 pulled up and then down, causing the MIG to break hard right and down. This concluded the encounter.

At the same time as the above encounter, BLUE 4 observed a MIG-21 at the same altitude, in his 10 o'clock position on a heading which would place BLUE 4 in a firing position. However, the MIG began a left turn. BLUE 4 positioned himself behind the MIG momentarily and fired, but could not stay with the MIG's turn due to the overtake speed. BLUE 4 broke off without any visible damage to the MIGs and continued to egress without further sightings.

8. ORDNANCE

(No. fired/No. hits)

| | 20mm | Cannon | Remarks |
|---|---|---|---|
| BLUE 1 | 1 Attempt/0 | | Failed to fire |
| BLUE 2 | 1/0 | | |
| BLUE 4 | 1/0 | | |
| MIG-17 | | 2/0 | At BLUE and at aircraft in Event III-154 |

9. EQUIPMENT PROBLEMS

BLUE 1's M-61 gun failed to fire.

11. DATA SOURCES

55 TFW 261555 April 67 OPREP-3 DOTO-O 11414

[redacted]

[redacted]

Event III-154

Aircraft Involved: Four F-105Ds vs eight MIG-17s

Result: No damage

Vicinity of Encounter: Approximately 21°20'N/105°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 26 April 1967/Approximately 1620H

Four F-105Ds (BLUE Flight and GREEN Flight) were part of a strike force attacking the Hanoi transformer yard (JCS 82.24). The strike force consisted of 20 F-105s, of which four were IRON HAND, and four F-4Cs as MIGCAP (Event III-157). The encounters of the strike aircraft with MIGs are described in Events III-153, -154, and 156. At approximately the same time (1630H) another group of eight F-105s was conducting a strike against the Hanoi railway and highway bridge (JCS 13.00).

8. ORDNANCE

| | (No. fired/No. hits) |
|---|---|
| | Air-to-Air Missiles |
| MIGs | 4/0 |

11. DATA SOURCE

7AF 262332Z April 67 Msg DIO 26438

12. NARRATIVE DESCRIPTION

As BLUE Flight came off the target they sighted four MIG-17s approximately 10 miles east and no contact was made. BLUE Flight sighted four MIG-17s on egress. The MIGs fired two salvos of two missiles each which missed as BLUE Flight turned. The MIGs did not give further chase.

Event III-155

Aircraft Involved: Four F-105s vs two MIG-21s

Results: No damage

Vicinity of Encounter: 21°19'N/105°52'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 26 April 1967, 1620H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight egressing from same ALFA target as Events III-153 and -157 while at 8,000' had two MIGs pass through flight; MIGs passed about 2,000' behind lead and 3,000' ahead of #3; no firing.



[redacted]

[redacted]

Event III-156

Aircraft Involved: Four F-105Ds vs two MIG-21s

Result: Sighting only

Vicinity of Encounter: Approximately 21°20'N/105°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 26 April 1967/Approximately 1620H

Four F-105Ds (BLUE Flight) were part of a strike force attacking the Hanoi transformer yard (JCS 82.24). The strike force consisted of 20 F-105s, of which four were IRON HAND, and four F-4Cs as MIGCAP (Event III-157). The encounters of the strike aircraft with MIGs are described in Events III-153, -154, and -156. At approximately the same time (1630H) another group of eight F-105s was conducting a strike against the Hanoi railway and highway bridge (JCS 13.00).

11. DATA SOURCE

7AF 262332Z April 67 Msg DIO 26438

12. NARRATIVE DESCRIPTION

BLUE Flight sighted two MIG-21s during egress but no contact was made.

[redacted]

[redacted]

Event III-157

Aircraft Involved: Four F-4Cs vs approximately ten MIG-21s

Result: One MIG-21 destroyed

Vicinity of Encounter: General area of 21°13'N/105°50'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 26 April 1967/1607H to 1624H.

Four F-4Cs (BLUE Flight) were flying MIG CAP for a strike on JCS 82.24, the Hanoi transformer site located at 21°08'27"N/105°50'55"E. The strike force consisted of twenty F-105s of which four were IRON HAND. The encounters of the strike aircraft with MIGs are described in Events III-153, -154, and -156. At approximately the same time (1630H) another group of eight F-105s struck JCS 13.00.

## 2. MISSION ROUTE

BLUE Flight departed Danang and refueled on White Anchor. After refueling the flight proceeded direct to Channel 97, then direct to 21°46'N/104°47'E, then direct to 21°43'N/105°17'E, then direct to 21°20'N/105°43'E, then direct to the target. On egress the flight again refueled on White Anchor.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

4 - AIM-7E (except for BLUE 1 who had three AIM-7E)
4 - AIM-9B
1 - 370 gallon external tank
1 - QRC-160 ECM pod
1 - 600 gallon centerline tank
IFF and TACAN. (Both On.)

MIG-21s

Silver
No markings visible
Clean.

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Thud Ridge obscurred by cumulus clouds. Five to six-eights broken to the south. Bottoms at 5-9000 feet MSL, tops at 10-12,000 feet. Good visibility above and below the clouds.

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 11-12,000 feet MSL | | | |
| Heading: | 146 degrees | | | |
| Speed: | 450 KTAS | | | |
| Fuel State: | 12,000 pounds | | | |

Flight Formation

Pod element on the left.

## 5. INITIAL DETECTION

While proceeding down Thud Ridge BLUE Flight heard the IRON HAND Flight call MIGs. The first contact was a visual acquisition of a single MIG-21 by BLUE 3 at the flight's 9 o'clock positions. BLUE 2 (backseat) also saw the MIGs at about the same time. The MIG was at 6000 feet MSL heading 320 degrees. There were no warnings from the agencies.

## 6. ACTION INITIATED

Blue lead instructed BLUE 3 and 4 to attack the MIG while BLUE 1 and 2 followed to provide cover.

## 7. SITUATION DEVELOPMENT

The MIG which BLUE 3 and 4 were attacking disappeared into the clouds, but they saw another MIG-21 and attacked this MIG. At this time BLUE 1 and 2 saw a MIG-21 chasing an F-105 and split the flight to follow the MIG.

From this point on BLUE 1 and 2 and BLUE 3 and 4 were operating independently. BLUE 3 and 4 subsequently attacked other MIG-21s but were never able to achieve a firing position before the MIGs disappeared into clouds. At BLUE 2's bingo they egressed.

After the MIG on the F-105 disappeared into cloud cover BLUE 1 and 2 attacked other MIGs with BLUE 1 firing 2 SPARRCWs and 2 SIDEWINDERs at a MIG-21, all of which missed.



[redacted]

He then fired a single SPARROW at another MIG-21 and, although BLUE 1 did not see the missile intercept, he is credited with a kill. When BLUE 2 reached bingo fuel the flight egressed.

While egressing BLUE Flight saw two MIG-21s and one MIG-17 in the area of Phuc Yen.

8. ORDNANCE

(No. fired/No. hits)

| | AIM-7E SPARROW | AIM-9B SIDEWINDER |
|---|---|---|
| BLUE 1 | 3/1 | 2/0 |

9. EQUIPMENT PROBLEMS

None.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | 3100 | 350 | 60-70 | 1900 hrs in F-100. |

Comments on this Encounter

BLUE 1 had no problem identifying the MIGs due to their silver color and delta wing shape.

Felt that they could turn with the MIG-21, possibly due to the ability of pilot. Although the MIGs made several passes they could not turn with the F-4.

The MIGs appeared to be in an orbit, operating singly.

The F-4s kept turning to defeat not only the MIG-21s but also the SAMs and AAA.

11. DATA SOURCES

Project Interviews: BLUE 1-Front, 23 June 1967.

Messages, Reports:

366TFW 261120Z April 1967 OPREP-3/008 FASTEL 789.
366TFW 261845Z April 1967 OPREP-3
Section I Fastel 806
Section II Tastel 807.
366TFW 271000Z April 1967 MSG DCO 822.
Raytheon Letter Subject Missile Firing DID 28 April 1967.

12. NARRATIVE DESCRIPTION

BLUE Flight was providing MIG CAP for a force of F-105s. The F-105s, from KORAT were ingressing in a "gaggle" with BLUE Flight trailing the formation.

While ingressing at 1607H, when BLUE Flight was at approximately 21°38'N/105°09'E, heading 082 degrees, at 450 KTAS and 15,000 feet altitude, they observed three SAM bursts of dirty brown smoke at the same altitude at approximately 21°32'N/105°18'E. No SAM calls were heard at this time or at any other time during the mission.

At 1611H, when BLUE Flight was at 21°24'N/105°38'E, heading 146 degrees at 10,000-12,000 feet MSL, they observed two SAM detonations at approximately 8000 to 10,000 feet MSL at approximately 21°17'N/105°38'E. About 30 seconds later, with the speed and heading the same, BLUE Flight saw three more SAMs in flight, headed approximately 330 degrees, at 8 nautical miles range at 2 o'clock. These SAMs were at 6000 feet MSL, and climbing at a 60 degree angle. None of the SAMs sighted during ingress were fired at BLUE Flight.

At 1612H BLUE Flight was at approximately 21°20'N/105°43'E, at 11,000-12,000 feet MSL, heading 146 degrees; they heard the IRON HAND Flight lead call MIGs. Very shortly thereafter, BLUE 3 (as reported by OPREP) and BLUE 2 backseat (as reported by BLUE 1) saw one MIG-21 (MIG 1) at 9 o'clock. MIG 1 was at 6000 feet MSL and was heading about 320 degrees.

BLUE 3 and 4 were high on the left and were instructed by BLUE lead to go after MIG 1 with BLUE 1 and 2 following in trail to provide cover.

BLUE Flight had jettisoned their centerline tank when it became empty (at approximately the time when the flight crossed the Red River). When the engagement started BLUE 1 failed to jettison the outboard tank. However, it was empty and was retained throughout the encounter.

[redacted]



As the elements of BLUE Flight turned left to engage MIG 1 a SAM passed between the elements about 2000 feet in front of BLUE 1 and 2, heading 340 degrees. The time was 1613H and the position approximately 21°16'N/105°50'E. No bursts were observed nor did the missile appear to track.

As the flight continued their left descending turn MIG 1 broke to the deck and disappeared into the clouds at about 5000 feet MSL.

At this time (1614H) BLUE 3 and 4 saw another MIG-21 (MIG 2) at 9 o'clock low, one nautical mile distant, heading 280 degrees, and turned left into him.

Meanwhile, BLUE 1 and 2, after completing about 180 degrees of turn saw a MIG-21 (MIG 3) chasing an F-105. MIG 3 was below and to the left of BLUE 1 and 2. BLUE 1 lead called BLUE 3 and 4 and told them he was breaking off from them and separating the elements to cover the F-105. From this point on BLUE 1 and 2 and BLUE 3 and 4 were operating separately.

BLUE 3 and 4 continued on after MIG 2, who broke down and left, disappearing into the clouds.

As BLUE 3 and 4 were turning right through a heading of 150 degrees to join with the other element, they spotted two more MIG-21s (MIG 4, 5) at 8:30 o'clock low, approximately 5 nautical miles distant, turning through 250 degrees. MIG 4 and 5 were lost from view as BLUE 3 and 4 continued to turn right toward Phuc Yen and spotted another MIG-21 (MIG 6) at 3 o'clock low on the downwind leg of the airfield's traffic pattern, heading about 280 degrees.

BLUE 3 and 4 made a descending right turn to engage but MIG 6 turned left and broke down into clouds and disappeared. BLUE 3 and 4 made a 180 degree turn south of the field and saw another MIG-21 (MIG 7) at 2 o'clock low just north of the field heading northwest. They gave pursuit but MIG 7 broke left and down disappearing into clouds.

At this time, about 1621H, BLUE 3 and 4 had two SAMs in booster phase fired at them approximately 1-1/2 seconds apart. The closest missile passed approximately 50 feet directly above BLUE 3. When attacked by the SAMs BLUE 3 and 4 were at 8000 feet MSL at 21°18'N/105°47'E heading 320 degrees. The SAMs were heading 330 degrees and passed close enough to have caused a proximity burst had they been tracking.

Shortly thereafter BLUE 3 and 4 heard BLUE 2 call bingo fuel and they egressed. At no time did BLUE 3 and 4 achieve a position to fire on any of the MIGs.

While BLUE 3 and 4 were pursuing their MIGs independently, BLUE 1 and 2 were similarly engaged. As soon as the flight split into two elements, BLUE 1 and 2 broke down and left into MIG 3. MIG 3, who was on the F-105's tail, immediately broke off from the F-105 and disappeared into cloud cover.

BLUE 1 and 2, on looking around saw several more MIG-21s orbiting over Phuc Yen between 6000 and 8000 feet MSL. They picked up one (MIG 8) at 10 o'clock, heading south in traffic pattern about 1-1/2 miles away and broke left into him. MIG 8 turned left and BLUE 1 and 2 followed.

BLUE 1 held 1-1/2 mile separation on MIG 8 and went to boresight for acquisition. After lock on in boresight the backseat went to full system, interlocks in. With parameters met, BLUE 1 fired two AIM-7E missiles in ripple. They both went out of sight beneath the nose maintaining a straight flight path in reference to launch, and one was observed to detonate just south of Phuc Yen. Neither missile appeared to guide and the second one appeared to barrel roll.

MIG 8 was in a leisurely left turn at 6000 feet when attacked by BLUE 1. The missile select lights had been on for at least five minutes previously but BLUE 1 had placed the missile power switch to standby after the five minute tune-up period. Upon reaching the target he placed missile power switch on once again but had it only 5 seconds prior to placing missile arm switch to arm. The select lights were all illuminated just prior to arming the SPARROWs.

MIG 8 was outside of BLUE 1 at 45 degrees off BLUE 1's flight path at 12 o'clock. At launch BLUE 1 was at 400 KCAS at 6000 feet MSL pulling 3-4 g's. BLUE 1 had 50 knots overtake on MIG 8 and was from 30 to 45 degrees angle off at 1.5 n mi range.

The bit check previous to take off was satisfactory and on return the system was carefully checked, but no explanation of the failure of the first two missiles was discovered.

BLUE 1 then pressed on after MIG 8 and fired two SIDEWINDERS in ripple, as MIG 8 had continued his left hand turn. BLUE 1 focused on one missile which started to guide but as MIG 8 came to a cloud he rolled off into it and the missile did not follow and missed at 6 o'clock by 100-200 feet. The other missile was not observed.

BLUE 1 had selected the SIDEWINDER due to the failure of the first two SPARROWs and had ripple fired to increase the chance of success.

At firing MIG 8 was 20 degrees off the nose of BLUE 1, in a left turn at 6000 feet MSL. BLUE 1 was at 450 CAS at 6000 feet MSL pulling 2-2 1/2 g's. His angle off from the

[redacted]

MIG was 20 degrees and the range was 1 mile. BLUE 1 had a good tone and had kept the target in the gun sight reticle before and during firing. Although tone definition was good on missile firing the SIDEWINDERs could have homed on the cloud background which was present.

BLUE 1 lost sight of MIG 8 as he went into the cloud. Other MIG-21s were still seen circling at 10 o'clock. BLUE 1 spotted one co-altitude at about 2 miles away and pulled in a hard turn and got inside of MIG-21 (MIG 9). Due to the cloud buildup BLUE 1 went back to radar mode and at 2-1/2 miles made a boresight acquisition and lock on. A switch to full system was then made, interlocks in.

MIG 9 was also in a gentle left turn and at 2 miles range BLUE 1 fired a SPARROW and after a short delay the missile launched and tracked the target nicely. At this time however, MIG 9, with the missile tracking good and closing from 1000 feet range, made a slight right roll and entered a cloud. BLUE 1 followed the contact for a while until the radar broke lock. BLUE 1 felt that he had held lock long enough for intercept and since the MIG was taking the most leisurely evasive action and the missile was guiding, he was credited with a kill. The time was about 1622H.

At launch BLUE 1 was at 450 KCAS at 6000 feet MSL. The MIG was also at 6000 feet MSL with both in a left turn. BLUE 1 was pulling 2 g's and had 60 knots overtake on the MIG. The MIG was 2 miles away at 12 o'clock and 5 degrees angle off.

The MIGs last known position was 20°19'N/105°50'E, altitude 5000 feet MSL, heading 340 degrees, speed about 420 KTAS.

At this time BLUE 1 saw another MIG-21 (MIG 10) low at 10 o'clock and turned to engage when BLUE 2 called bingo fuel. The flight then started to egress from the target area to the northwest, and while egressing they spotted two MIG-21s and one MIG-17 in the Phuc Yen traffic pattern and four silver MIGs, identity undetermined and two IL-28s in revetted sites on the field.

Throughout the engagement, the MIGs seemed to maintain their left orbit at 6000-8000 feet altitude tightening their turn and ducking into a cloud when attacked. BLUE 1 and 2 remained in a general left turn working mostly in the horizontal. BLUE 1 did go into high speed yo-yo to attack MIG 9, but their altitude ranged only from 4000-8000 feet, and the speed was never below 400 knots. Both BLUE 1 and 2 used afterburner in hard turns to keep inside of the MIGs. Although all the MIGs were in the same general area, they seemed to be operating as singles. Due to their pattern the MIGs were acquired at 10 o'clock. However, some MIG-21s made very high angle off passes at BLUE 1 and 2. They could not match the turn however and posed no threat. BLUE 2 saw this situation on several occasions but did not bother to call them out. The MIGs were not in afterburner and BLUE 1 had no trouble getting a 6 o'clock position on them.

The battle took place close to Phuc Yen and as BLUE 1 and 2 passed close to the field, they came under AAA fire, despite the proximity of MIGs. All of the flight members felt that the MIGs could have landed at Phuc Yen at any time but chose instead to lure the flight over the field and there appeared to be a coordination between SAMs, MIGs and AAA which was abetted by the low clouds. The operations conducted by BLUE Flight had to account for these defenses when conducting their search.

BLUE Flight started to egress about five minutes after the strike force had left the target. While egressing at 14,000 feet MSL heading 270 degrees, the flight observed one more SAM to burst at their altitude 5 miles away at approximately 21°23'N/105°12'E at 1624H. In all some twelve SAMs were fired at the flight.

[redacted]

Event III-158

Aircraft Involved: Four F-4Cs vs two MIG-21s
Result: Sighting only
Vicinity of Encounter: 20°55'N/105°13'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 28 April 1967/Shortly after 1640H

Four F-4Cs (BLUE Flight) were to provide MIGSCREEN for the strike force from Takhli, which were attacking JCS 18.38. The strike force consisted of 16 strike aircraft and was supported by an IRON HAND Flight. All of the strike flights except one encountered MIGS (Events III-161, -162, -163) and the IRON HAND Flight (Event III-164) also encountered MIGs.

2. MISSION ROUTE

Departed Danang, and refueled on BROWN ANCHOR. From there, direct to Channel 97, then direct to 20°48'N/105°06'E, direct to 20°57'N/105°27'E, then direct to target area orbit in the vicinity of 21°04'N/105°39'E. The egress route was direct to 21°08'N/105°31'E, direct to 20°50'N/105°05'E, then direct to 20°23'N/104°55'E, then direct to 19°00'N/104°20'E, then direct to Channel 85, and then to Danang.

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4--Tank configuration unknown but probably one centerline and one outboard.

4-AIM-7E
4-AIM-9B
1-QRC-160 pod

MIG-21

Silver

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear visibility unlimited

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 17,000 ft AGL | | | |
| Heading: | 240° | | | |
| Speed: | | | | |
| Fuel State: | | | | |

Flight Formation

Pod

5. INITIAL DETECTION

While outbound BLUE 3 saw two MIG-21s below the flight. The MIGs were at 2000 ft altitude, heading 240°, turning left towards Hanoi.

6. ACTION INITIATED

BLUE Flight continued on, while keeping the MIGs under surveillance.

7. SITUATION DEVELOPMENT

MIGs were lost from view.

8. ORDNANCE

None

9. EQUIPMENT PROBLEMS

None

10. AIRCREW COMMENTS

None interviewed

11. DATA SOURCES

366 TFW 781300Z OPREP-3 FASTEL 865

12. NARRATIVE

BLUE Flight was fragged to fly MIGSCREEN for five strike force flights. (These are the flights in Events III-161, -162, -163, and -164 plus one other which did not encounter MIGs.) BLUE Flight stayed with the flight of Event III-163 from rendezvous to target and return. BLUE Flight rendezvoused with the strike force at 1616H. They stayed above the flight in Event III-163 to the target and set up an orbit at 21°04'N/105°39'E. The target of the strike force was JCS 18.38.



[redacted]

[redacted]



At 1633H, BLUE 4, while flying at 18,000 ft AGL, and 500 KTAS, was in a left turn, turning through 360° had two SAM missiles detonate near the aircraft. BLUE 4 was the last aircraft in a Pod turn formation. BLUE 3 saw a SAM missile detonate at BLUE 4's 6 o'clock position within 75 ft of the aircraft. Approximately 7 seconds later BLUE 3 saw a second SAM detonate at BLUE 4's 6 o'clock position within 75 ft.

The second SAM was in booster and after the burst the crew saw the booster section continue out of the burst and go above them. The two bursts were orange in color and appeared to be the size of a dirigible.

BLUE 4 had a total of 12 holes in the stabilator, aft fuselage, and lower wing. BLUE 4 lost PC-2 hydraulic system, but BLUE Flight was able to return to home base without further incident. The missiles appeared to be traveling in a near vertical path. They were not observed prior to detonations. All QRC-160 were operational.

On the outbound leg from the target, BLUE 3 saw two MIG-21 aircraft below the flight. The MIGs were on a heading of 240° turning left toward Hanoi. The MIGs stayed at 2000 ft and disappeared to the east toward Hanoi. BLUE 1 (Lead) elected to maintain flight discipline and escort BLUE 4 out of enemy territory. Four crew members saw the MIGs.

[redacted]

[redacted]

Event III-159

Aircraft Involved: Four F-105s vs eight MIG-17s

Results: Sighting

Vicinity of Encounter: 20°52'N/105°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 28 April 1967, 1630H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight ingressing to same ALFA target Event III-162 saw three silver MIGs cross its track at 1,000' AGL; when about 2 miles away, MIGs began sweeping turn, but no further contact made; one minute later, #3 saw five silver MIGs at 10,000' altitude and 6-8 miles range.

Event III-160

Aircraft Involved: Four F-105s vs two MIG-17s

Results: No damage

Vicinity of Encounter: 20°58'N/105°24'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 28 April 1967, 1653H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight returning from strike on target of Event III-165 saw two MIGs orbiting; #4 began turn, but lost sight of MIGs.



[redacted]

[redacted]

Event III-161

Aircraft Involved: Four F-105s vs eight MIG-17s in 3 separate encounters

Results: No damage

Vicinity of Encounters: 21°02'N/105°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 28 April 1967/1630H

Four F-105s (BLUE Flight) were part of a strike force attacking JCS 18.38 Dan Phuong causeway 12 miles west of Hanoi. The other aircraft in this strike force (including support aircraft) which encountered MIGs are those of Events III-158, -162, -163, -164.

2. MISSION ROUTE

Departed Takhli and proceeded overland to the target. The general route after leaving Channel 97 is about the same as that described in Event III-158.

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 2, 3, 4

6 - 750-lb bombs
B-3 had an AIM 9
Tank configuration unknown, probably each had a QRC-160 pod, camouflaged.

MIG-17

Silver
No external stores of tanks

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Unknown

5. INITIAL DETECTION

On ingress BLUE Flight saw three MIG-17s 2 to 3 miles out on the right.

6. ACTION INITIATED

The MIGs were no threat due to their position and the flight continued on.

7. SITUATION DEVELOPMENT

BLUE Flight delivered ordnance on the target, and on egress a flight of two MIG-17s were out-maneuvered by BLUE 1 and 2.

An additional flight of three MIG-17s made a head-on pass at BLUE Flight, and fired at the flight. BLUE 1 fired at these MIGs but obtained no hits.

8. ORDNANCE

(No. fired/No. hits)

| | CANNON | Remarks |
|---|---|---|
| BLUE 1 | 3/0 | 8 bursts at the last 3 MIGs |
| BLUE 2 | 1/0 | |
| MIG 1 | 1/0 | Fired at BLUE Flight at least once. BLUE 3 only saw MIG 2 firing. |
| MIG 2 | 1/0 | Fired at BLUE Flight at lease once. BLUE 3 only saw MIG 2 firing. |
| MIG 3 | 1/0 | Fired at BLUE Flight at least once. BLUE 3 only saw MIG 2 firing. |

9. EQUIPMENT PROBLEMS

None reported

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 3 | ~2500 | 400 | | Had ADC experience |

Comments on this Encounter

Tough to counter a head-on firing pass.

[redacted]

## 11. DATA SOURCES

Project Interviews: BLUE 3, 31 May 67
Messages:

355 TFW 281800 April 67 OPREP-3 DOTO-0 11439

## 12. NARRATIVE DESCRIPTION

BLUE Flight was inbound and about 2 minutes from the target when they saw a flight of three MIG-17s. The MIGs were off the right 2 to 3 miles. BLUE 3 called them to the rest of the flight, but BLUE 1 ascertained that the MIGs were of no threat since BLUE Flight had already increased speed for the run in to the target. The flight continued on past Hoa Lac and received heavy AAA fire from an estimated nine 85mm batteries.

The flight struck the target and egressed to the west. In this interval the MIGs came east to the egress route.

On egress, a flight of two MIG-17s was out-maneuvered by BLUE 1 and BLUE 2.

BLUE 3 and 4 were about three-quarters of a mile behind BLUE 1 and 2, who were very close together. Near 20°47'N/105°30'E BLUE Flight came upon an additional three MIG-17s. The MIGs were first seen by BLUE 3 about 10° off to the right, as the MIGs were turning in towards BLUE 1. They were 1 to 1 1/2 miles in front when first seen, heading about 90° to BLUE Flight's course and not closing at that instant. The MIGs never crossed in front of BLUE Flight. These MIGs had already been called by other flight members when BLUE 3 saw them. The MIGs were in a turn and BLUE 3 got a good top view of them.

The MIGs ended up in a generally head-on pass to BLUE Flight and made a 140° pass (180° would be exactly nose on).

BLUE 3 was at 3000 to 4000 ft altitude at 600 KTAS with BLUE 4 on the left. BLUE 3 let up for missiles-air, since the wingman was in a good position.

A MIG that had previously been unseen, came across in front of BLUE 3, passing from the left. The MIG was unseen until he filled the wind screen about 500 ft away and due to the high rate of closure passed quickly off to the right and disappeared.

A MIG that had been seen at BLUE 1's one o'clock position rolled steeply into BLUE 3 and the muzzle flashes were seen as the MIG passed to the 3 o'clock position and out of sight. BLUE 3 could not fire due to the position of BLUE 1.

BLUE 1 fired deflection bursts of 20mm at each of the three MIG-17s as it broke away.

There was no further contact after BLUE Flight passed through the MIGs.

[redacted]

Event III-162

Aircraft Involved: Two F-105Ds vs at least nine MIG-17s

Result: One MIG-17 destroyed

Vicinity of Encounter: 21°06'N/105°34'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 28 April 1967/1630H to 1635H

Four F-105Ds (BLUE Flight) were part of a strike force of 16 F-105s in a strike against JCS 18.38, the Dan Phong Highway causeway, 12 miles west of Hanci. BLUE Flight was the first strike flight and followed the flak suppression flight (Event III-163). The other aircraft in the strike force which encountered MIGs are those of Events III-161 and -163. One other strike flight saw no MIGs. The actions of IRON HAND flight are described in Event III-164. The actions of the F-4 support aircraft are given in Event III-158. Also, there were the normal support aircraft such as B-66 and BIG EYE.

After hitting the target BLUE 1 and 2 were separated from BLUE 3 and 4. Consequently, most of the action involves only BLUE 1 and BLUE 2.

## 2. MISSION ROUTE

BLUE Flight left Takhli and refueled on GREEN ANCHOR. From aerial refueling the flight proceeded to Channel 97 and then ingressed directly to the target on a heading of about 048°.

## 3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 3

2 - 3000 lb bombs
1 - AIM-9B
1 - QRC-160 Pod
650 gal centerline tank
IFF - Squawking; TACAN - receive only
Camouflage paint

F-105D BLUE 2, 4

2 - 3000 lb bombs
1 - QRC-160 Pod
650 gal centerline tank
IFF - Squawking; TACAN - receive only
Camouflage paint

MIG-17 MIG 1-9

Silver color, no marking noted
External tanks

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: VFR. Clear with 15 miles visibility
Flight conditions unknown

## 5. INITIAL DETECTION

BLUE Flight saw MIG-17s on ingress to the target. The MIGs were at 4 o'clock 5 to 6 miles out of the line of flight. Although MIG warnings were received, they were not correlated with the MIGs that were encountered.

## 6. ACTION INITIATED

BLUE Flight increased speed and the MIGs were left behind.

## 7. SITUATION DEVELOPMENT

BLUE Flight continued on and hit the target. As BLUE Flight pulled off the target, BLUE 1 and 2 pursued one MIG-17 in a turning chase, firing one AIM-9B which missed.

Two more MIG-17s made a head-on pass and both BLUE 1 and 2 and the MIGs fired without effect. BLUE 1 and 2 continued hard right and sighted another MIG-17. Both BLUE 1 and BLUE 2 fired on the MIG with BLUE 1 scoring a kill. While firing on this MIG, BLUE Flight was attacked by two more MIG-17s from 5 o'clock firing. These MIGs broke off as BLUE 1 and 2 broke hard right.

While egressing a single MIG-17 made a head-on firing pass but scored no hits. Shortly thereafter, the BLUE 1 and 2 were attacked by two more MIG-17s, one from 5 o'clock and the other from 7 o'clock; both were firing. BLUE Flight unloaded and outran the MIGs.

## 8. ORDNANCE

(No. fired/No. hits)

| | 20mm | AIM-9B | Cannon | Remarks |
|---|---|---|---|---|
| BLUE 1 | 2/1 | 1/0 | | Expended 800 rounds. One MIG-17 killed by cannon fire. |
| BLUE 2 | 3/0 | | | Expended 1000 rounds |
| MIG 2,3,5,6,7,8 & 9 | | | 1/0 | Each made one firing pass, no hits |

[redacted]

[redacted]



## 9. EQUIPMENT PROBLEMS

BLUE 1 - The gun camera was inoperative.

## 10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 1 | 3000 | 1400 | 78 |

Comments on this Encounter

Had preplanned to use the AIM-9B first, and set up to do so on MIG 1. The sun was not a factor. Felt that aggressiveness in attacking the MIGs is the key to success.

The MIGs seemed to be eager to disengage. BLUE 2 did an excellent job of covering and warning of attacking MIGs. This was due to the fact that BLUE 1 and 2 had flown together for the past 50 missions, and BLUE 2 knew what to expect. Due to cluttered communication channels, the wingman must be able to stay with the lead with a minimum of communication.

Switchology is unacceptable. It needs to be more simplified. The switchology definitely degraded the attack against MIG 1.

The low level acceleration and maximum speed relative to the MIG-17 was a real advantage, and was utilized successfully as a defense maneuver.

Comments from Overall Experience

On previous missions to Route Package VI and the Hanoi area, BLUE 1 had seen six to eight MIGs on different occasions.[1] These sightings were head-on passes with MIG-17s or observations of MIG-17s or 21s outside of engagement distances.

## 11. DATA SOURCES

Project Interviews: BLUE 1, 30 May 1967

Messages, Reports:

355 TFW 291240Z Apr 67 OPREP-3 DOTO-0 011456
355 TFW 281823 Apr 67 OPREP-3 DOTO-0 011441
355 TFW 281800 Apr 67 OPREP-3 DOTO-0 11441

## 12. NARRATIVE DESCRIPTION

BLUE Flight (consisting of four F-105s) was ingressing to the target. On crossing the Black River, MIG-17s were sighted at 4 o'clock, low approximately 5 to 6 miles out of the line of the strike force. BLUE Flight went to afterburner and increased airspeed, and the MIGs fell behind and were lost from view.

BLUE Flight hit the target, and after roll in, BLUE 1 and 2 were separated from BLUE 3 and 4. They did not rejoin until they all reached Channel 97 on egress.

Although MIG warnings were issued, BLUE Flight was unable to correlate them with their specific encounters and, as a result, did not get warning for the MIG encounters. The first indication of MIGs was when they were seen. During the MIG encounters which followed, BLUE 1 and 2 did not request CAP support nor communicate with the CAP aircraft (Event III-129A).

As BLUE 1 and 2 recovered from the bomb run, BLUE 1 saw a MIG-17 at 2 o'clock about 1 1/2 miles out. At this time, BLUE 1 and 2 were at 3000 ft altitude (about 1000 ft AGL) in the vicinity of 21°06'N/105°34'E. BLUE 1 and 2 turned toward MIG 1, gaining rear quadrant advantage in the vicinity of the MIG's 4 o'clock.

BLUE 1 had planned to use the SIDEWINDER first, and attempted to reset the switches to that mode. In doing so, BLUE 1 had to take his eyes from the MIG to look inside the cockpit. On looking back at the MIG, BLUE 1 discovered that the MIG had gained 15° to 30° of turn on him and was increasing the lateral separation. BLUE 1 then pulled the pipper up to place it on the MIG. BLUE 1 got a tone about two seconds prior to launch and held the tone until launch. The tone after launch was not recalled. In order to put the pipper on the MIG, BLUE 1 had to pull over 2 1/2 g's.

BLUE 1 then released g to about 1, and at 1500 ft altitude AGL and at 400 kts, BLUE 1 fired an AIM-9B. At firing, BLUE 1 had about 15° angle off, and the range was 3000 ft. BLUE 1 was in a slight climbing right turn with about 15° of bank.

[1]The RED BARON files contain no other events with BLUE 1 as a participant, so it is unknown if these sightings are contained in previous events.

[redacted]

The MIG was also in a turn at about the same speed and altitude as BLUE 1. As the SIDEWINDER left the rail, the MIG tightened his turn even more, but it was estimated by BLUE 1 that the MIG was probably outside of parameters due to range and angular deflection even before this maneuver. Since the target was at about 1000 ft AGL, background IR radiation may have affected tracking.

The missile appeared to guide towards the MIG, but the missile passed about 1000 ft behind and 400 ft below the MIG.

After a 360° turn, BLUE Flight (BLUE 1 and 2) then broke off the engagement and turned toward the west for egress. On rolling out on a westerly direction, BLUE 1 and 2 saw two MIG-17s (MIG 2, 3) heading 170° at 2000 ft. The MIGs and BLUE 1 and 2 turned right into each other and ended up in a head-on firing pass as both the MIGs and BLUE 1 and 2 fired. BLUE 1 did not see the MIGs muzzle flashes and no hits were observed.

BLUE Flight passed MIG 2 and 3 on the left, head on, in a right turn. As the flight continued a hard right turn, they sighted another MIG-17 (MIG 4) at 21°02'N/105°19'E. MIG 4 was at BLUE 1's 2 o'clock position about 1 1/2 to 2 miles out. BLUE 1 and 2 were in the vicinity of 2000 to 3000 ft MSL and about 350 to 370 kts airspeed, in afterburner. When seen, the MIG was in a gentle left turn with about 30° of bank. As MIG 4 turned, BLUE 1 and 2 were able to turn inside; and as he came into range, BLUE 1 and 2 fired.

BLUE 1 started firing at 1000 to 1300 ft range, and after a burst of 200 to 400 rounds, BLUE 1 saw the left wing start to emit smoke and fire. BLUE had the sight set up for manual gage. The MIG passed through the pipper at such an angle that BLUE 1 felt that the MIG was in the firing envelope. (BLUE 1 felt that had the MIG been turning harder, the proper lead would not have been possible). The impacts all appeared to be in the left wing root as recorded by BLUE 2's KA-71 strike camera.

BLUE 1 fired at 15° to 20° angle-off and down to 800 ft range. As the MIG began to burn (which was confirmed by BLUE 2) the MIG tightened his turn to the left and entered a steep diving spiral, towards the Black River; when last seen the MIG was about 500 to 1000 ft from the ground. BLUE 1 and 2 never saw the MIG hit the ground.

As the MIG started to out turn BLUE 1 and 2, BLUE 1 started a high yo-yo to the outside to position for another firing pass.

At this time, BLUE 2 called that two MIG-17s (MIG 5 and 6) were attacking from 5 o'clock. BLUE 1 saw the MIGs at about 1000 ft range and both were firing. BLUE 1 and 2 initiated a hard right descending turn, and unloaded in afterburner. The MIGs disengaged after about 30° of turn, scoring no hits. BLUE 1 and 2 still had the centerline tank in place, as well as pylons, but they jettisoned the tank at this time.

On egress, a single MIG-17 (MIG-7) made a short head-on ineffectual firing pass, and continued to the north as BLUE Flight continued southwest.

BLUE 1, with BLUE 2 on the right, climbed slightly; and shortly after the attack by MIG 7, BLUE 1 and 2 were attacked by three more MIG-17s (MIG 8, 9, 10). Two MIGs were at 5 o'clock and the other was at 7 o'clock. The MIGs were about 1000 to 1500 ft range and were firing. BLUE 1 saw the rounds pass over the canopy and the muzzle flashes on the nose of the MIGs. BLUE 1 and 2 went to afterburner and negative g and descended to 300 to 400 ft above the ground. The flight rapidly outdistanced the MIGs and safely egressed.

The engagements were all about 1500 to 3000 ft; and except for accelerating away, the speeds were about 400 kts. At the start of the engagements, BLUE Flight had about 7000 lb of fuel, which would have given them some ten minutes in the target area so that use of afterburner was not restricted. The encounters on egress occurred between 1630H and 1635H.

[redacted]

[redacted] Event III-163

Aircraft Involved: Four F-105Ds vs one MIG-17

Result: One MIG-17 destroyed

Vicinity of Encounter: 21°01'N/105°25'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 28 April 1967/1636H

Four F-105Ds (BLUE Flight) were part of a strike force attacking JCS 18.38, the Dan Phong Highway Causeway, 12 miles west of Hanoi. BLUE Flight was the flak suppression flight and led the strike force to the target. The other aircraft in the strike force which encountered MIGs (one flight did not) are those of Events III-161 and -162. The IRON HAND support aircraft for this strike were those described in Event III-164. The CAP aircraft were the flight of Event III-153.

## 2. MISSION ROUTE

Departed Takhli and after aerial refueling proceeded to the target, directly from Channel 97, over the same route as the strike flights (Event III-161 and -162). Egress was the reverse route.

## 3. AIRCRAFT CONFIGURATIONS

| F-105D BLUE 1, 3 | BLUE 2, 4 |
|---|---|
| 1 - QRC-160 Pod | 1 - QRC-160 Pod |
| 2 - 450 gal tanks | 2 - 450 gal tanks |
| 4 - CBU | 4 - CBU |
| Full 20mm | Full 20mm load |

1 - AIM-9B (SIDEWINDER)
IFF: BLUE 1 operating, BLUE 2, 3, 4 on standby
TACAN on receive only
Camouflaged

MIG-17

Drop tanks
Dark Olive drab

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear with 15 mile visibility

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 8000-10,000 ft | | | |
| Heading: | Southwesterly (Egressing) In a right hand turn | | | |
| Speed: | 550 kt | | | |
| Fuel State: | 8000-9000 lb | | | |

Flight Formation:

Pod, almost line abreast, element on the left, BLUE 2 on the right of Lead.

## 5. INITIAL DETECTION

BLUE Flight had heard MIG warnings so they knew that MIGs were airborne. On egress BLUE 1 saw a MIG-17 and called it out. The MIG-17 was chasing an F-105F.

## 6. ACTION INITIATED

After making a positive identification of the MIG-17, the flight attacked.

## 7. SITUATION DEVELOPMENT

BLUE 1 set up a SIDEWINDER attack and fired but the missile failed to guide. As BLUE 1 turned off to follow the missile's flight, BLUE 2 closed in and fired at the MIG. The first burst missed and on the second burst the gun jammed.

BLUE 1 then moved in and fired 20mm at the MIG. The MIG exploded, resulting in a kill.

## 8. ORDNANCE

(No. fired/No. hits)

| | SIDEWINDER AIM-9B | Cannon 20mm | Remarks |
|---|---|---|---|
| BLUE 1 | 1/0 | 1/1 | Missile failed to guide. Cannon made a kill. |
| BLUE 2 | | 2/0 | Gun jammed on second burst. |



[redacted]

[redacted]

9. EQUIPMENT PROBLEMS

BLUE 1 - Gun camera did not operate
BLUE 2 - Gun jammed

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 1 | 5000 | 285 | 76 |
| BLUE 2 | 3100 | 200 | -- |

Comments on this Encounter

BLUE 2 felt that the MIG never saw them. BLUE 2 initially thought the MIG that he attacked was a second MIG.

11. DATA SOURCES

Project Interviews: BLUE 2, late May 1967
Messages, Reports:

355TFW 281900Z Apr 67 OPREP-3 DOTO-0 11440

12. NARRATIVE DESCRIPTION

BLUE Flight had attacked the target and was egressing, when BLUE 1 visually acquired an unidentified aircraft and called it out. He delayed his attack a few seconds to make a positive identification.

When seen the MIG was at 11 o'clock at 1 to 2 miles range,* passing from BLUE Flight's left to right. The MIG was in a right level turn (20° to 30° of bank) heading approximately 330°, and was trying to set up an attack on an F-105F. (From the time and location, probably one of the aircraft from Event III-164). At the time of sighting, BLUE Flight was at 8000 to 10,000 ft altitude and the MIG was at 5000 to 7000 ft altitude.

Although previous MIG warnings had been heard BLUE Flight was not warned of this specific MIG. While inbound, BLUE Flight had communicated with the supporting CAP aircraft (Event III-158) but did not contact them during egress or during the MIG encounter.

When the MIG was identified, BLUE Flight turned into trail of the MIG. It was surmised that the MIG never saw BLUE Flight make the attack. BLUE Flight did not jettison stores, but went to afterburner to close on the MIG.

BLUE 1 closed slightly on the MIG and fired his SIDEWINDER when in range. Although BLUE 1 had a tone for 4 to 5 seconds prior to launch, the missile failed to guide, and went high and to the left. When he fired, BLUE was 1 1/2 miles* from the MIG at about 30°, angle off at the MIG's 4 o'clock. Both BLUE 1 and the MIG were in a right turn with BLUE 1 pulling 1 1/2 g with about 10° of bank in a slight descent. BLUE 1 had about 200 kt of overtake at launch, and both aircraft were in the 6000 to 8000 ft altitude region.

As the SIDEWINDER took off, BLUE 1 momentarily broke off his attack and rolled out to follow its flight, in order to assure that it was not going to guide on the F-105F that the MIG had been attacking. The F-105F at this time was about 4000 ft or more ahead of the MIG and appeared to have the MIG in sight. The F-105F was unloading and keeping the MIG at an angle off.

The MIG tightened his turn slightly and slid across in front of BLUE 2. BLUE 2 went to afterburner and made a firing pass but was not in good tracking position. During this pass BLUE 2 fired 277 rounds from 1500 to 1000 ft range but observed no hits. BLUE 2 then closed further and with a good trailing position attempted to fire again but the gun jammed. BLUE 2's gun camera film showed the MIG to be in good position for the second attempt and the pipper to be on the MIG. The sight was set for missiles-air, and BLUE 2 had not attempted to attain a radar lock. During the firing passes BLUE 2 pulled 2 to 3 g's and was at about 550 kt airspeed. The overtake was between 50 and 100 kts.

During the attack of BLUE 1 and 2, BLUE 2 had maintained position on the inside of the right turn and the element (BLUE 3 and 4) had automatically moved into a covering position. After his gun jammed, BLUE 2 tried for a little bit longer to make the gun fire, then came out of his right bank and moved outside to BLUE 1's left wing. As soon as BLUE 2 broke off, BLUE 1 came back in and closed on the MIG.

*This estimate is based on BLUE 2's 4000 to 5000 ft estimate and the 1 1/2 mile firing range.

*BLUE 2 estimated 1/2 mile.

[redacted]



The MIG steepened this turn to about 60° of bank and BLUE 1 closed to 1500 ft and fired his 20mm cannon. BLUE 1 expended approximately 700 rounds as he closed from 1500 to 700 ft range, with about 10° angle off.

The MIG took hits in the left wing and erupted in a large ball of fire. As it subsided the MIG then began a slow diving right spiral with the left wing on fire.

BLUE 1's gun camera did not work and he did not see the MIG impact the ground but BLUE 2 and 3 observed the impact and all members of BLUE Flight observed the resulting explosion at location 21°01'N/105°25'E at 1635H.

BLUE Flight took another look around for any other MIG aircraft, and not seeing any then continued to egress.

[redacted]

[redacted]

Event III-164

Aircraft Involved: Four F-105s vs one MIG-17
Result: No damage
Vicinity of Encounter: 21°02'N/105°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 28 April 1967/1636H

Four F-105s (BLUE Flight) were on an IRON HAND mission in support of the strike force attacking JCS 18.38.

2. MISSION ROUTE

Departed Takhli and ingressed overland. See Event III-158 for general route after leaving Channel 97.

3. AIRCRAFT CONFIGURATIONS

At least three of the aircraft in BLUE Flight were F-105Fs, and carried AGM-45s. Other stores unknown.

8. ORDNANCE

| | (No. fired/No. hits) |
|---|---|
| | 20mm Cannon |
| BLUE 1 | at least 1/0 |
| BLUE 2 | 1/0 |

11. DATA SOURCES

Messages, Reports:

DIA Summary of Air Engagements
355 TFW 281300 OPREP-3 DOTO-D 11439
RED BARON MIG Incident Summary

12. NARRATIVE DESCRIPTION

BLUE Flight provided IRON HAND support. During the mission ten MIG-17s were sighted. In addition BLUE 1 and 2 engaged and fired on one MIG-17. One AGM-45 was launched at a FANSONG signal with unknown results.

[redacted]

[redacted]

Event III-165

Aircraft Involved: Two F-105Fs and two F-105Ds vs five MIG-17s

Result: No damage

Vicinity of Encounter: 20°55'N/105°22'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 28 April 1967/1648H

Two F-105F and two F-105D aircraft (BLUE Flight) were on an IRON HAND mission in support of 16 other F-105s, attacking JCS 20.00. The aircraft in Events III-158 and -166 were part of this strike force, all from Korat.

## 2. MISSION ROUTE

The exact route is unknown but it generally was overland from Channel 97 direct to the target.

## 3. AIRCRAFT CONFIGURATIONS

BLUE Flight carried AGM-45 shrike, CBU-24, and MK-82 bombs. The AGM-45 was carried on all aircraft. No AIM-9Bs were carried.

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Generally clear, visibility 10 miles or better

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 5000 ft | | | |
| Heading: | 350° | | | |
| Speed: | Unknown | | | |
| Fuel State: | Unknown | | | |
| Flight Formation: | Unknown | | | |

## 5. INITIAL DETECTION

BLUE 1 saw two MIG-17s at 12 to 1 o'clock 3 to 4 miles away. BLUE 3 saw three more MIG-17s at about the same time. The MIGs were at 5000 ft heading 180°.

## 6. ACTION INITIATED

BLUE 1 started to attack the two MIGs that he had seen. BLUE 2, 3, and 4 broke down and to the left.

## 7. SITUATION DEVELOPMENT

BLUE Flight attacked the two MIGs with BLUE 1 getting off a burst at the lead MIG on a head-on pass and another burst at the second MIG with a little deflection. The lead MIG fired at BLUE 1. The other three MIGs then started to come in for an attack. BLUE Flight went to afterburner and exited the area.

## 8. ORDNANCE

(No. fired/No. hits)

| | SHRIKE | GUN | Remarks |
|---|---|---|---|
| BLUE 1 | 2/1 | | BLUE 1 thought he observed two hits. |
| MIG 1 | | 1/0 | |

## 9. EQUIPMENT PROBLEMS

BLUE 1 - No sight reticle

## 10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 3900 | 900 | 48 | Had flown B-57s<br>Had flown F-105s since 1963 |

Comments on this Encounter

Suspected that the MIG tactic in this event was to work in two pairs and a single. The two attacking from head-on were supplemented by three from the rear, two from one side and a single from the other side. (However, BLUE 1 did not see these other three).

The MIGs turned much more rapidly than had been expected.



[redacted]

11. DATA SOURCES

Project Interviews: BLUE 1, 6 June 1967
Messages, Reports:

388 TFW 281405 April 1967 OPREP-4 DOI 1367

12. NARRATIVE DESCRIPTION

BLUE Flight was on an IRON HAND mission. They had fired once and observed the impact of one missile and the explosion of the white phosphorous warhead. The launch sequence was for all four flight members to pull up and each launch one missile simultaneously. After the shrike launch,the flight had a SAM launch indication and the flight broke around to the left.

BLUE Flight proceeded to an area west of Hoa Lac airfield (which was still operational at this time), and while in the vicinity of 20°55'N/105°22'E on a heading of 350° at 5000 ft altitude, BLUE 1 saw two MIG-17s at 12 to 1 o'clock 3 to 4 miles away. The MIGs were turning around a hill and appeared to be turned toward the north.

BLUE 1 called them out and BLUE Flight started to attack. At about the same time that BLUE 2 saw these two MIGs, BLUE 3 saw three more MIG-17s; however, BLUE 1 never saw the latter three MIGs.

BLUE 1 proceeded to attack the two MIG-17s that he had seen while BLUE 2, 3, and 4 broke down and to the left. Due to the range and the consequent time lapse, BLUE 1 was able to set up his sight for air to air. However, on firing, no sight picture was available.

Both BLUE 1 and the lead MIG-17 (MIG 1) pulled in toward each other, ending up in a head-on pass. BLUE 1 observed muzzle flashes in three positions on the MIG's nose, and BLUE 1 fired 150 to 200 rounds at him (the gun camera film did not show the flashes on the MIG's nose). MIG 1 passed about 30 ft below BLUE 1.

Immediately behind MIG 1 was the wingman (MIG 2) and BLUE 1 got a shot at this MIG also, with a little deflection, on a quartering head-on shot. BLUE 1 thought that he observed two hits on the outboard right wing. However, the gun camera film did not confirm this. However, the gun camera film did indicate a puff of smoke came from the MIG which was unnoticed by BLUE 1.

After passing MIG 2, BLUE 3 reported that the other three MIGs were coming in for an attack. BLUE Flight jettisoned four CBU-24 and 12 MK-82 in the vicinity of 21°01'N/105°19'E, went to afterburner and exited the area.

[redacted]

Event III-166

Aircraft Involved: Four F-105s vs one MIG-17

Result: Sighting only

Vicinity of Encounter: 21°05'N/105°20'E

## I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 28 April 1967/Unknown (TOT was 1650H)

Four F-105Ds, (BLUE Flight) was one of four strike flights from Korat attacking the Hanoi Railroad and Maintenance Shops (JCS 20.00). The flight in Events III-158 and -165 were other members of this strike force which encountered MIGs.

## II. DATA SOURCES

Messages, Reports:

388TFW 281405Z Apr 67 OPREP-4 DOI 1367

## III. NARRATIVE DESCRIPTION

BLUE Flight struck the target at 1650H and orbited in the vicinity of 21°09'N/104°15'E as RESCAP for the aircraft lost in Event III-158. Sometime during the mission, BLUE Flight observed one MIG-17 at 10,000 ft altitude. Two F-4s were in pursuit of the MIG.

BLUE Flight carried AIM-9B armament (at least three), and 24 M-117 bombs.

During the mission, BLUE Flight observed two SAM bursts at 12,000 to 14,000 ft altitude, 3/4 to 1 mile away at 12 o'clock.



[redacted]

[redacted]

Event III-167

Aircraft Involved: Four F-105s and one MIG-17

Results: No damage

Vicinity of Encounter: 20°50'N/105°10'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 28 April 1967, 1653H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight from same ALFA target as that of Event III-165 saw MIG below; MIG turned in; flight punched tanks and accelerated away.

Event III-168

Aircraft Involved: Four F-105s and one MIG-17

Results: Sighting

Vicinity of Encounter: 21°05'N/105°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 28 April 1967, 1700H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight egressing from same ALFA target as that of Event III-165 saw a MIG at 10,000' being pursued by two F-4s.

Event III-169

Aircraft Involved: One RF-101 vs one MIG-21

Results: Sighting

Vicinity of Encounter: 21°00'N/105°00'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 29 April 1967, 1110H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Photo A/C covering Hoa Lac airfield fired on by SA-2 when at 15,000'; MIG sighted at 4 o'clock, 6 miles at same time; MIG climbing; no further sighting.

[redacted]

[redacted]

Event III-170

Aircraft Involved: Four F-105s vs two MIG-21s and two MIG-17s

Results: Sighting

Vicinity of Encounter: Hanoi

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 29 April 1967, 1615H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flak suppression flight for strike on bridge in Hanoi saw two MIG-17s at 8000' and two MIG-21s at 17,000' while inbound. MIG CAP was aircraft of Event III-173.

Event III-171

Aircraft Involved: Four F-105s vs one MIG-17s

Results: Sighting

Vicinity of Encounter: Hanoi

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 29 April 1967, 1615H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight on Hanoi bridge saw MIG-3 minutes before target at 8500'; MIG attempted turn, but was lost. MIG CAP was aircraft of Event III-173.

Event III-172

Aircraft Involved: Four F-105s vs one MIG-17

Results: Sighting

Vicinity of Encounter: Hanoi

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 29 April 1967, 1615H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Another strike flight on same target as aircraft in Events III-170, -171, -172, and -175 saw MIG while pulling off; no attempt to engage since MIG CAP seen nearby.



[redacted]

[redacted]

Event III-173

Aircraft Involved: Four F-4Cs vs thirteen MIG-17s
Result: One MIG-17 destroyed
Vicinity of Encounter: 20°49'N/105°34'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 29 April 1967/1612H to 1625H

Four F-4Cs (BLUE Flight) were on a MIGCAP mission for a strike on JCS 13.00. (There is no report of the F-105 force encountering MIGs.)

## 2. MISSION ROUTE

BLUE Flight left Danang and refueled on WHITE ANCHOR. From air-to-air refueling, the flight proceeded direct to Channel 97, and then direct to 20°55'N/105°37'E. The return route was to Channel 97 and past strike refuel on WHITE ANCHOR.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

4 AIM-7E
4 AIM-9B
1 600-gal. centerline tank
1 370-gal. outboard tank
1 QRC-160 pod

MIG-17 (1-13)

Not MIG-17D
12 were silver
1 was camouflaged mottled brown/green with no markings.
Some armed with air-to-air missiles

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered clouds with bases at 10,000 ft. Visibility was 10 miles.

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 12,000-14,000 ft | | | |
| Heading: | About 160° (in right turn) | | | |
| Speed: | 540 KTAS | | | |
| Fuel State: | Full internal | | | |
| Flight Formation: | Pod | | | |

## 5. INITIAL DETECTION

MOTEL had called MIGs in the incident area but there were no specific warnings for the MIGs engaged. BLUE Flight was at 20°49'N/105°34'E when BLUE 4 sighted four MIG-17s. The strike force also called the MIGs to BLUE Flight. The MIGs were at 20°52'30"N/105°32'30"E heading 290° at 3,000 to 5,000 ft AGL. When seen, the MIGs were at 9 o'clock to BLUE Flight. The backseater was the first to see the MIGs in BLUE 3.

## 6. ACTION INITIATED

BLUE Flight turned to attack the MIGs.

## 7. SITUATION DEVELOPMENT

The flight of four MIGs split, with BLUE 1 and 2 going after the lead element, and BLUE 3 and 4 spearated and engaged the trailing element.

BLUE 1 and 2 attacked the MIGs and BLUE 1 fired an AIM-9B which downed a MIG-17. BLUE 1 and 2 were subsequently attacked by numerous MIG-17s which fired both cannon and air-to-air missiles. During the engagement BLUE 2 was hit and destroyed by 37/57 AAA fire.

BLUE 3 and 4 engaged several MIG-17s two elements of which fired on BLUE 3 and 4 with no damage.

## 8. ORDNANCE

| | (No. fired/No. hits) AIM-9B | AAM | Cannon | Remarks |
|---|---|---|---|---|
| BLUE 1 | 1/1 | | | AIM-9B recorded a kill |
| MIG 5 | | | 2/0 | Two bursts of three seconds each |
| MIG 6 | | 2/0 | | Launched at BLUE 2 |

[redacted]

[redacted]



| | (No. fired/No. hits) AIM-9B | AAM | Cannon | Remarks |
|---|---|---|---|---|
| MIG 9 | | | | At least 1/0 fired at BLUE 3 and 4 |
| MIG 11 | | | | At least 1/0 fired at BLUE 3 and 4 |

9. EQUIPMENT PROBLEMS

None.

10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-4 Hours | Combat Missions |
|---|---|---|---|
| BLUE 3 (front) | 3100 | 350 | 60-70 |

Comments on this Encounter:

MIGs were very agressive and would not fight in the vertical. The MIGs would not follow the F-4s in a climb and stayed near the deck. As the F-4s attacked, a pair of MIGs would be vectored into the flight's 6 o'clock. The MIGs kept them on the defensive.

A gun would have been of value to attack the MIG that reversed into them (MIG-13), but this was the only chance to use a gun that he had.

The ability to climb and unload and accelerate worked well against the MIG-17. Every time he looked back there were two MIG-17s at 7 o'clock.

11. DATA SOURCES

Project Interviews: BLUE 3 (front), May 1967

Messages: 366TFW 291716 April 1967 OPREP-3 FASTEL 916
366TFW 300830Z April 1967 OPREP-3 FASTEL 933

12. NARRATIVE DESCRIPTION

BLUE Flight was inbound with the strike force when at 1612H, while at 20°53'30"N/105°14'E, BLUE 4 sighted a SAM lift off from the vicinity of lead 15 (VN-083) at the flight's 3 o'clock position. The flight was heading 074 degrees at 17,000 ft AGL at 480 KTAS in Pod formation. This SAM did not track and passed low and to the 6 o'clock position about 3000 ft away, and was not observed to detonate.

The force continued on the same heading to 20°58'N/105°31'E when at 1614H, the entire flight observed three SAMs lift off. One was from Lead 41 (VN-002) and two others at 10 o'clock were from VN-015. When the SAMs were launched BLUE Flight started a slightly descending right turn to put the SAMs off to the left, however, the SAMs were not observed in flight.

In the right turn, as the flight passed through a heading of 160 degrees at 14,000 ft AGL and 540 kts, BLUE 4 sighted and called a flight of four MIG-17s. BLUE 3 backseat sighted the MIGs almost simultaneously. BLUE Flight had jettisoned the centerline tank before entering the area, and at the call jettisoned the outboard tank. BLUE Flight was at 20°49'N/105°34'E at this time. The MIGs which were just called by the strike force, were headed 290 degrees, at 300 to 500 ft AGL, and at 20°52'30"N/105°32'30"E. They were at 9 o'clock to BLUE Flight. The MIGs appeared to be positioning themselves on the last strike flight. BLUE Flight continued their right turn and started to descend. BLUE 3 lost sight of the MIGs momentarily and during this time the MIG flight split into two elements with the trailing element about 2 miles to the left and one mile behind on a parallel course. BLUE Flight continued to turn to the right and as they turned through west BLUE 3 saw BLUE 1 and 2 start after the lead element of MIGs (MIG 1 and 2), which were at 3 o'clock. Shortly thereafter BLUE 3 saw the second element of MIGs (MIG 3 and 4) off to their 10 o'clock about 5 miles, heading in the same direction as BLUE Flight.

At 1616H the elements of BLUE Flight split with BLUE 1 and 2 continuing a right hand turn after MIG 1 and 2, while BLUE 3 and 4 about one mile on trail turned left to engage MIG 3 and 4. Since the actions of the elements occurred independently of each other, the actions of BLUE 1 and 2 will be described first followed by those of BLUE 3 and 4.

BLUE 1 and 2 pressed in on MIG 1 and 2. BLUE 1 was unable to hold lock-on for an AIM-7 firing due to ground clutter. BLUE 1 then closed to 3000-2800 ft range, and with zero angle off, and 50 kt closure fired a SIDEWINDER at MIG 2. The time was 1617H and the position was 21°01'N/105°19'E. BLUE 1 had 1 g on the aircraft at firing and was at 6000 ft AGL, and 550 KTAS. The missile guided nicely and closed to within about 100 ft, when MIG 2 broke hard right (estimated 5-6 g's) following MIG 1. The missile passed about 50 ft over the left wing and detonated about 100 ft forward of the MIG's nose. This was credited as a kill due in part to the sighting of wreckage by BLUE 4.

Immediately after the missile detonation, BLUE 1 saw MIG 1 continue to break right. BLUE 1 and 2 unloaded and pulled up, losing sight of MIG 1 and 2. BLUE 1 and 2 leveled off at about 13,000 ft in the vicinity of 21°04'30"N/105°26'E; at this time (1618H) BLUE 1



[redacted]

observed two MIG-17 (MIG 5 and 6) closing on their 6 o'clock position from 3000 ft range. At the same time BLUE 1 also saw two more MIG-17s (MIG 7 and 8) at his 1:30 o'clock position.

BLUE 1 and 2 attempted to accelerate, unload and continue their turn to egress from the highly coordinated and massing MIG force. At this time with MIG 7 and 8 in front and MIG 5 and 6 behind BLUE 1 observed a SAM detonation at co-altitude (13,000 ft AGL) at 6 o'clock about 250 ft range. The burst was white in color, and a sharp buffet of short duration was felt as a direct result of the blast.

At this time BLUE 1 observed MIG 5 (the lead MIG) at 6 o'clock fire about two bursts of 3 seconds duration each from his cannon. These rounds passed about 15 ft above and left of BLUE 1's canopy. Still unloading and accelerating BLUE 1 and 2 winged over from 13,000 ft AGL down to 6000 ft.

BLUE 2 was in position on the inside of the turn, still attempting to disengage from the MIGs. As BLUE 1 and 2 bottomed out, with BLUE 1 at 6000 ft and BLUE 2 at about 4500 ft, BLUE 1 backseat observed a heavy concentration of ground fire. BLUE Flight was at 20°54'N/105°32'E, and the AAA fire, presumably 37/57mm, came from 20°52'15"N/105°32'30"E, and almost enveloped BLUE 2. BLUE 2 rolled over to the right about 135 degrees of bank, 45 degrees nose down, and dove toward the ground. The time was 1622H. Just prior to impact BLUE 1 frontseat observed the white part of a chute. BLUE 2 was observed to impact at 20°54'30"N/105°34'30"E. At no time was any beeper signal or voice communication heard.

As BLUE 2 rolled over, engulfed in heavy ground fire, BLUE 1 front observed two air-to-air missiles launched from the second of the two MIG-17s on the tails of BLUE 1 and 2 (MIG 6). He saw these missiles drop, one from each side from the wings of MIG 6 and launch toward the spot where BLUE 2 had been. The missiles, unidentified as to type, went off into space and were not observed to detonate.

At 1624H BLUE 1 accelerated to 550 KTAS at 6000 ft AGL, and reversed his course to heading of 250 degrees and joined BLUE 3 and 4. BLUE 1 was unable to contact ETHAN to initiate a SAR effort.

BLUE 3 and 4 had followed BLUE 1 and 2 during their initial right descending turn after MIGs 1 and 2. While heading about 290 degrees descending through 4000 ft AGL at 550 KTAS, and following BLUE 1 and 2 by about a mile, BLUE 3 and 4 spotted MIG 3 and 4 at 10 o'clock low about 5 miles distant. MIG 3 and 4 were abeam and slightly south of BLUE 1 and 2, who appeared to be unaware of the presence of MIG 3 and 4.

BLUE 3 and 4 turned slightly left to engage MIG 3 and 4. As BLUE 3 and 4 came in, MIG 3 and 4 saw them and started up to the right. BLUE 3 and 4 overshot due to their high speed and so they pulled up. The MIGs out-turned BLUE 3 and 4 so BLUE 3 and 4 kept climbing. As they continued two more MIG-17s (MIG 9 and 10) closed on their 6 o'clock firing. The MIGs were in range and BLUE 4 saw the shells pass his aircraft.

From that time on BLUE 3 and 4 were on the defensive. Although BLUE 3 and 4 used the vertical, the MIGs would follow only a little way up and then would break off. As BLUE 3 and 4 would attempt to dive to reattack, two more MIG-17s would attack. This happened at least one more time (MIG 11 and 12) with these MIGs also firing at BLUE 4.

During one of the passes that BLUE 3 and 4 made, they were coming down in a tight turn accelerating from 400 kts. There were two MIGs at their 6 o'clock and another MIG-17 (MIG 13) came into view and crossed into the inside of BLUE 3 and 4's turn. MIG 13 then did a rudder reversal back into BLUE 3 and 4, ending up in a head-on pass, and passed BLUE 3 about 100 ft away.

BLUE 1 subsequently joined BLUE 3 and 4, who were in a left turn. BLUE 3 and 4 had MIGs on their tail at this time, who broke off when BLUE 1 approached. BLUE 1 did not observe these MIGs.

As BLUE 3 and 4 were egressing BLUE 4 saw an aircraft burning on the ground at 1624H in the vicinity of 20°55'N/105°18'E, which was later surmized to be the MIG 17 that BLUE 1 had downed with the missile.

During their engagement with the MIGs, BLUE 3 and 4's altitude varied from 200 ft AGL to 6000 ft; while their speed varied between 400 kts and Mach 1.1. The MIGs never climbed above 3000 ft.

Of the returning members of BLUE Flight four crew members validated nine MIG-17s and two crew members validated an additional four MIG-17s. One crew member validates the camouflaged MIG-17.

[redacted]

Event III-174

Aircraft Involved: Two F-105s vs two MIG-17s
Two F-105s vs one MIG-21

Result: One F-105 lost/one F-105 damaged

Vicinity of Encounter: 21°30'N/104°30'E to 21°12'N/104°18'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 29 April 1967/1700H

Four F-105s (BLUE Flight) were the flak suppression flight in the strike force attacking JCS 20.00 (location 21°03'N/105°53'E). A description of the other MIG encounters of this strike force are contained in Events III-165 and -166. After hitting the target, BLUE 1 and 2 were separated from and behind BLUE 3 and 4. Only BLUE 3 and 4 encountered the MIG-21. BLUE 1 and 2 separately encountered two MIG-17s. There was no CAP aircraft for this mission.

## 2. MISSION ROUTE

BLUE Flight departed Korat at 1505H, and had pre-strike refueling on RED ANCHOR. From Channel 97 BLUE Flight then proceeded direct to the target on a heading of 010° at 16,000 ft. On egress the flight proceeded to 21°45'N/104°48'E, and then back to Channel 97. BLUE 4 landed in Udorn due to low fuel.

## 3. AIRCRAFT CONFIGURATION

| F-105D: | BLUE 1, 2 | BLUE 3 | BLUE 3 |
|---|---|---|---|
| | 3-CBU-24<br>1-CBU-29<br>(Prob 2-450 gal tanks and pods.)<br>B1 probably carried 1 AIM-9B | 4-CBU-24<br>1-QRC-160 pods<br>1-AIM-9B | 4-CBU-24<br>2-QRC-160 pods<br>2-450 gal tanks |

MIG-21

Clean silver

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered to broken clouds 10,000 to 12,000 ft. Haze at lower altitudes. Visibility was good (about 15 miles) above clouds. The weather was generally clear over the target and bail out area, and broken in the incident area.

| | BLUE 1 2 | BLUE 3 4 |
|---|---|---|
| Altitude: | 9,000 ft | 18,000 ft |
| Heading: | 340° | 220° |
| Speed: | | 450-500 CAS |
| Fuel State: | | 9,000 lb |

Flight Formation

BLUE 1 and 2 were separated from BLUE 3 and 4 with BLUE 1 and 2 about 10 miles behind. BLUE 4 was on BLUE 3's right.

## 5. INITIAL DETECTION

BLUE 1 and 2 heading 340° and at 9000 ft, saw two MIG-17s at 5000 ft heading 140° and turning right. This sighting occurred previous to that of BLUE 3 and 4.

BLUE 3 and 4 in the vicinity of 21°30'N/104°30'E saw an unidentified silver aircraft at 7 o'clock position 6 to 8 miles away. BLUE 3 and 4 were heading 220° at 18,000 ft. The unidentified aircraft was on a conversion course; BLUE 3 and 4 were alert for MIGs since they had heard BLUE 1 and 2 call MIGs.

## 6. ACTION INITIATED

BLUE 1 and 2 turned to follow the MIG-17s that they had seen. BLUE 3 and 4 turned into the unidentified aircraft.

## 7. SITUATION DEVELOPMENT

BLUE 1 and 2 lost the MIG-17s in a low deck of clouds over Thud Ridge, haze, and low setting sun. BLUE 1 and 2 then broke off and continued to egress. During egress they heard BLUE 3 and 4 encounter the MIG-21.

BLUE 3 and 4 were able to force the MIG-21 initially to overshoot but the MIG then executed a barrel roll, and despite the efforts of BLUE 3 and 4 to unload, and to turn and accelerate away in afterburner, the MIG gained a firing position. The MIG-21 shot down BLUE 3 and damaged BLUE 4 before breaking off.



[redacted]

8. ORDNANCE

(No. fired/No. hits)

| | Probable Cannon | Remarks |
|---|---|---|
| MIG-21 | At least 2/2[1] | BLUE 3 lost and BLUE 4 damaged |

9. EQUIPMENT PROBLEMS

BLUE 4's CBU-24 failed to release properly over the target. BLUE 3 QRC-160 pod was inoperative.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 4 | 1000 | 150 | 50 |

Comments on this Encounter

Believed that his airplane did not have an advantage to escape from the MIG-21 at this flight condition due to external stores, paint and age. It did not perform as well as the charts might indicate, since the charts are for a clean aircraft.

The MIG pilot was good. The MIG was GCI vectored and had a good overtake, which precluded successful evasion.

11. DATA SOURCES

Project Interview: BLUE 4, 8 June 67
Messages, Reports:

432 TRW 281205Z OPREP-3 TUOC 03009
388 TFW 281316Z OPREP-3 DOF 1366
Air Staff USAF XOXS 67-2567 Combat Loss F-105D SN 58-1151

12. NARRATIVE DESCRIPTION

BLUE Flight was on a flak suppression mission against JCS 20.00. The flight proceeded directly to the target from Channel 97. Egress from the target was to be up Thud Ridge in order to evade any MIGs which might be south of Hanoi and to minimize the AA and SAMs.

The flight hit the target at 1645H, attacking flak sites on opposite sides of the target. As a result, the two elements of BLUE Flight were separated laterally several miles when they came off the target. The flight had attacked the target from a heading of 074°. They rolled in from 16,000 ft with a 45° dive. The release altitude was 8000 ft AGL (about 9500 ft MSL) and recovery was 5000 ft AGL. The axis of attack was 045° and BLUE Flight dropped on a heading of 330°. BLUE 4's CBU failed to release over the target and were later jettisoned.

The flight then turned to a heading of 340° to proceed to 21°47'N/105°17'E. The elements were still separated with BLUE 1 and 2 about 10 miles behind BLUE 3 and 4.

BLUE 1 and 2 who were at 9000 ft and heading 340° up Thud Ridge on egress observed two MIG-17s. The MIGs were at 5000 ft altitude heading 140° and in a right turn. BLUE 1 and 2 turned to follow and started to attack the MIGs, but lost them in a low deck of clouds over Thud Ridge. The visibility was also reduced due to haze and low setting sun.

BLUE 1 and 2 then broke off and again headed toward 21°47'N/105°17'E. Due to the attack on the MIG-17s, BLUE 3 and 4 were now estimated to be approximately 60 miles ahead of BLUE 1 and 2, on the planned course. About 4 minutes later, (at about 1704H) BLUE 1 and 2 heard BLUE 4 call BLUE 3 that "they are coming at us," and then heard BLUE 3 call that he was hit, and heard BLUE 4 report of an attack by a MIG-21.

BLUE 1 and 2 then proceeded to the position of the downed aircraft which was given as 040° radial and 56 miles from Channel 97. BLUE 1 and 2 observed what was assumed to be the downed aircraft burning on the Black River somewhere between 21°15'N/104°17'E and 21°12'N/104°23'E. BLUE 1 and 2 heard no beeper and recovered at Korat.

After egressing from the target, BLUE 3 and 4 reached the end of Thud Ridge and started back towards Channel 97, heading 220° at 18,000 ft altitude with a speed of 450-500 KCAS. They had heard the encounter of BLUE 1 and 2 and were watching for MIGs. However, they received no other warning. When in the vicinity of 21°30'N/104°30'E BLUE 3 and 4 simultaneously observed an unidentified silver aircraft, that had come out of some clouds on their left. BLUE 3 and 4 were in a clearing and off to the left a few miles were some stratus type clouds with tops at 20,000 ft and bottoms at 16,000 ft. Below, over the mountain tops it was broken to overcast. The visibility in the clear was good.

[1] AF combat loss records give ordnance type as unknown, cannon is indicated based on BLUE 4's interview.

[redacted]



When seen, the aircraft was at 7 o'clock, coaltitude 2-3[1] miles away. The aircraft was on a conversion course and had considerable overtake.

BLUE 3 and 4 started a left level turn into the unidentified aircraft. BLUE 4 jettisoned tanks and followed immediately by BLUE 3. As the aircraft closed it was recognized as a fighter-type and then a MIG-21. The MIG turned with the flight which, on recognizing the aircraft as a MIG, BLUE 3 and 4 unloaded to accelerate.

BLUE 4 was in afterburner and since it was on the right, started to cross over behind BLUE 3 in order to stay inside of the turn. As BLUE 4 crossed over, he felt a thump and took a hit. (One hole in speed brake petals and one on the afterburner can.) BLUE 4 did not observe the MIG firing.

The MIG appeared to overshoot, with a crossing angle of 30° to 40°. The MIG came by high (about 4000 ft above the flight) and overshot to the right. BLUE 4 looked to the right and momentarily observed the MIG high, as if he had executed a barrel roll.

When next seen the MIG was able to reposition behind BLUE 3 and 4 at about 1 mile distance. BLUE 3 and 4 were still in an afterburner descending turn. Attempting to lose the MIG, BLUE 4 then saw the underside of the MIG and assumed that the MIG was firing at them. Immediately thereafter BLUE 3 called that he was hit. (This was the only communication from BLUE 3.)

When hit, BLUE 3 was descending through 10,000 ft. BLUE 3 immediately started to slow down, and BLUE 4 could see fire and smoke in BLUE 3's aft section, and kept advising BLUE 3 to abandon the aircraft. BLUE 3's aircraft started to descend and erupted in fire from the right wing base approximately 1 minute after initial aircraft damage.

During this time BLUE 4 was doing wide "S" turns in an attempt to keep both BLUE 3 and the MIG in sight. BLUE 4 saw the MIG a few times during this period but the MIG did not press the attack. BLUE 4 did not observe any firing.

BLUE 3 ejected at 1000 ft AGL at 1704H on a heading of 240°, at approximately 21°13'N/104°18'E. BLUE 4 saw two black objects separate from BLUE 3's aircraft and the aircraft impact. BLUE 4 did a 360° turn but was unable to see a chute or hear a beeper.

After staying in the immediate area for 1 to 2 minutes, BLUE 4 was unable to determine the location of the MIG and was unsure of his aircraft's condition. BLUE 4 then exited having failed to see a chute or hear a beeper. BLUE 4 recovered at Udorn, due to low fuel. He was unable to refuel due to insufficient thrust, resulting in unstable airspeed. The cause was battle damage.

During the encounter BLUE 4 did not see the MIG fire, and observed the MIG to be clean of external stores.

Although a SAR was initiated, it was called off at 1818H and BLUE 3 was listed as missing.

[1]The OPREP-3 281205 gives 6-8 miles, but this appears to be long considering the weather description and ensuing action.



[redacted]

[redacted]

Event III-175

Aircraft Involved: Four F-105s vs one MIG-17

Results: No damage

Vicinity of Encounter: 20°55'N/105°08'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 29 April 1967, 1615H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight egressing from same as Event III-172 saw MIG at 4 o'clock low, went into afterburner, jinked, and lost MIG.

Event III-176

Aircraft Involved: One RF-4C vs MIG

Result: Radar contact

Vicinity of Encounter: 20°47'N/104°55'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time[1]: 30 April 1967/0226H

One RF-4C (BLUE flight) from Udorn was ingressing to Hoa Lac airfield on a reconnaissance mission.

11. DATA SOURCES

432 TRW 290011Z OPREP-3 TUOC 03020

12. NARRATIVE

BLUE flight was ingressing on a heading of 067 degrees at 500 feet AGL when he received x-band (conical scan) strobing from 10:30 o'clock. BLUE flight was at 20°47'N/104°55'E and the time was 0226H. The target run was aborted at 20°56'N/105°16'E, at 0229H due to heavy ground fog in valleys and MIG alerts being called for QF-4 and QG areas.

On egress, at 21°00'N/104°48'E, on a heading of 240-245 degrees, and 500 feet AGL, x-band strobing was again received varying in intensity from 1 to 2 1/2 rings, and moving from 5 to 7 o'clock position during jinking turns. The time was 0233H.

The strobing continued to a point about 20 miles south of channel 97 (20°20'N/103°43'E). BLUE flight was tracked through a series of hard jinking turns and changes in altitude from 500 feet to 20,000 feet MSL. BLUE 1 was at 1.0 Mach throughout and the audio tone (sweep) was steadily becoming more rapid.

Break in the intercept was abrupt with termination of radar signals at 0243H. No visual contact was made with the other aircraft. MIG alerts were received throughout the engagements, broadcast for QF and QG areas. No friendly aircraft were known to be in the area at this time.

[1] 25 April 1967 13262

[redacted]

[redacted]

Event III-177

**Aircraft Involved:** Four F-105s vs four MIG-17s

**Results:** Sighting

**Vicinity of Encounter:** 21°28'N/106°23'E

1. PRIM
Dat

11. DAT
CI

12. NA

ta.

**TACTICAL SITUATION**

1967, 0900H

dy 6-68.

N

ght saw at least four silver MIGs at 10-12,000' above
d involved with other flights.

Event III-178

**Aircraft Involved:** Four F-105s vs two MIG-?

**Results:** Sighting

**Vicinity of Encounter:** 21°29'N/106°27'E

1. PRIM
Dat

11. DAT
CI

12. NA

str

**TACTICAL SITUATION**

1967, 0900H

dy 6-68.

N

rs for target of Event III-177 saw two MIGs trailing an F-105
tely that of Event III-179.



[redacted]

[redacted]

Event III-179

**Aircraft Involved:** Three F-4Cs vs two MIG-17s and two MIG-21s at 0902H; two MIG-21s and two MIG-17s at 0903H; four MIG-17s at 0905H. Also see Event III-137.

**Result:** No damage

**Vicinity of Encounter:** - Route Package VI-A
a. 21°28'30"N/106°41'00"E at 0902H
b.
c. 21°28'N/106°54'E at 0905H

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 30 April 1967/0905H

BLUE 4 aborted due to radio problems after 35 minutes of flight leaving three F-4Cs to fly MIGCAP for strike force of F-105s attacking target at 21°26'N/106°20'E.

## 2. MISSION ROUTE

Danang AB direct TAN ANCHOR direct 21°08'N/107°38'E, direct 21°33'N/106°24'E direct 21°29'N/106°17'E direct cover over target direct 21°10'N/107°15'E direct 21°08'N/107°38'E direct TAN ANCHOR direct Danang AB.

## 3. AIRCRAFT CONFIGURATIONS

P-4C BLUE 1, 2, 3

4 - AIM-7E SPARROW
4 - AIM-9B SIDEWINDER

a. MIG-17 MIG 1, 2

All MIGs silver color - no markings observed
Cannon

b. MIG-21 MIG 1, 2

Silver color - no markings
Air-to-air missile

c. MIG-17 MIG 1, 2

Silver color
Cannon

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear. Haze layer at 12,000 ft. Visibility above haze 15 plus miles. Visibility below haze 7 miles.

a. Conditions at 0902H

| | BLUE 1 2 3 | MIG-17 1 2 |
|---|---|---|
| Altitude: | 10,000 ft | below 10,000 ft |
| Heading: | 280° | 090° |
| Speed: | 500 kts | |
| Flight Formation: | "QRC fighting formation" | |

b. Conditions at 0903H

| | BLUE 1 2 3 | MIG-21 1 2 |
|---|---|---|
| Heading: | | 200° |
| Flight Formation: | | Loose trail, MIG-17s in front followed by MIG-21s. MIG-21s left MIG-17s during BLUE's turn and not sighted again. |

c. Conditions at 0905H

| | BLUE 1 2 3 4 | MIG-21 1 2 |
|---|---|---|
| Altitude: | 6000 ft | |
| Heading: | 090° | 090° |
| Speed: | 460 kts | (less than 460 kts) |

## 5. INITIAL DETECTION

At 0902H F-4s trailing high and to rear of last F-105 flight inbound to target sighted two MIG-17s at 2 o'clock, low position, heading 090°.

[redacted]

At 0903H BLUE flight observed two MIG-17s followed by two MIG-21s in loose trail chasing four egressing F-105s. All aircraft (F-105s and MIGs) on 080° heading at BLUE's 10 o'clock low position.

At 0905H, as BLUE flight started to roll in against the four MIGs, BLUE 3 observed two additional MIG-21s in a pop-up maneuver in 3 o'clock low position, climbing at 15° heading 200°.

## 6. ACTION INITIATED

a. BLUE flight feinted toward first MIGs acquired at 0902H. MIGs turned and fled heading northeast. BLUE returned to MIGCAP high and behind last flight of F-105s.

b. At 0903H, BLUE flight lead called for flight to roll in against the four MIGs attacking the F-105s.

c. BLUE flight rolled in against four MIGs firing on F-105s. At 0905H, one of the two MIG-21s approaching from 3 o'clock low position (90° heading) fired an air-to-air missile which was defeated by the roll maneuver initiated to attack the four MIGs pursuing F-105s on a 200° heading. BLUE flight took no action against the second pair of MIG-21s and lost contact with them.

## 7. SITUATION DEVELOPMENT

BLUE flight completed right turn to a heading of 090° at 6000 ft and 460 kts and began closing (40 kts overtake) on the two MIG-17s which were pursuing the F-105s. The MIG-21s originally following the MIG-17s had left the formation and BLUE never observed them again. BLUE lead approached the rear MIG-17 and when MIG was at 12 o'clock, 5° depression, lead received a boresight lock which went to full system as the first AIM-7 was fired at a range of approximately 2.5 miles. One second later a second AIM-7 was launched (0905H). The missiles appeared to track, closing within 200 ft of the MIG-17 when the MIG turned right and down in a 2 1/2 g maneuver. The two missiles continued straight ahead passing behind and to left of the MIG-17.

## 8. ORDNANCE

(No. fired/No. hits)

| | SPARROW AIM-7E | SIDEWINDER AIM-9B | Remarks |
|---|---|---|---|
| BLUE 1 | 2/0 | 0/0 | Fired two AIM-7E "full system" |
| BLUE 2, 3 | 0/0 | 0/0 | |
| MIGs-17-1,2 | | | Fired cannon |
| MIGs-21-1,2 | | | Fired one missile (BLUE flight unable to ascertain whether ATOLL or ALKALI) |

## 9. EQUIPMENT PROBLEMS

None

## 10. AIRCREW COMMENTS

From BLUE lead: SUU-16 gun would have been more effective weapon in this encounter.

## 11. DATA SOURCES

Messages, Reports:

366 TFW JOPREP OPREP-3 FASTEL 929 1200442 April 1967
366 TFW JOPREP OPREP-3 FASTEL 932 1200741 April 1967
Raytheon Conf. Memo R. E. Klein to C. Kaough dated 2 May 1967

## 12. NARRATIVE DESCRIPTION

BLUE flight consisting of three F-4Cs, assigned MIGCAP mission for three flights of F-105s attacking target at 21°26'N/106°20'E. (BLUE 4 aborted due to radio problems after 35 minutes of flight). BLUE flight trailed high and to rear of last F-105 strike flight inbound to the target. BLUE flight at 0902 local time at 10,000 ft, 500 kts, heading 280° over 21°28'30"N/106°41'00"E sighted two MIG-17s at 2 o'clock low position on a heading of 090°. BLUE flight feinted toward MIGs but MIGs turned and departed area on a northeast heading. BLUE flight returned to its original position behind F-105 flight.

At 0903H, BLUE flight observed two MIG-17s followed by two MIG-21s all silver color with no distinguishable markings in a loose trail formation pursuing four egressing F-105s. All aircraft were on a 080° heading and were at BLUE's 1 o'clock low position. The MIG-17 in the lead position was observed to fire cannon bursts at the F-105s. BLUE lead called the flight to roll in against the MIGs.

As BLUE flight started down to attack the two MIG-17s and two MIG-21s, BLUE 3 observed two additional MIG-21s beginning an attack on BLUE flight from the 3 o'clock

[redacted]



low position. The MIG-21s in a pop-up maneuver on a 200° heading were climbing toward BLUE at approximately 15°. BLUE 3 observed an air-to-air missile approaching BLUE flight exhausting a white vapor trail and climbing at about 15° also. This missile was too small to be confused with a SAM but BLUE 3 crew could not determine whether it was an ATOLL or ALKALI missile. Although the enemy air-to-air missile appeared to guide, BLUE's rolling maneuver (to begin the attack against the first group of four MIGs) defeated the missile. BLUE momentarily lost sight of the two MIG-21s which launched the missile and these MIG-21s were never sighted again.

BLUE completed its right turn to a heading of 090° and started closing on the two MIG-17s pursuing the F-105s. The two MIG-21s originally with the MIG-17s were no longer in the area and were believed to have left the formation of four while BLUE was in the turning maneuver. BLUE was at 6000 ft, 090° heading at 460 kts (40 kts overtake speed) pulling 1 g with the trailing MIG-17 at lead's 12 o'clock position and 5° depression angle. BLUE lead received a boresight lock-on which went to full system as the first AIM-7E was fired. One second later the second AIM-7 was fired. Both missiles launched and appeared to be tracking.

As the AIM-7s closed to within 200 ft of the MIG-17, the MIG turned right and downward in a 2 1/2 g maneuver defeating the missiles. The two missiles continued on a straight course, passing behind and to the left of the MIG. The missiles were never observed to detonate.

BLUE flight climbed and joined last F-105 flight egressing the area. All aircraft and crews recovered normally.

[redacted]

[redacted]

Event III-180

Aircraft Involved: One F-105 vs two MIG-17s; (BLUE flight of four F-105s encountered seven MIG-17s in this event) Also see Event III-136.

Result: One MIG-17 killed

Vicinity of Encounter: 21°28'N/106°31'E
Route Package VI-A

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 30 April 1967/0906H

Strike on target at 21°26'N/106°20'E. Rail yards approximately 14 mi northeast of Bac Giang. BLUE flight was the third flight on target.

2. MISSION ROUTE

Takhli direct to BROWN ANCHOR to middle of Gulf of Tonkin for doppler update to tip of the Ile Bamun, direct to reservoir (21°28'N/106°31'E).

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1

2 - 450 gal tanks
6 - 750 bombs
2 - AIM-9B (SIDEWINDER), left outboard
1 - QRC-160 Pod, right outboard

F-105 BLUE 2

2 - 450 gal tanks
6 - 750 bombs
2 - QRC-160 Pods

F-105 BLUE 3

2 - 450 gal tanks
6 - 750 bombs
2 - AIM-9B (SIDEWINDER), left outboard
1 - QRC-160 Pod, right outboard

F-105 BLUE 4

2 - 450 gal tanks
6 - 750 bombs
2 - QRC-160 Pods

MIG-17

Silver color with red stars

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Flight coming in south of target on 245° heading. Had descended to 5000 ft and were pulling up slightly to acquire target.

Weather: Clear with scattered clouds

| | BLUE 1 | 2 | 3 | 4 | Remarks |
|---|---|---|---|---|---|
| Altitude: | | 4500 to 5000 ft | | | |
| Heading: | | 245° | | | |
| Speed: | | 550 kt | | | |
| Fuel State: | 9800 lb | | | | BLUE lead had 1500 to 2000 lb above 7.8 Bingo |

5. INITIAL DETECTION

At last turn point, south of target (Reservoir at 21°28'N/106°31'E) BLUE 4 sighted three MIG-17s at 3 o'clock, level position, approximately 1 mi range. BLUE 4 called MIGs. Lead instructed flight to maintain position and hold ordnance.

After BLUE lead dropped ordnance on target (4500 to 5000 ft altitude), two MIG-17s were sighted at 11 o'clock high (7000 ft altitude) at 1 mi range.

6. ACTION INITIATED

BLUE flight continued to target as MIGs turned into the flight at right angles (abeam) and began firing at 1500 ft range, the tracers appearing well behind the flight since the MIGs were not pulling lead. BLUE flight continued to target as MIGs could not make turn or accelerate to the F-105 speed.

[redacted]

Still in afterburner. After attack on target, lead dropped both 450 gal tanks, set up air-to-air gun sight, and pursued the MIGs at approximately 100 kts overtake speed (550 kts after coming off target).

7. SITUATION DEVELOPMENT

BLUE flight continued to target.

BLUE lead estimated distances as less than 1 mi and too close for missile attack. As distance closed, the MIGs tightened their right turn and began descending. Lead believed MIGs did not detect the attack, but were beginning an attack themselves. As lead tightened turn at high overtake speed, he was required to pull so much lead that the pipper disappeared from the combining glass (approximately 4 g's). Lead then decided to estimate lead without sight - using the pilot boom for a reference.

8. ORDNANCE

BLUE 1, 2, 3, 4

1000 rounds 20mm each
2 AIM-9B IR missiles each

MIG-17 1, 2

Cannon

9. EQUIPMENT PROBLEMS

None

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Mission | Remarks |
|---|---|---|---|---|
| BLUE Lead | 1300 | 900 | | (200 Navy hours?) |

Comments on this Encounter

The "new" procedure for calling MIGs was in effect - Charlie Hotel - Bravo Hotel, etc. "Though they call them, you never know where they are. They give you what general area they are in and you look for them and get a stiff neck and never see them. Then the other times when you do not hear a call, there they are."

11. DATA SOURCES

Project Interviews: BLUE lead, 29 May 1967
Messages, Reports:

355TFW Takhli Air Base, Thailand, JOPREP/OPREP-3, 300915 April 1967

12. NARRATIVE DESCRIPTION

BLUE flight was the third and last flight of F-105s striking rail yards northeast of Bac Giang (21°26'N/106°20'E) at approximately 0900 hours local time. The reservoir south of the target was the last turn point and as the flight, which had descended to 5000 ft altitude on a heading of 245°, began pulling up slightly to acquire the target, BLUE 4 called three MIG-17s at 3 o'clock, level position, approximately 1 mi away. BLUE lead determined MIGs to be no immediate threat and instructed flight to maintain position and hold ordnance.

BLUE flight, accelerating, continued to target as MIGs turned and approached abeam (90° to BLUE flight). When about 1500 ft away, MIGs began firing cannon whose tracers appeared well behind BLUE flight since the MIGs were not pulling lead. BLUE flight continued to target as MIGs could not turn nor accelerate to become a threat to the F-105s. BLUE flight popped up and rolled in to target. BLUE 3 was attacked by a MIG-17 as he came off target. BLUE 3 jinked through flak and the MIG broke off the attack.

As BLUE lead came off the target on a heading of approximately 080° and speed of 550 kts (afterburner), lead sighted two MIG-17s at 11 o'clock, 3000 ft above and a mile away. The MIGs were in a gentle right turn. BLUE lead jettisoned fuel tanks, set up guns for air-to-air and with approximately 100 kts overtake speed, closed on the MIGs. The MIGs did not appear to be aware of BLUE lead's attack but they began increasing their right turn and descending. As range closed to approximately 1000 ft, lead required so much lead on the target that the pipper moved off the combining glass. (BLUE lead estimated pulling approximately 4 g's). Without a sight, BLUE lead sighted estimated lead on the enemy wingman with the pilot boom as a reference point. Lead fired cannon ahead of the MIG and then swept the fire down and through the target. Lead noted impacts on MIG 2's left side, beginning at the nose and ending at the wing root. Lead had only time to fire approximately 150 rounds before the distance to the MIG became so short that it appeared he would collide. He broke left to avoid running into the MIG and climbed in a yoyo. MIG 2 slowly rolled out straight and level, smoke and flame pouring

from the left wing, passing to BLUE lead's 5 o'clock position where lead lost sight of the MIG. BLUE 2, about 1 mi in trail from lead, sighted the burning MIG and reported that it was in a spin. Neither BLUE lead or BLUE 2 saw the MIG impact the ground.

[redacted]

Event III-181

Aircraft Involved: Four F-105s vs one unident

Results: Sighting

Vicinity of Encounter: 21°25'N/107°00'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 30 April 1967, 0923H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight egressing from an ALFA target at 17,000' saw a silver unident on reciprocal heading; unident turned and disappeared to south.

Event III-182

Aircraft Involved: Two RF-4Cs vs two MIGs

Results: No damage

Vicinity of Encounter: 21°54'N/104°14'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 30 April 1967, 1521H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Inbound photo flight received MIG warning, followed by X-band signal increasing in intensity; maneuvers did not decrease intensity, so RF-4s turned and dived; two MIGs seen at 11 o'clock while in dive; speed increased and MIGs not seen again.

Event III-183

Aircraft Involved: Four F-105s vs two unidents

Results: Sighting

Vicinity of Encounter: Unknown

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 30 April 1967, 1648H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Egressing ALFA strike flight at 17,000' saw two afterburner lights at 35-40,000', but could not see aircraft.

[redacted]

[redacted]

Event III-184

Aircraft Involved: Two F-105s vs unknown number of MIGs. See also Event III-138

Result: Two F-105s lost

Vicinity of Encounter: 21°20'N/104°56'E
Route Package ?

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 30 April 1967/1624H

BLUE flight ingressing at 8000 ft altitude at 560 kts enroute to area of JCS 82.24 target to provide IRON HAND support.

3. AIRCRAFT CONFIGURATIONS

Possible MIG-21s - not sighted

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Few scattered clouds, visibility 7 mi "down sun" and 4 mi "up sun"

| | BLUE 1 2 3 4 |
|---|---|
| Altitude: | 8000 ft |
| Heading: | 85° |
| Speed: | 560 kts |

5. INITIAL DETECTION

At 1617H BLUE flight heard MIG-21 warnings for the (geographical) area through which they were flying. They did not see MIGs at any time though two F-105s were shot down. First indication of enemy's presence was at 1624H when BLUE 1 observed BLUE 3 torching, flame out and then aircraft go out of control.

6. ACTION INITIATED

Two "good" parachutes sighted and two beepers heard. BLUE 1 and 2 made three 360° turns while chutes were descending and established voice contact with BLUE 3. BLUE 1 and 2 were unable to establish voice contact with BLUE 4 and assumed BLUE 4 also downed.

7. SITUATION DEVELOPMENT

As BLUE 1 and 2 circled the two parachutes from BLUE 3 (Pilot and EWO), tracers and four puffs of 37mm cannon were observed passing over the chutes but no enemy aircraft sighted. Both chutes landed at 21°18'30"N/104°59'40"E. Aircraft impacted at 21°17'00"N/105°01'50"E. BLUE 1 and 2 returned to tanker then escorted Sandy 1 and 2 back to RESCAP area. BLUE 1 and 2 orbited area until Bingo fuel reached then returned to base.

8. ORDNANCE

No US ordnance expended

9. EQUIPMENT PROBLEMS

None reported

10. AIRCREW COMMENTS

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 3 (F-105F) Front | 3840 | "UE"time 1190 | 93 | Seven months in theater |
| EWO | 1315 | 318 | 93 | Seven months in theater |
| BLUE 4 (F-105D) Front | 573 | 311 | 61 | Five months in theater |

11. DATA SOURCES

Messages, Reports:

355TFW Takhli RATFB 301708Z April 1967 JPCCO FASTEL 355 DOTO-0 11484 April 1967
355TFW JOPREP OPREP-3 PINNACLE 030 (All same message)



[redacted]

12. NARRATIVE DESCRIPTION

BLUE flight of four F-105s were inbound to the area of JCS target 82.24 in vicinity of 21°20'N/104°56'E flying at 8000 ft altitude on a heading of 85° at 560 kts to provide IRON HAND support. At 1617H the flight received a MIG-21 warning for the area through which they were flying. At 1624H BLUE lead observed BLUE 3 (an F-105F with a two-man crew) torching. BLUE 3 flamed out shortly afterwards, and the aircraft was observed to go out of control.

Two good chutes were seen and two beepers heard. BLUE 1 and 2 began circling the chutes as they descended making voice contact with BLUE 3 pilot but not the EWO. BLUE 1 and 2 made three 360° turns in the descent during which they observed tracers and four puffs of 37mm cannon fire pass over the tops of the chutes. No enemy aircraft was observed.

Both chutes from BLUE 3 landed at 21°18'30"N/104°59'40"E and BLUE 3 aircraft impacted at 21°17'00"N/105°01'50"E. Voice contact again established with BLUE 3 but two other beepers were heard still transmitting. BLUE 1 and 2 attempted to contact BLUE 4 but were unable to do so. BLUE lead reported downed pilots to CROWN, also adding that BLUE 4 was also probably down. Neither lead nor BLUE 2 saw BLUE 4 hit or receive (messages).

BLUE 1 and 2 returned to the tanker to refuel and then escorted two RESCAP aircraft to the area of BLUE 3. (See Event III-138). BLUE 3 pilot reported several times that the RESCAP aircraft were directly overhead. BLUE 1 and 2 orbited the area until Bingo fuel was reached and then they returned to base.

[redacted]

Event III-185

Aircraft Involved: Four F-105Ds vs two MIG-21s
Also see Event III-139

Result: One F-105 lost

Vicinity of Encounter:

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 30 April 1967/1715H

Strike on Hanoi Transformer Station, JCS target 82.24.

2. MISSION ROUTE

Departed Takhli Channel 97 direct 21°30'N/104°45'E direct 21°36'N/105°24'E direct 21°19'N/105°42'E direct 21°08'N/105°46'E direct target (JCS 82.24, Hanoi Transformer Station) direct 21°15'N/105°53'E direct 21°22'N/105°45'E. Egress reverse route.

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 2, 3, 4

6 - M-117 bombs
1 - AIM-9B

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

In RESCAP orbits BLUE 1 and 2 low, BLUE 3 and 4 high

Weather: Scattered visibility 7 to 10 miles

| | BLUE 1 | BLUE 2 | BLUE 3 | BLUE 4 |
|---|---|---|---|---|
| Altitude: | low | low | 15-16,000' | 15-16,000' |
| Heading: | | | approx 260° when hit, counterclockwise orbit | |
| Speed: | | | | |
| Fuel State: | | | | |
| Flight Formation: | | | | |

5. INITIAL DETECTION

BLUE 3 "felt jolt" and "heard a thud" at approximately 1715H while in counterclock orbit, high (15-16,000 ft) on RESCAP.

6. ACTION INITIATED

BLUE 4 instructed BLUE 3 to break left. As BLUE 3 broke left and down, BLUE 4 observed MIG-21 3 o'clock and high. BLUE 4 engaged second MIG-21 as BLUE 3 turned into MIG which had made the initial attack.

7. SITUATION DEVELOPMENT

BLUE 3 and 4 went to afterburner to Mach 0.95 heading for cloud jinking at approximately 10,000 ft altitude. Both BLUE 3 and 4 then headed for Channel 97 for refueling.

8. ORDNANCE

| | (No. fired/No. hits) | Remarks |
|---|---|---|
| BLUE 1 | 0/0 | U.S. expended no ordnance |
| BLUE 2 | 0/0 | |
| BLUE 3 | 0/0 | |
| BLUE 4 | 0/0 | |
| MIG | unknown/1 | BLUE 3 sighted ball of flame - BLUE 4 |



[redacted]

9. EQUIPMENT PROBLEMS

None reported

11. DATA SOURCES

Messages, Reports:

432TRW NMCC 301235Z April 1967

12. NARRATIVE DESCRIPTION

BLUE flight of four F-105D aircraft departed Takhli 1505H, 30 April 1967 for strike on JCS 82.24 target, Hanoi Transformer Station. After pre-strike refueling on GREEN ANCHOR, flight proceeded to target. Enroute, Strike Force Commander aborted the strike mission to set up RESCAP for a downed F-105F (See Event III-184). A good beeper signal was heard from the downed crew and the Strike Force Commander believed rescue possibility was high.

BLUE flight set up a high cover at 16,000 to 17,000 ft altitude over the downed aircraft near 21°21'N/105°05'E. When the low cover altitude aircraft (GREEN 1, 2, 3, 4) reached Bingo fuel and proceeded to the tankers for refueling, BLUE 1 and 2 went to low cover altitude and BLUE 3 and 4 stayed high at 15,000 to 16,000 ft in a counterclockwise orbit at 350 kts.

Then the second element of GREEN flight (GREEN 3 and 4) returned to the rescue area and directed the incoming SAR aircraft.

At 1715H on a heading of approximately 260°, BLUE 4 "felt a jolt and heard a thud" and immediately called BLUE 3 to break left "because of MIGs." As BLUE 3 broke left and down, he saw a MIG-21 on the right going out to his 3 o'clock position and high. BLUE 3 turned into the MIG as the MIG continued his left turn returning across and to the left of BLUE 3. BLUE 3 then saw a second MIG-21 engaging BLUE 4.

BLUE 3 and 4 lit afterburner, accelerating to Mach 0.95 and jinking headed for the clouds at approximately the 10,000 ft level. BLUE 3 and 4 headed for Channel 97. Enroute BLUE 3 asked BLUE 4 several times if he "had him in sight." BLUE 4 answered affirmatively. At 1720H, approximately 10 seconds after last transmission, BLUE 3 looked behind and saw a ball of flame which he assumed was BLUE 4. BLUE 4 went down at approximately 21°03'N/104°55'E.

BLUE 1 and 2 called to BLUE 3 and reported sighting BLUE 4 going down and that they also saw a chute with a man waving. BLUE 3, low on fuel, continued to Channel 97 for a tanker where he refueled and recovered at Udorn. A cursory check of the aircraft after landing revealed no visible battle damage.

[redacted]

Event III-186

Aircraft Involved: Four F-105s vs two MIG-21s

Results: No damage

Vicinity of Encounter: 20°52'N/103°58'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 30 April 1967, 1713H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

IRON HAND flight returning from Hanoi Shrike firings with remainder of ALPA strike force: at 26,000', two MIGs drove through force on near-reciprocal hearing at same altitude; no attempt to engage.

Event III-187

Aircraft Involved: Four F-105s vs six to eight MIG-17s

Results: No damage

Vicinity of Encounter: 20°58'N/105°10'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 1 May 1967, 1015H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

F-105 MIG CAP flight at 3000' when 6-8 MIGs approached from 5 o'clock low; flight broke after receiving MIG warning from aircraft of Event III-186 and made 270° turn; MIGs were attacked by other flights; BLUE lead observed a burning MIG-17 on the ground; after initial break, BLUE was out of position and unable to engage; no further MIGs sighted.

Event III-188

Aircraft Involved: One F-4B vs two MIG-17s

Results: No damage

Vicinity of Encounter: 21°25'N/106°25'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 1 May 1967, 1250H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

TAR CAP for strike (diversionary for Kep strike) saw F-8E shootdown of MIG described in Event III-196; leader of F-4B TAR CAP flight then sighted another MIG at 12 o'clock low and was pursuing MIG at 200' altitude when hit by automatic weapons fire; F-4B returned to ship.

[redacted]

[redacted]



Aircraft Involved. Four F-4Cs vs eight MIG-17s.
Result of Encounter: Sightings only
Vicinity of Encounter: 20°32'N/105°03'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 1 May 1967/1008H

Flying MIG SCREEN Orbit, .8 Mach

2. MISSION ROUTE

Danang to WHITE ANCHOR for refuel, direct to Channel 97, thence to orbit station.

3. AIRCRAFT CONFIGURATIONS

Not stated but probably 4 AIM-7 and 4 AIM-9B each. Absence of guns positively stated.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear 7 mile visibility. Little haze.

Altitude: .8 Mach AGL

Heading: 210°

Speed: 450 kts

Flight Formation: Pod

5. INITIAL DETECTION

BLUE flight observed three to five MIG-17s approaching from 9 o'clock to engage the flight.

6. ACTION INITIATED

BLUE flight immediately descended to engage MIGs at an altitude below 1,000 ft.

7. SITUATION DEVELOPMENT

BLUE 1 and 2 sought to maneuver to open range but lost sight of MIGs. Several other MIGs were subsequently sighted usually very low and low heading in opposite direction.

BLUE 3 and 4 attempted to engage another MIG-17 but lost it in the haze and hills. Another MIG-17 passed across the front of BLUE 3 and 4 but with speed and climb separated.

9. EQUIPMENT PROBLEMS

BLUE 1 lost transmitter and interphone for tanker frequency.

10. AIRCREW COMMENTS

BLUE 1 and 2 said that they had about 20 seconds of close range tracking and probability of a gun kill would have been excellent.

BLUE 3 and 4 also reported that they would have had a good opportunity as a MIG flew close from left to right.

11. DATA SOURCE

OPREP 3

12. NARRATIVE DESCRIPTION

This event is characterized by a large number of friendly and hostile sightings so that it is difficult to determine the exact number of separate hostile aircraft actually sighted. Other friendly flights were simultaneously engaging MIGs in the same vicinity. BLUE 1 and 2 after losing sight of the initial flight of MIGs thought they saw a SAM firing which was in fact the impact of a MIG-17 shot down by PURPLE flight. PURPLE flight warned BLUE flight of another MIG coming their way. BLUE flight again attempted to engage but was unable to obtain a position for missile firing. BLUE 3 and 4 sighted another MIG-17 and went in low and rolled in but the MIG made a hard turn and was lost in the haze and the hills. After reconoitering the area for ten more minutes without additional MIG sightings, the BLUE flight egressed the area to Channel 97 and the tanker.

[redacted]

[redacted]

Event III-190

Aircraft Involved: Four F-4Cs vs eight MIG-17s
Result: One MIG destroyed
Vicinity of Encounter: 20°35'N/105°15'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 1 May 67/1021H

BLUE flight was one of two flights scheduled for MIGCAP Barrier with F-105 flights covering a RESCAP mission.

2. MISSION ROUTE

Departed Danang, pre-strike refueling with WHITE ANCHOR, proceeding via Channel 97 to MIGCAP area 20°30'N/105°00'E to 21°10'N/105°30'E.

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

4 AIM 7-E QRC Pod right outboard
4 AIM 9-B Left outboard and centerline tanks

MIG 17s

Cannon

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Visibility 5 to 10 miles, clear
Altitude: 5,000 AGL
Heading: 030°
Speed: 500 kts
Fuel State: Approximately 14,000 lb, Centerline jettisoned
Flight Formation: Pod stacked left

5. INITIAL DETECTION

BLUE 1 detected 2 or 3 bogeys approaching from 11:30 o'clock at approximately 8000 ft and descending. BLUE 1 called the bogeys to BLUE flight and to the preceding flight of F-105s at AGL 1000 ft. BLUE 1 then changed the call to MIGs which were closing rapidly in an apparant head-on pass.

6. ACTION INITIATED

The preceding flight of F-105s broke down and left. BLUE flight pulled up in a vertical and rolled to the right and the MIGs passed thru the hole. BLUE flight's maneuver enabled it to end up at the 6 o'clock position of MIG 1 and 2.

7. SITUATION DEVELOPMENT

BLUE 1 and 2 pressed, continued to press repeated attacks against MIG 1 until it was destroyed and then became engaged with additional MIGs that subsequently entered the engagement without result. BLUE 3 and 4 first engaged MIG 2 and then other MIGs without result.

8. ORDNANCE

(No. fired/No. hits)

| | AIM-7E | AIM-9B |
|---|---|---|
| BLUE 1 | 3/0 | 3/0 |
| BLUE 3 | 2/0 | 1/0 |

9. EQUIPMENT PROBLEMS

BLUE 1 was unable to obtain a lock-on with the AIM-7 throughout the engagement even when in one instant conditions were ideal. Post-flight equipment check revealed that the feeder horn was burned out. It is not determinable at what point the failure occurred.

10. AIRCREW COMMENTS

| | Total Hours | F-4 Hours | Combat Missions |
|---|---|---|---|
| BLUE 1 | 3300 | 900 | 90-95 |

At this time the MIGs were beginning the tactic of staying low and continuously turning. The only thing I did different was perhaps to stay with the same MIG. Though I had other opportunities to grab another MIG, I stayed with this one and never let him out of my sight. I kept pressing the attack. Every attack right on him until he clutched up."



[redacted]

[redacted]



## 11. DATA SOURCES

Project Interviews: BLUE 1
Messages, Reports: OPREP 3 PINNACLE/033 366TFW
A.F. Staff Message Supplement to OPREP 3 (40732) 5 May 67

## 12. NARRATIVE DESCRIPTION

After the maneuver was initiated, the two elements of BLUE flight operated independently and are narrated separately for clarity.

BLUE 1 had attained a 6 o'clock position too quickly to allow time for setting up the manual procedure (subsequently to be described) and attempted a boresight mode firing of the AIM-7E. The firing was unsuccessful and the MIG then broke down and went very low to the ground. This was apparently at this time a standard defense procedure against AIM-7 attacks. BLUE 1 then maneuvered for an AIM-9B attack pulling up in a high-speed yo-yo and back down on the MIG's 6 o'clock and fired an AIM-9B. The AIM-9 was observed to go straight out and, in BLUE 1's assessment, could not distinguish between the plane and the ground. BLUE 1 was also of the opinion that the repeated missile attacks were having a psychological effect on the MIG pilot as revealed by the violence of his maneuvers. "I was shaking him up a little bit and he was really beginning to crank it around." BLUE 1 executed another high-speed yo-yo and went to the manual system with the AIM-7E.

[Note: Since BLUE 1 interview was so explicit in the details of the manual procedure he attempted they are included in the description of this event for what informational value they may have.] "We have a track switch which we call auto-track or acquisition on jam. In this manual position, you can lock onto an imaginary target anywhere you want to. You just squeeze it into full system and it locks on. It then gives you a Vc based on a little switch we call manual Vc and we set it up for 150 knots." This requires the pilot to estimate the rate of closure: "But it isn't as difficult as it sounds; because we are always coming in from the 6 o'clock, it is merely necessary to assume that you will be closing on him and that you will not be closing faster than 300 knots." It searches the area between 0 and 300 knots. The 300 knots is below ground speed which is necessary to prevent locking on the ground. "So this is what we (sic) recommend and any time we come from a 6 o'clock, we put on this 150 knot closing." "Now we lock on to our imaginary target, and we get the full attack display every bit of it pure nonsense, none for real,... The only important thing is that the missile has been put into the narrow gate to search the area between zero and 300 knots."

Coming back down out of the maneuver BLUE 1 again in the 6 o'clock position fired on AIM-7E in the manual procedure described above. The missile appeared to be tracking well but seemed to "loose out at the last minute." BLUE 1 could not be sure that he kept his reticle on the MIG illuminating it continuously for the whole missile flight. The missile did however pass close to the MIG which again reacted by turning severely. BLUE 1 again executed a high speed yo-yo repositioning at the MIG's six o'clock again set up for manual firing of the AIM-7E. BLUE 1 fired the AIM-7 which appeared to track well with the speed gate locked on. However, it was BLUE 1's opinion that with the sharp right turn the MIG was pulling (50 ft above ground level), the missile was going to pass behind the MIG's 6 o'clock. At this point the MIG hit the ground and was destroyed.

In the above time interval at least 5 or 6 additional MIGs had joined the battle and there was another flight of F-4s and two flights of F-105s all joined in the melee.

To continue the action of the first element of BLUE flight, BLUE 1 immediately picked up another MIG we can designate as MIG 3 and had no trouble seizing and maintaining the MIG's 6 o'clock using the same verticle maneuvers as in the previous encounter. BLUE 1 made two firing passes at MIG 3; one was dry, the other was an AIM-9B shot that was outmaneuvered.

In the last maneuver against MIG 3, BLUE 1's wing man, BLUE 2, had become separated. BLUE 1 states that whenever he came into the top of the high-speed yo-yo he would check to see if his Number 2 was still with him and he had been until the last maneuver. BLUE 1 looked around and observed BLUE 2 down on the deck at about 350 kts turning with a MIG. BLUE 1 called BLUE 2 to break right and go afterburner, but he didn't. He was observed to fly a couple of "wifferdills" and was upside down and there was nother MIG joining the attack. BLUE 1, who had lost airspeed, now got turned around and started down from 12,000-14,000 ft to aid BLUE 2. As he came in high at the MIG's 6 o'clock they broke off their attack and started turning again. BLUE 1 instructed BLUE 2 to join on him which he did and the element resumed the offensive. BLUE 1 sighted a MIG high, 5000 ft, running straight and level at about 4 miles. BLUE 1 started to close on the MIG, keeping low. Everything was right for an AIM-7 shot and the MIG was clear on the scope. However, continuous attempts to lock on were unsuccessful. BLUE 1, by then closing rapidly, switched over to AIM-9B and at about 1 mile range fired the AIM-9. The MIG apparantly saw the SIDEWINDER and though the AIM-9 had good tone and was guiding well the MIG was able to "flat out-turn" the AIM-9B. "The SIDEWINDER was giving her all she's got but it just couldn't begin to hack it."

After this shot BLUE 1 was fairly close to Hanoi and approaching BINGO fuel, so the element egressed the area.

[redacted]

[redacted]



Details on the 2nd element are not complete since there was no interview.

BLUE 3 and 4 engaged a total of three MIGs and sighted four or five additional ones. Most of the MIGs were silver colored but two were camouflaged. The first MIG engaged turned hard left and BLUE 3 was unable to fire. A second MIG was spotted in a left turn. BLUE 3 got a lock-on and fired two AIM-7s. The first AIM-7 did not guide and the second AIM-7 guided but exploded behind the MIG's tail. A third MIG was sighted and turned hard left into BLUE 3. BLUE 3 fired an AIM-9B at this MIG while in a hard left turn at very close range and it missed. Additional MIGs had by now attained a rear quarter position on BLUE 3 and 4 and one of them was firing a cannon at BLUE 4. BLUE 3 and 4 were able to disengage by increasing airspeed. BLUE 3 reported that he would have been able to hit MIG 3 if he had had a gun. The MIG engagement was broken off after approximately 15 minutes because of BINGO fuel. The altitude of the engagements varied from 200 ft to 5000 ft AGL. Visibility was 5 to 7 miles. No SAM or AAA activity reported. One MIG was reported to have afterburner.



[redacted]

[redacted]

Event III-191

Aircraft Involved: Four F-105s vs eight MIG-17s
Result: No damage
Vicinity of Encounter: 20°36'N/105°18'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 1 May 1967/1011H

BLUE flight was flying BARCAP for a RESCAP mission.

2. MISSION ROUTE

Departed Ubon, normal routing, refueling at North Station before proceeding to take barrier position.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4

Wing tanks and QRC
2 AIM-9Bs
20 mm gun

MIG-17s

Afterburner specifically mentioned several times.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Visibility 5 to 7 miles, clear.

Altitude: 5,000 - 7,000 ft
Heading: Northeast
Speed: 450-500 kts
Fuel State: Not stated at least 15 minutes before BINGO.

5. INITIAL DETECTION

Two MIGs reciprocal heading low at 12 o'clock passed under flight. No MIG warning received prior to this sighting.

6. ACTION INITIATED

BLUE flight turned right and observed another MIG at its 12 o'clock. The flight attempted a quartering head-on pass against this MIG but could not attain a firing position. The MIG also attempted to engage BLUE flight in a scissors-type maneuver. BLUE flight broke off and immediately encountered approximately eight MIGs operating independently (no apparent formation or elements). The flight then became engaged in a near continuous series of maneuvers. It is not known whether some of these MIGs were among those previously sighted.

7. SITUATION DEVELOPMENT

In the ensuing melee both BLUE 1 and BLUE 2 fired an AIM-9B under difficult high-g maneuvers without success. The first missed the MIG by approximately 5000 ft when the MIG initiated a high-g turn just prior to launch. The second was fired with excessive angle-off. BLUE 1 and BLUE 2 each attempted three or four snapshots with 20mm during the dogfight but no effectiveness was noted. The dogfight lasted about 15 minutes after which BLUE 3 and BLUE 4 reached BINGO fuel. Their flight then increased airspeed and disengaged, headed southwest for post strike AAR. BLUE flight observed a single MIG 19(?), 1100 AGL on a northerly heading as it egressed the area.

8. ORDNANCE

(No. fired/No. hits)

| | AIM-9B | 20mm gun |
|---|---|---|
| BLUE 1 | 1/0 | 3 or 4 snapshot bursts |
| BLUE 2 | 1/0 | 3 or 4 snapshot bursts |

9. EQUIPMENT PROBLEMS

None.

10. AIRCREW COMMENTS (Relate to MIG-17 vs F-105)

BLUE 1. The ability of the MIG to turn and reverse direction is very impressive when you first see it no matter how much you have been briefed. In a hassle you have to keep your airspeed up; you cannot afford to slow down and try to turn with him. The only opportunity you are likely to have to down a MIG is to spot him at a distance and position yourself before he is sure you are there [redacted] there is no comparison between maneuverability and turning radius.

[redacted]

11. DATA SOURCES

Project Interviews: BLUE 1

Messages, Reports:

OPREP FASTEL 11501 May 67

OPREP 3 335 TFW PINNACLE 02

12. NARRATIVE DESCRIPTION

This is an unusual F-105 event in that it was one of several flights participating in a RESCAP operation where a flight of F-105s was configured for air-to-air engagement rather than as a strike mission. The Commander's evaluation of this type mission stated that--"This type mission scheduled on a random basis would be of benefit in countering the recent increased MIG activity. The enemy could never be certain whether he was intercepting an offense or a defense."

BLUE flight was engaged by several MIG-17 aircraft operating without apparent coordination. The MIG aircraft depended on rapid turning and circling with jinking to keep their 6 o'clock clear. BLUE 1 states they never flew straight and level. In the course of the maneuvering one MIG pulled up in the right quarter of BLUE 1 crossing at about 45° going away to the left forward. BLUE 1 started a climb with the MIG which immediately turned over into a semi-split-S bringing his nose down. BLUE 1 could not stay with him in this maneuver. "The 105 is not an aircraft to split-S with at 5,000-6,000 ft." BLUE 1 coming out of this encounter sighted another MIG low in a gentle turn. Believing he was unseen, BLUE 1 attempted to roll in and began tracking at about 7000 ft out. He then realized that the MIG had made a 270° turn in "practically no space at all" and was coming back on him at about 45° angle. BLUE 1 fired an AIM-9B but since he was pointed groundward he realized that there was little possibility of the AIM-9B tracking and it did not. There were one or two subsequent opportunities for fleeting snapshots without apparent effect.

[redacted]

Event III-192

Aircraft Involved: Four F-105s vs four MIG-17s
Result: No Damage
Vicinity of Encounter: 20°40'N/105°18'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 1 May 1967/unknown

BLUE flight of four F-105s on strike mission.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

| | |
|---|---|
| Weather: | Unknown, not a factor |
| Altitude: | 6500 ft |
| Heading: | 035° |
| Speed: | 450 kts |
| Flight Formation: | Pod |

5. INITIAL DETECTION

BLUE flight observed two flights of two MIG-17s diving from high out of the sun at 10 o'clock position.

6. SITUATION DEVELOPMENT

BLUE flight started a turn into the MIGs when the MIGs started a left turn to come into the 6 o'clock position. BLUE flight went afterburner and jettisoned bombs.

8. ORDNANCE

F-105

Not stated

MIG-17s

Guns

9. EQUIPMENT PROBLEMS

None

11. DATA SOURCE

OPREP 3/PINNACLE-001

12. NARRATIVE DESCRIPTION

Two flights of two MIG-17s dove out of the sun from the 10 o'clock position on BLUE flight, firing guns as they came. BLUE flight attempted to turn into the MIGs but when the MIGs made a left turn to attain a 6 o'clock position, BLUE flight jettisoned bombs and went afterburner. The MIG flight passed over BLUE flight by approximately 1500 ft and were then engaged by a flight of F-4s. No further contact by BLUE flight.

[redacted]

[redacted]

Event III-193

Aircraft Involved: Four F-105s vs two MIG-17s
Result: No damage
Vicinity of Encounter: Hoa Lac Airfield

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 1 May 67/unknown

BLUE flight had just completed a strike on Hoa Lac Airfield when it was attacked by two MIG-17s.

2. MISSION ROUTE

Inland route to target.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4

Wing tanks, Pod, Guns

BLUE 1 and 3

AIM-9B

MIG-17s MIG 1 and 2

Guns

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear, good visibility
Altitude: 5000 ft
Heading: West
Speed: 500 kts
Fuel State: Approximately 9000 lb

5. INITIAL DETECTION

Coming off target BLUE 4 sighted two MIG-17s at BLUE flight's 6 o'clock, and alerted flight.

6. ACTION INITIATED

BLUE 3 looking back on BLUE 4's warning saw two MIGs at 6 o'clock high on a tight left turn. The lead MIG appeared to be firing on BLUE flight. BLUE 3 went afterburner, punched fuel tanks and broke left. The MIGs then reversed and departed the area.

7. SITUATION DEVELOPMENT

The MIGs apparently attempted only a single firing pass then separated without attempting to continue the engagement.

8. ORDNANCE EXPENDED

| | (No. fired/No. hits) |
|---|---|
| BLUE flight | 0/0 |
| MIG lead | Cannon fire |

9. EQUIPMENT PROBLEMS

None

10. AIRCREW COMMENTS

"On that day their tactics were just hit and run. I have seen that subsequently. They seem reluctant to engage in a prolonged battle with the 5s'"

11. DATA SOURCE

Project Interviews: BLUE 3

12. NARRATIVE DESCRIPTION

BLUE flight, following a strike against Hoa Lac Airfield, was regrouping and departing the area at approximately 5000 ft, headed in a westerly direction. BLUE 3 and 4 were almost a half mile behind BLUE 1 and 2 and closing. BLUE 4 then called MIGs at 6 o'clock. BLUE 3 looked back and saw two MIG-17s at 6 o'clock, high in a tight left turn attacking the flight. BLUE 3 punched fuel tanks and went afterburner and could see little puffs of smoke coming from MIG lead which appeared to be gunfire. BLUE 3 broke hard left attempting to turn into the MIGs. BLUE 4, accelerating rapidly, passed right through the MIG flight



[redacted]

before he could fire. BLUE 1 and 2 pulled high to the right planning to come down behind the MIGs. Before any of this could be accomplished, the MIGs reversed to the right and departed the area.

[redacted]



On 1 May 1967, carrier aircraft from the BON HOMME RICHARD struck Kep Airfield (JCS 9.1 at 21°23'26"N/106°15'58"E) with the primary targets being MIG aircraft in the rivetted area at the northeast end of the airfield and the support area south of the runway. The strike force composition by aircraft type, number, and the time on target is given in Table 1, as well as the event in which MIG action against the force is described.

Table 1 (S). BON HOMME RICHARD STRIKE FORCE (U)

| Aircraft No. Type | Function | Target | Time on Target | Event No. |
|---|---|---|---|---|
| Six A-4C | Strike | JCS 9.1 | 1245H | |
| Two A-4C | Flak Suppression | Flak sites | 1244H | |
| Four A-4E | Flak Suppression | Flak sites | 1244H | |
| Four A-4E | IRON HAND | | 1240H-1247H | No MIGs Encountered |
| Four F-8C | TARCAP | | | |
| Four F-8E | TARCAP | | | |

Also airborne in support of the force were four A-1H for RESCAP, two EA-1F ECM aircraft and two F-8E and two F-8C as BARCAP.

The strike aircraft launched at 1150H. The target weather was clear with 5 miles visibility in haze.

The strike force encountered intense AAA fire at the target although flak suppression and IRON HAND sorties had silenced several sites prior to the roll-in of strike aircraft. MIG-17 fighters were also encountered in the target area both before, during and after the attack. No SAM opposition materialized, although enroute to the target, the aircraft of Event III-194 saw a possible SAM explosion at very high altitudes over the target. Only one member of this flight encountered ALQ-51 lights, but no APR-27 was received.

All attack aircraft were equipped with APR-27/ALQ-51.

The strike aircraft sighted a minimum of seven MIGs on the field and at least four airborne.

Four sorties dropped VT fused MK 81 bombs in the revetted area while two other sorties dropped VT fused MK 82 in the support area. Two other sorties (the aircraft of Event III-195) attacked two MIG-17 aircraft on a taxiway with 29 VT fused ZUNI rockets. Post strike photography showed three MIG-17s burning. Flak suppression with CBU-24 was accomplished by four IRON HAND and six other flak suppression sorties.

A total of ten AGM-45s were fired, five against FIRECAN and five against FANSONG radars. One explosion was noted in a flak site and the site was silenced. Two sites were silenced by CBU-24s. Although flak was generally suppressed to the south of the target, heavy 37/57/85mm fire continued to come from the northeast sector adjacent to the runway.

At least four MIG-17s were airborne and the MIGs pursued their attack through areas of heavy flak. The results of the aerial battles were two confirmed kills and two MIGs damaged.

All friendly aircraft returned on board with one A-4C of the strike force (Event III-196) damaged in the wing by ground fire and another A-4C of the flak suppression (Event III-197) damaged by ground fire.

Also on 1 May 1967 aircraft from the carrier ENTERPRISE attacked cargo ships, at 1255H (exact location of this strike is unknown).



[redacted]

[redacted]

Event III-194

Aircraft Involved: Two F-8Es vs four MIG-17s

Results: One MIG-17 destroyed
One MIG-17 damaged

Vicinity of Encounter: 21°26'N/106°28'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 1 May 1967/1245H.

Four F-8E (BLUE Flight) was TARCAP for a strike on Kep Airfield. Although BLUE Flight ingressed as a unit only BLUE 3 and 4 encountered MIGs. The actions of BLUE 1 and 2 are unknown.

2. MISSION ROUTE

Departed Yankee Station and aerial refueled just after launch, then proceeded to the target.

3. AIRCRAFT CONFIGURATIONS

F-8E BLUE 3, 4

1 - AIM-9C
2 - AIM-9D
(Dual fuselage pylons with 4 LAU-7A launchers)
284 rounds 20mm
ALQ-51 - APR-27
IFF-On; TACAN-On; Radar-On.

NOTE: Configuration of BLUE 1 and 2 unknown.

MIG-17

MIG-17D model
Some armed with AAM.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear. Other conditions unknown.

5. INITIAL DETECTION

BLUE Flight heard calls of MIGs from the strike leader. These MIGs were first seen when BLUE Flight observed two afterburner lights high at one o'clock. They then saw two separate groups of MIGs in sections of two pass from north to south.

6. ACTION INITIATED

The other TARCAP flight (Event III-198) turned after these MIGs and BLUE Flight continued to the target.

7. SITUATION DEVELOPMENT

After reaching orbit station, BLUE Flight split into two sections. BLUE 3 and 4 saw three MIG-17s pass below the flight and attack the trailing MIG, destroying him with a SIDEWINDER (AIM-9D).

On egress BLUE 3 and 4 saw a MIG-17 chasing an A-4 (BLUE 2 of Event III-194). This MIG was attacked but BLUE 3 could not get a missile tone; however, BLUE 4 fired 120 rounds of 20mm fire at the MIG hitting the MIG in the left wing.

8. ORDNANCE

(No. fired/No. hits)

| | SIDEWINDER AIM-9D | Cannon | Remarks |
|---|---|---|---|
| BLUE 3 | 1/1 | | One MIG killed |
| BLUE 4 | | 1/1 | One MIG damaged |

9. EQUIPMENT PROBLEMS

BLUE 3 - Pressurization turbine was running hot. The failure to achieve a tone during the second attack was caused by the fact that the second AIM-9D was fired first and that there was no automatic stepping for the next missile. A good tone was later achieved on the first AIM-9D.

10. AIRCREW COMMENTS

Experience: No data except BLUE 4 was an Air Force exchange officer.

[redacted]

Comments on this Encounter

BLUE 3

The switchology to set up the missiles for firing was a problem.

The AIM-9Ds were short so only two were carried. The AIM-9C was loaded at the pilot's desire.

BLUE 4

Would have preferred a Gatling gun.

The F-8 sight was poor. The sight ladder was confusing since it was highly lighted and the gyro pipper passed through it, which was disconcerting.

## 11. DATA SOURCES

Project Interviews: BLUE 3 and BLUE 4, June 1967.

Messages, Reports:

CTG 77.7 011550Z May 1967 OPREP-4 RT 554.
CTG 77.7 011700Z May 1967 OPREP-5 001.
CTG 77.7 010655Z May 1967 OPREP-3 001.

## 12. NARRATIVE DESCRIPTION

BLUE Flight was one of two TARCAP flights supporting a strike on JCS 9.1. On ingress to the target BLUE Flight heard calls of MIGs from the strike leader. Near the target, BLUE Flight observed two aircraft afterburner lights high at 1 o'clock, passing north to south. There were two separate groups of MIGs in sections of two, which were subsequently seen, for a total of four MIGs in all.

The other TARCAP flight (Event III-198) turned to engage so BLUE Flight continued on to the target and set up a CAP station 3-5 miles northeast of Kep. At this time the actions of BLUE 1 and 2 became unclear. It is not known if they engaged MIGs although they must have sighted them. BLUE 1 and 2 are not mentioned in the account of BLUE 3 and 4's actions.

While the strike group was on the target four MIG-17s were observed to take off from Kep and pass under the BLUE Flight. The MIGs were heading east northeast at 1000 feet altitude in order to jump the strike force. At this time, BLUE Flight was heading west at about 4000 feet altitude. Two MIG-17s (MIG 1, 2) were in a lead section but the second section had split and the third MIG-17 (MIG 3) was alone and about one mile behind MIG 1 and 2.

BLUE 3 and 4 made a hard descending right turn to attack MIG 3 not using afterburner. The MIGs apparently did not see BLUE 3 and 4's attack. BLUE 3 gained a 6 o'clock position to MIG 3 and at 4000-6000 feet range, 1000 feet altitude and 400 knots fired an AIM-9D. The missile was observed to fly directly up the MIG's tailpipe and explode. The MIG was not in afterburner. MIG 3 disintegrated rapidly, and MIG 1 and 2 were not seen again.

With the element to echelon right, BLUE 3 and 4 returned to CAP altitude. Shortly thereafter while turning south BLUE 4 saw another MIG-17 (MIG 4) chasing an A-4. The A-4E in this case was BLUE 2 of Event III-195.

BLUE 3 and 4 were at 3000 to 3500 feet altitude and about 350 knots. The MIG passed below BLUE 3 and 4 from right to left on a heading perpendicular to that of the F-8s. The MIG was at about 500 feet altitude.

BLUE 3 and 4 broke left and down, and called the A-4 that he had a MIG on his tail. The A-4 was weaving to prevent the MIG from tracking. The MIG was in afterburner and about 2000 feet in trail of the A-4. The A-4 headed for a hill located at 21°24'N/106°28'E. The MIG apparently noticed BLUE 3 and 4 on his tail and broke left on top of the hill. The A-4 broke right and disengaged.

BLUE 4 first fired about 40 rounds of 20mm at 10-15 degrees angle off at the MIG's 7 o'clock position. BLUE 4 was coaltitude at 2000 feet range closing. The MIG disengaged when he saw the 20mm by breaking left and down. One continued to fire for a total of about 120 rounds of 20mm with the pipper tracking as the MIG broke. BLUE 4 saw numerous hits in the MIG's left wing as he closed to 1200-1500 feet range.

MIG 4 continued the left turn with lower speed than BLUE 4 and BLUE 4 had to pull up and break off due to a hill.

The MIG was in afterburner; however, except for an initial use to accelerate, BLUE 4 did not use afterburner. BLUE 4 had sufficient g capability to adequately lead the MIG.

BLUE 3 then engaged MIG 4. Although he was able to attain a good position on the MIG (4000 to 6000 feet astern of MIG 4 as MIG 4 made moderate to violent high-g maneuvers and returned to a northwest heading at low altitude), BLUE 3 could not get a SIDEWINDER tone.* Although BLUE 3 shifted to the AIM-9C he was unable to obtain a radar lock due to ground clutter.

*See equipment problems, paragraph 9, [redacted] cause.

Event III-194

MIG 4 attempted to draw BLUE 3 into a heavy flak area located at 21°27'N/106°22'E, but BLUE 3 disengaged. BLUE 3 and 4 rejoined and remained in the general area of 21°25'N/106°25'E until the Enterprise group was off the target. The estimated time of departure from final CAP station was at 1257H.

Event III-195

Aircraft Involved: Four F-8Cs vs two MIG-17s
Result: No damage
Vicinity of Encounter: 21°15'N/106°16'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 1 May 1967/1248H.

Four F-8Cs (BLUE Flight) were part of a TARCAP supporting a strike on JCS 9.1.

8. ORDNANCE

| | AAM |
|---|---|
| MIG 17 | 2/0 |

11. DATA SOURCES

Project Interviews: None.

Messages, Reports:

CTG 77.7 011550Z May 1967 OPREP-4 RT55A.

12. NARRATIVE DESCRIPTION

On ingress to the target, BLUE Flight saw, and turned to engage two MIG 17s which were initially seen at one o'clock high. These are the same MIGs seen initially by the F-8s in Event III-194).

BLUE Flight subsequently observed two MIG 17s at 21°15'N/106°16'E, diving toward the target area from 15-20,000 feet. The MIG lead aircraft fired two air-to-air missiles toward aircraft in the area. The missiles appeared to maneuver, but did not hit any aircraft.

[redacted]

Event III-196

Aircraft Involved: Three A-4Cs vs MIG-17s
Result: No damage
Vicinity of Encounter: 21°18'N/107°07'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 1 May 1967/1256H.

Three A-4Cs were part of the six strike aircraft attacking JCS 9.1 (see Table 1 of the introduction to this event).

8. ORDNANCE

MIGs fired cannon with no hits.

11. DATA SOURCES

Project Interviews: None.

Message Reports:

CTG 77.7 011550Z May 1967 OPREP-4.
CTG 77.7 011700Z May 1967 OPREP-5.

12. NARRATIVE DESCRIPTION

As BLUE Flight ingressed, the first defenses encountered were two MIG-17s which passed under the flight at approximately 21°26'N/106°26'E without attempting to attack or fire.

The flight encountered very intense AAA, of 37/57/85mm approximately one minute from roll in. The pilots reported that it was the most intense they had ever encountered. No AAA was received after roll in due to flak suppression aircraft hitting the target area first.

On the bombing run one member of BLUE Flight saw four MIG-17s airborne in pursuit of the flight in Event III-195. BLUE flight continued the run and then egressed. While egressing they observed the F-8 of Event III-194 to down a MIG-17 with a SIDEWINDER. the MIG's tail was blown off and the MIG tumbled and impacted at about 21°26'N/106°28'E.

Subsequently, during egress, the flight was jumped by two MIG-17s (possibly three) at 1256H, position 21°18'N/107°07'E. The MIGs rolled in from 10 o'clock high. BLUE Flight (composed of three aircraft at this time) was on a heading of 105 degrees, at 5000 feet and 450 knots. BLUE Flight turned with the MIGs and at the same time 37mm AAA opened up from the ground, and during the break a member of BLUE Flight was hit. As the flight righted and jettisoned tanks they lost the MIGs. The member who had been hit observed the right wing tip to be missing.

All aircraft recovered on board safely.

[redacted]

[redacted]

Event III-197
Aircraft involved: Two A-4Cs vs two MIG-17s
Result: One MIG destroyed
Vicinity of Encounter: 21°21'N/106°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 1 May 1967/1244H.

Two A-4Cs (BLUE Flight) were part of the flak suppression support for a strike on JCS 9.1.

2. MISSION ROUTE

From BON HOMME RICHARD, north to the ingress point (probably north of Haiphong) and west to Kep. Egress was the reverse route.

3. AIRCRAFT CONFIGURATIONS

A-4C BLUE 1, 2

4 - LAU-10 rocket pod loaded with VT-fused ZUNI rockets (mounted on TERS)
90 rounds 20mm
400 gallon centerline tank
grey and white paint scheme
IFF-Off; TACAN-Off; ALQ-51, APR-27 On.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Unknown.

5. INITIAL DETECTION

As BLUE 1 and 2 pulled off the target, they saw two MIG-17s coming from the southwest The MIGs were inside BLUE Flight's turn at 1500 feet range.

6. ACTION INITIATED

As the MIGs attacked BLUE 1, BLUE 2 attacked the MIGs, while calling for BLUE 1 to break.

7. SITUATION DEVELOPMENT

BLUE 1 executed a high-g barrel roll and forced the MIGs to overshoot. As the MIGs split, BLUE 1 selected the second one of the MIGs and fired three ZUNI rockets at him, one of which hit, resulting in a kill.

BLUE 1 then attacked the lead MIG but his guns would not charge.

8. ORDNANCE

(No. fired/No. hits)

| | Cannon | ZUNI Rocket | Remarks |
|---|---|---|---|
| BLUE 1 | | 3/1 | One MIG-17 killed |
| BLUE 2 | 2/0 | | |
| MIGs | At least 1/0 | | |

9. EQUIPMENT PROBLEMS

BLUE 1's guns were jammed.
BLUE 1's radio transmitter became inoperative during the engagement.

10. AIRCREW COMMENTS

Experience

BLUE 1 was on LSO. Had considerable experience in F-4, as well as A-4.

11. DATA SOURCES

Project Interviews: BLUE 1, June 1967.

Messages, Reports:

CTC 77.7 011700 May 1967 OPREP-5/001.
CTG 77.7 011550 May 1967 OPREP-4/007.

12. NARRATIVE DESCRIPTION

BLUE Flight of two A-4Cs were part of the flak suppression aircraft assigned to a strike on Kep Airfield.

[redacted]

Since no flak sites on the northeast side were observed active (the assigned target) BLUE 1 and 2 attacked MIGs on the taxiways at Kep as briefed. BLUE 1 expended 13 of 16 ZUNI (VT fused) and BLUE 2 expended 16 ZUNI on two MIG-17 aircraft in Area D of the target.

BLUE 1 and 2 had attacked on a north-south run and on coming off the target made a left roll out. On rolling out they saw two MIG-17s (MIG 1, 2) coming out of the southwest. The MIGs were inside of BLUE Flight's left turn and closed to 1500 feet range.

As the MIGs closed they overshot BLUE 2 and concentrated their attack on BLUE 1, with both MIGs firing cannon. While MIG 1 and 2 were closing and firing at BLUE 1, BLUE 2 got behind MIG 2 and called for BLUE 1 to break.

BLUE 1 went into a high-g barrel roll over the top. The MIGs pulled up and attempted to follow but could not match the turn. As the MIGs pulled up BLUE 2 fired two bursts of 20mm at MIG 2 but achieved no hits.

As a result of the barrel roll, BLUE 1 forced the MIGs underneath and out in front. At 1 o'clock at 500 feet and they split; and BLUE 1 rolled down to position on MIG 2; BLUE 2 broke right and disengaged.

BLUE 1 fired one ZUNI with 50 mil lead and 3 g, at MIG 2 but it missed. He then added lead to 75 mil and with 3 g at 800 feet range, with a plan view of the MIG at about 30° angle off, BLUE 1 fired two more ZUNI rockets. One ZUNI was observed to detonate. After using the ZUNI pods they were jettisoned.

BLUE 1 rolled hard right to check his 6 o'clock position and lost visual contact with MIG 2. As BLUE 2 pulled back to the left a MIG passed at 10 o'clock in a sixty degree dive and impacted at approximately 21°21'50"N/106°30'30"E. BLUE 2 observed black smoke rising from the impact area and BLUE 1 was credited with a kill.

After checking his 6 o'clock, BLUE 1 then acquired and went after the lead MIG (MIG 1) but BLUE 1's guns would not charge. (In post flight - rad haz inspection the rad haz clips were found to be jammed.)

BLUE 1 then disengaged. He left Kep with 2500 pounds of fuel and it took 18 minutes to get out because much avoidance was required. During the engagement BLUE 1 had lost his transmitter. He finally arrived at the carrier with 800 pounds of fuel.

Post flight inspection showed a small nick in the leading edge flap. It was thought to be from AAA fire and not due to the MIG's attacks.

[redacted]

Event III-198

Aircraft Involved: Four A-4Es vs three MIG-17s
Result: No damage
Vicinity of Encounter: 21°23'N/106°15'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 1 May 1967/after 1244H.

Four A-4E (BLUE Flight) were part of the flak suppression support for a strike on Kep Airfield.

8. ORDNANCE

(No. fired/No. hits)

| | Cannon | Remarks |
|---|---|---|
| BLUE 1 | 1/0 | Estimate possible damage. |
| MIG 2, 3 | At least once/0 | At BLUE 2. |

11. DATA SOURCE

Project Interviews: None.

Messages, Reports:

CTG 77.3 011550Z May 1967 OPREP-4/007.

12. NARRATIVE DESCRIPTION

During egress from the target MIGs appeared in the area. One MIG-17 (MIG 1) passed in front of BLUE 1 in a slow turn. BLUE 1 fired 20mm at MIG 1, and MIG 1 then rolled inverted and pulled down, recovering at low altitude and departed the area. BLUE 1 estimates possible damage to this MIG.

BLUE 2 was jumped by two MIG-17s (MIG 2, 3), with the MIGs at 3 o'clock position. BLUE 2 descended to extremely low altitude and evaded MIGs by a series of high-g turns.

Two F-8Es TARCAP (Event III-194) chased the MIGs away.

[redacted]

[redacted]

Event III-199

Aircraft Involved: Two F-4Cs vs two unidents

Results: Sighting

Vicinity of Encounter: 20°40'N/107°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 1 May 1967, 1710H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Two bogey sightings separated by 5 minutes by CAP orbiting at coastline for drone flight; bogeys above 30,000'; distance too great for identification.

Event III-200

Aircraft Involved: Eight F-105s vs at least three MIG-17s

Results: Sighting

Vicinity of Encounter: 21°50'N/105°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 1 May 1967, 1718H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight of four F-105s, part of ALFA strike on Thai Nguyen Steel Plant, saw two MIGs at first time and position ingress at 6 o'clock; MIGs trailed for 15 miles until two F-4C MIG CAP (see Event III-197) closed; MIG CAP had been following strike force; while egressing, second F-105 flight saw two silver aircraft which turned and were lost.

Event III-201

Aircraft Involved: ? F-4? vs ? MIG-?

Results: Sighting

Vicinity of Encounter: Near Chinese Border

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 1 May 1967/unknown

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Silver MIGs sighted by F-4 aircraft near China/NVN border.

[redacted]

[redacted]

Event III-202

Aircraft Involved: Four F-4Cs vs three MIG-17s
Result: No damage
Vicinity of Encounter: 21°50'N/105°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 1 May 1967/1725H

Four F-4Cs (BLUE flight) were flying MIGCAP for the strike force. There was another flight of F-4s on MIGCAP for the same strike, four with BLUE flight following the strike force.

2. MISSION ROUTE

The flight departed Ubon and then refueled on ORANGE ANCHOR extended. Then they proceeded to Channel 97 for rendezvous with strike force, and then up to Yen Bai for ingress to the target down Thud Ridge.

3. AIRCRAFT CONFIGURATIONS

Each F-4C

4 - AIM 7E
4 - AIM 9B
ECM Pod right outboard
370 gal. tank Left outboard
Centerline tank

MIG-17

Silver, no marking

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered, broken deck of clouds, 7 miles visibility.

| | |
|---|---|
| Altitude: | 11,000-12,000 ft |
| Heading: | 130° |
| Speed: | 500 kts |
| Fuel State: | 12,000 lb |
| Flight Formation: | Pod formation, stacked slightly low. |

5. INITIAL DETECTION

BLUE 3 Back called "MIGs at 6 o'clock". The MIGs were moving toward 8 o'clock and were about 1,000 ft AGL about two miles away. The MIGs were silver.

6. ACTION INITIATED

BLUE 1 Front (Lead) immediately looked at "deep 6 o'clock" and saw three delta winged airplanes 5-7 miles behind in trail about 2,000 - 3,000 ft apart. BLUE 1 announced he had them and led formation into a left break down and to the left going afterburner.

7. SITUATION DEVELOPMENT

After about a 180° to 220° diving turn BLUE 1 closed at the 8 o'clock position and realized that the three delta aircraft were F-4s. The MIGs were gone.

8. ORDNANCE

No firing.

9. EQUIPMENT PROBLEMS

None reported

11. DATA SOURCES

RED BARON Interview: BLUE 1 Front
Messages, Reports:

OPREP-3 011300 May 67, 8TFW - DOI 05015

12. NARRATIVE DESCRIPTION

The nature of this event is made clearer by an explanation rather than a narrative.

After the debriefing it became clear the BLUE 3, (back) had actually seen MIGs. The procedure had been that if a man in the flight sights a MIG he does not take his eye off it. He calls it. If the flight leader does not pick it up immediately, he will give that man the lead of the flight until he does. In this event BLUE 1 looking down called, "I have them. There are three of them in trail." That was exactly what BLUE 3 (back) saw - three MIGs in trail. BLUE 1 then continued to lead the flight down after 3

[redacted]

delta winged aircraft low 2,000-3,000 ft that turned out to be F-4s that should have been escorting another strike flight ten minutes earlier but were late. BLUE flight was unable to reaquire the MIGs which were very low in the mountains with the low scattered puffy rain clouds.

BLUE flight saw no SAMs.

The other F-4 flight, which was leading the strike force, was tasked to orbit in the vicinity of 20°32'N/105°03'E to 21°16'N/105°16'E. The flight flew direct from Channel 97 to 20°35'N/104°50'E, arriving at 1725H. Due to poor visibility (2-3 miles in haze) the flight determined to cover the strike force egress route in accordance with special instructions. At 1726H the flight proceeded to the vicinity of 21°40'N/104°30'E. All strike flights egressed at 1745Z without seeing MIGs or SAMs.

[redacted]

Event III-203

Aircraft Involved: Four F-105s vs one possible MIG-21

Results: Sighting

Vicinity of Encounter: 20°54'N/104°22'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 2 May 1967, 0951H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Egressing strike flight at 17,000' saw single bogey at 26,000'; bogey, which looked like MIG-21, disappeared into clouds without hostile action.

Event III-204

Aircraft Involved: Four F-105s vs two MIG-17s

Results: No damage

Vicinity of Encounter: 21°30'N/107°05'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 2 May 1967, 0915H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Egressing strike flight at 6000' saw two MIGs make pass from 9000' and 9 o'clock; MIGs rolled in to 2000' behind #2 F-105; flight went supersonic and left MIGs; no firing seen.

Event III-205

Aircraft Involved: Two RF-101s vs at least one MIG-?

Results: No damage

Vicinity of Encounter: 21°40'N/105°33'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 3 May 1967, 1630H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Photo flight saw black puffs 25-50' away and observed single MIG tracking 2 miles to right; no further contact.

[redacted]

Event III-206

Aircraft Involved: Three RF-4Cs vs One MIG-21

Result: No damage

Vicinity of Encounter: 21°51'N/104°13'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 3 May 1967/1705H

Three RF-4Cs (BLUE Flight) were on a reconnaissance mission against JCS 82.24.

8. ORDNANCE

| | Alkalai AA-1 |
|---|---|
| MIG-21 | 2/0 |

11. DATA SOURCES

432 TRW 031200Z May 1967 OPREP-3 TUOC 03211

432 TRW 040000Z May 1967 OPREP-3 TUOC 03244

12. NARRATIVE

At 1657H while heading 019 degrees at 25,000 feet MSL, at 20°45'N/104°50'E, BLUE Flight received a 3-ring x-band from the 11 o'clock position.

At 1704H while heading 019 degrees at 20,000 feet MSL when at 21°51'N/104°13'E, still inbound to the target, BLUE Flight noted the x-band signal move from 11 o'clock to 9 o'clock position.

Thirty seconds later BLUE Flight observed a single silver MIG-21 with no markings at 24,000 feet MSL, at 10 o'clock high, in a pursuit curve slipping to 7 o'clock position. BLUE Flight broke left and down, and at this time two missiles were seen to pass off to the right. One missile was observed to explode off the right wing, 300 feet away, at the same altitude. The missile appeared fat and stubby resembling the AA-1 Alkalai. During the high g evasive maneuver, the missile seemed to be on a straight trajectory rather than tracking his aircraft. The backseater observed the missile to detonate in a white puffy burst.

BLUE Flight dropped tanks and exited the area in a descent at Mach 1.4. The x-band signal continued at 6 o'clock with a strength of three rings until 20°40'N/103°25'E. The time that the MIG broke off was 1710H.

On sighting the MIG-21, the flight dispersed 8 carts of chaff.

BLUE 1 and 2 jinked to channel 97 at 10,000 feet altitude and BLUE 3 continued his descent to the deck and proceeded to channel 97.

BLUE Flight felt that the MIG-21 was GCI vectored for about 10 minutes prior to contact since the flight received strobes of 1-1/2 to 2 rings and the signal moved from 1 to 2 o'clock position while the flight was on a heading of 019 degrees.

The weather was 2/8 coverage with tops at 12,000 feet MSL. The visibility was 5-6 miles in haze.

One member of BLUE Flight received a MIG warning "Bandits at 70 miles."

[redacted]

Event III-207

Aircraft Involved: Four F-4Cs vs a) two MIG-21s
b) five MIG-17s

Result: One MIG-21 destroyed

Vicinity of Encounter: a) 21°08'N/105°51'E
b) 21°03'N/105°30'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 May 1967/1435H

Four F-4Cs (BLUE flight) were on a MIGCAP mission in support of a force of 20 F-105s from Takhli which were striking JCS 82.24. In addition, another flight of F-4Cs were also on MIGCAP for this force. The flights of F-105s which encountered MIGs are those of Events III-211 and III-212.

## 2. MISSION ROUTE

Departed Ubon and effected rendezvous with the strike force at the ORANGE ANCHOR drop off. From there the force proceeded to Channel 97. From Channel 97 direct to 21°37'N/104°54'E then direct to 21°34'N/105°33'E, then direct to 21°08'N/105°51'E down the right side of Thud Ridge. Egress was the same route with post strike refueling on ORANGE ANCHOR.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

4 - AIM-7E SPARROW
4 - AIM-9B SIDEWINDER
1 - QRC-160 Pod
1 - 600 gal centerline tank
1 - 370 gal wing tank

MIG-21

Clean
Silver

MIG-17

Clean
No afterburner
Silver

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered clouds at 2000 to 4000 ft, visibility 15 miles.

| | BLUE 1 2 3 4 |
|---|---|
| Altitude: | 14,000 ft |
| Heading: | 150° |
| Speed: | 500 kts |
| Fuel State: | 12,000 lb |

Flight Formation:

Pod with BLUE 2 high on the right and the element (BLUE 3, 4) on the left, slightly low, almost line abreast.

## 5. INITIAL DETECTION

BLUE flight received MIG warnings and knew MIGs were in the area. They heard one of the first or second F-105 flights call MIGs. BLUE 2 saw two MIG-21s, at 11 o'clock level, attacking a flight of F-105s and called them out.

## 6. ACTION INITIATED

BLUE flight warned the F-105s and broke into the MIG-21s going to afterburner and jettisoning tanks.

## 7. SITUATION DEVELOPMENT

BLUE 1 fired three SPARROWS at one of the MIG-21s, missing with all three. He then fired four SIDEWINDERS, one of which hit the MIG-21 resulting in a kill.

Outbound from the target BLUE flight engaged five MIG-17s in the vicinity of Hoa Lac airfield. During this engagement, BLUE 2 fired three AIM-9Bs without scoring a hit. BLUE flight then disengaged due to Bingo fuel and egressed.

[redacted]

8. ORDNANCE

(No. fired/No. hits)

| | SPARROW | SIDEWINDER | Remarks |
|---|---|---|---|
| BLUE 1 | 3[1]/0 | 4/1 | All fired at MIG-21. One MIG-21 killed. |
| BLUE 2 | | 3/0 | Fired at MIG-17 |
| MIGs | None | | |

9. EQUIPMENT PROBLEMS

BLUE 1's cockpit mounted gun camera did not work due to improper loading. BLUE 3's left outboard tank would not jettison.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | 4900 | 230 | 50 | Second MIG kill. Third air-to-air engagement. |
| Back | 350 | 90 | 86 | |
| BLUE 3 | | | | |
| Front | 4200 | 845 | 20 | First encounter with MIG-17 |
| BLUE 2 | | | | |
| Front | 2750 | 430 | -- | |
| Back | 720 | 410 | -- | |

Comments on this Encounter

BLUE 1 (Front) fired everything he had at the MIG-21. With a gun, he would have got a couple of MIG-17s in the second flight. He made many dry passes at them. For other comments see Events III-102, -207, and -252).

BLUE 3 - It was the first time that he had seen the MIG-17s get into a tight little turn and stay there. It was amazing how the MIG-17 turned. The turns effectively negated the missile attacks. Since the F-4s had no guns, a tight turn orbiting low to the ground was a successful defense.

To combat the MIG's defense tactics should be to work two elements in the vertical. One keeps the MIGs busy, and the other should drift off to get separation. When the second element returns he should call the first element to pull up and away, leaving a SPARROW shot for the second element.

11. DATA SOURCES

Project Interviews: BLUE 1, 4 June 1967; BLUE 3, 2 June 1967
Messages, Reports:

8 TFW 041120Z May 1967 OPREP-3 DOI 05080
8 TFW 041435Z May 1967 OPREP-3 DOI 05086
AIM 7D/E Missile Performance Reports for BLUE 1

12. NARRATIVE DESCRIPTION

BLUE flight was one of two flights of F-4Cs providing MIGCAP for a force of F-105 striking the Hanoi transformer station, JCS 82.24.

BLUE flight rendezvoused with two flights of F-105s which was the flight of Event III-211 and one other (GREEN flight). This was accomplished at ORANGE ANCHOR drop off and CAP position was taken immediately. The force proceeded to Channel 97 and orbited waiting for the rest of the strike force. After two orbits, rendezvous was completed and the ingress course was set.

[1]Although official sources indicated BLUE 1 fired 3 AIM-7E, both BLUE 1's interview and BLUE 3's interview state that BLUE 1 had no ordnance remaining during the engagement with the MIG-17s. It is concluded that one AIM-7E on BLUE 1 did not tune properly and, therefore, was unable to be fired. BLUE 1's firing sequence tends to confirm this.

[redacted]



The force from Takhli flew flights in trail. The first escort (F-4C) flight was near the front of the formation. That placed the IRON HAND flight out front. The strike force was led by the mission commander with the first flight of F-4s a little high and out to his right. BLUE flight was about 1 to 1 1/2 mi in trail of the last F-105 flight (GREEN flight) and about 2000 ft higher. The flight in front of GREEN flight was the flight of Event III-211.

The flight jettisoned the centerline tank about Yen Bai. During ingress MIG calls were heard for the target area via the BULLSEYE system.

After hitting the turn point at 1432H, BLUE flight proceeded down Thud Ridge for about 3 minutes. During this time the first or second F-105 flight made a call "MIGs at 9 o'clock low." This alerted BLUE flight to the MIGs location direction.

When about 5 to 6 mi from Phuc Yen (1435H), BLUE 2 saw two MIG-21s and called them out. BLUE 1 immediately spotted them, instantly identifying them as MIG-21s, and called to jettison tanks and go to afterburner. BLUE 3's outboard tank did not jettison.

When seen, the MIGs were at 10 to 11 o'clock from BLUE flight level and crossing left to right angle off 45°. They were at about the same altitude as BLUE flight and had apparently chandelled up from off the deck. The MIGs were turning in on a flight of F-105s (GREEN flight) immediately preceding BLUE flight.

The MIGs were at GREEN flight's 7 to 8 o'clock position, about 1 mi back.

BLUE 1 also saw some MIGs attacking the other flight in front of GREEN flight. [These are the F-105s in Event III-211] and called this flight to break right.

BLUE flight broke into the two MIG-21s which were crossing rapidly from left to right. One MIG continued to turn after the GREEN flight but the second MIG broke right, going down and under BLUE flight turning 180° and diving for the deck. This MIG was not seen again.

BLUE flight started after the first MIG and vector rolled for position. BLUE 1 obtained an immediate lock-on, in boresight. This MIG broke right and started an evasive maneuver.

The MIG outturned BLUE flight but BLUE 1 and 2 went high to stay with the MIG's turn. BLUE 3 and 4 also went high but were unable to match the turn and ended up high and to the outside. The MIG then reversed as BLUE 1 and 2 came over the top. As the MIG reversed to the left, BLUE 3 and 4 were looking head-on at the MIG and would have had a SPARROW shot if BLUE 1 and 2 had not maintained position on the MIG. However, BLUE 1 and 2 were able to reverse their turn and stay with the MIG. The MIG passed under BLUE 3 and 4 as they went high and outside of the turn again.

Sometime during this turning fight BLUE 1 ripple fired three SPARROW missiles at the MIG, according to the firing reports. There is some inconsistencies in the data with OPREP 041112 indicating a firing interlocks in at about a mile range. Interlocks is also supported in OPREP 0414135.

The missile firing reports give much larger firing ranges and interlock out. Considering the type of action encountered, the firing range of 4 mi which was given seems large. In all cases the MIG-21 target was given at 8500 ft altitude, 0.9 Mach and at 20° aspect to BLUE 1, who was at 8000 ft altitude and at .9 Mach pulling 4 g's with a slight overtake. The missile select light had been on 5 minutes prior to launch.

The first missile failed to guide and went ballistic and rapidly passed out of sight. The second and third missiles appeared to guide but passed behind the MIG-21 and were lost from view.

One source, OPREP 041120Z, reported BLUE 1 firing three SPARROWS, indicating that the third one was fired out of parameters at the MIG after the first three SIDEWINDERS were fired. No source indicates more than three SPARROWS were fired.

No further SPARROW firings by BLUE 1 were indicated in this event; however, after firing the last SIDEWINDERS, BLUE 1 was reported as being out of ordnance. Since BLUE 1 was loaded with eight missiles, it is concluded that one AIM-7 must have detuned and, therefore, was not able to be fired in the fight. It is a possibility that a fourth AIM-7E was fired by BLUE 1 and not indicated in the OPREPS; but due to the consistency of the report of three SPARROWS fired, this situation is considered unlikely.

The MIG-21 continued to turn and started to climb with BLUE 1 violently maneuvering to stay behind. At about 17,000 ft the MIG-21 was a little slow and he reversed. BLUE 1 observed the MIG to be down sun and high against a clear sky.

BLUE 1 went to HEAT and got a good tone, then pulled lead enough to put the target on the edge of the missile field of view. BLUE 1 fired two SIDEWINDERS which passed behind the MIG. The third SIDEWINDER fired,guided, and exploded 5 to 10 ft under the MIGs tail at the 5 o'clock position. This missile scored the kill. A fourth SIDEWINDER was fired while the MIG was in a violent evasive maneuver and burning, but it missed and its further flight was unobserved.

[redacted]

[redacted]



For all launches a good tone was achieved, with the target tracked 1 to 3 seconds prior to each launch. For all of the launches BLUE 1's airspeed was 540 KTAS, altitude 15,000 ft, at 1 1/2 to 2 g's. BLUE 1's aircraft was banking and slightly climbing with a slight overtake. The firing range was 4000 to 5000 ft. The angle off was from 10 to 25° with the missile which scored a hit being fired at 20°.

After the third exploded, no pieces were observed to come off the aircraft but the MIG went into a violent maneuver, pulling hard to the left and then snapping back to the right in a roll. The MIG straightened out and jinked right and left. At about this time the MIG started to burn and BLUE 1 fired his fourth SIDEWINDER at the MIG, which did not guide.

The MIG kept turning and then leveled off in a 15° dive and headed toward Phuc Yen. The MIG began to burn brightly with fire coming from the left side of the fuselage from the canopy back. The fire was brilliant white with pieces coming off (like a magnesium flame).

BLUE flight followed the MIG at about 1/2 mi range. As they neared Phuc Yen, the flight started to receive heavy 85mm flak. BLUE 3 called for BLUE 1 to break right. BLUE 1 did so and did not see the MIG crash. However, BLUE 3 observed the MIG to continue on and cross the runway to impact 100 yards, south of the runway near an 85mm flak site. No ejection from the MIG was observed.

After breaking right to a heading of west, BLUE flight climbed to between 8000 and 10,000 ft and then made a turn to the west of Phuc Yen, heading east. At a point between Hanoi and Thud Ridge the flight turned right to a heading of south and after crossing Hanoi, turned right to a heading of west. Since the MIG-21 engagement, the flight had not been able to regain their pod formation.

Just as BLUE 3 rolled out from the turn, a SAM passed through the flight. The SAM passed 100 to 300 ft under the nose of BLUE 3. The first that BLUE 3 saw of the SAM it was very close coming from 7 o'clock from the south. BLUE 3 broke down into the direction from which the SAM had originated and as he rolled out, another exploded 500 ft off the right wing.

The F-105 force had by this time egressed up Thud Ridge so BLUE flight descended and egressed out over the valley heading for Hoa Lac. No flak was observed.

When at about 4000 ft altitude and about 5 mi east of Hoa Lac, BLUE 1 saw five MIG-17s circling the field. BLUE 3 and 4 were in a fluid four formation at this time and were back of and slightly higher than BLUE 1 and 2. The MIGs were at about 2000 ft altitude. At this time BLUE 3 had about 9000 lb of fuel and was at about 550 kts.

BLUE flight had heard no MIG warnings for Hoa Lac.

BLUE flight descended to the MIGs altitude and started to engage them. BLUE 1 by this time had no ordnance left. Although the engagement occurred right over Hoa Lac airfield and BLUE flight altitude varied from 1500 to 8000 ft, no flak or ground fire was encountered.

The MIGs did not attempt to shoot at BLUE flight as BLUE 1 and 2 and BLUE 3 and 4 yo-yoed up and down to stay with the MIGs. The MIGs stayed in a tight left turn at about 2000 ft altitude. This meant that BLUE flight was either too close for a SPARROW shot or was pulling too many g's for a SIDEWINDER attack.

Despite this, BLUE 2 attempted to fire a SIDEWINDER. Three AIM-9Bs were launched against a hard turning MIG-17, but all missed due to angle off and ground IR background. For all three launches BLUE 2 was at 450 KTAS and 2000 to 3000 ft altitude, pulling 2 to 3 g's. The MIG-17 was nose high in a hard left turn and BLUE 2's to aircraft was nose low with 100 kts overtake. The track crossing angle was about 30° at firing. The range was 3000 to 4000 ft with 30° angle off. The tone was good for all launches. BLUE 2 had no radar lock and the missiles were launched visually.

After several turns with the MIGs, BLUE 3 and 4 pulled up and went out about 3 to 4 mi to the east and turned to come back in. BLUE 3 got a radar lock on the MIGs which were still under attack by BLUE 1 and 2. As he turned inbound, BLUE 3 asked if he could come in and received an affirmative answer from BLUE 1. BLUE 3 failed to communicate the exact situation, however, and BLUE 1 and 2 did not pull out of the MIG's pattern to allow a SPARROW shot.

Not getting the SPARROW shot, BLUE 3 pressed on in for a SIDEWINDER attack and with a good growl selected a MIG who was in a slight left turn. BLUE 3, with about 1 1/2 g's on the airplane and looking up at the MIG, started to close into firing parameters. At this time BLUE 2 came from the outside of the turn and slid in between the MIG and BLUE 3. Due to BLUE 3's closure, he had to pull up and break off the attack.

BLUE 3 and 4 went out and tried the same tactic again but again, due to confusion about the tactic, failed to get off a shot. By this time BLUE 4 was at absolute BINGO and the flight broke off and egressed.

[redacted]

[redacted]



At one time during the fight BLUE 3, warned by BLUE 1, saw a MIG-17 at his 7 o'clock in a hard left turn. Due to the angle off, BLUE 3 could see the top of the MIG's wing and the paint scheme. Two thirds of the top of the wing was red and from the tip in 4 or 5 ft it was solid red and then the red tapered off to the leading and trailing edges which tapered off towards the fuselage.

During egress, BLUE 4 jettisoned four AIM-9s due to fuel considerations. After refueling with ORANGE ANCHOR, the flight returned to base.

[redacted]

[redacted]

Event III-208

Aircraft Involved: Four F-4Cs vs two to three unident

Results: No damage

Vicinity of Encounter: 21°32'N/103°57'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 3 May 1967, 1710H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

MIG CAP flight for ALFA strike held to west due ALQ-71 failure, and observed four wing tip vortex condensation trails at 1 o'clock in a high-G turn into a split-S maneuver; then observed 2-3 silver A/C; unidents 30 miles from flight; unable to distinguish A/C type or markings due distance; seemed to be on attack heading toward flight, which turned to attack, but lost visual contact.

Event III-209

Aircraft Involved: Four F-4C vs two unident

Results: Sighting

Vicinity of Encounter: 21°20'N/104°25'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 May 1967, 1425H, 1440H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Lead of ECM escort flight at 29,000' picked up a bogey at his 3 o'clock position approx 4 miles out at 5-10,000' altitude; lead was unable to distinguish A/C type; 15 minutes later, flight at 29,000' picked up a bogey at 3 o'clock position, level and 5-7 miles away; at approx 5 miles, bogey dropped to approx 22,000' and passed flight 5 miles to right.

Event III-210

Aircraft Involved: Four F-4Cs vs four MIG-17s and four MIG-21s

Results: Sighting

Vicinity of Encounter: 21°15'N/105°47'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 May 1967, 1433H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

MIG CAP flight at 16,000' was ingressing along Thud ridge when lead spotted three silver and one camouflaged MIG-17 heading directly beneath; a climbing silver MIG-21 was simultaneously sighted but all MIGs disappeared before maneuvering could be initiated; at 1435H, #3 sighted two silver MIG-21s at second position shown; no pursuit initiated; lead at base of Thud ridge spotted one MIG-21 climbing into a cloud; no pursuit undertaken due low fuel.

[redacted]

[redacted]

Event III-211

Aircraft Involved: Four F-105s vs one MIG-21 and two MIG-17s

Result: No damage

Vicinity of Encounter: Near 21°08'N/105°51'E

## I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 May 1967/ about 1435H

Four F-105Ds (BLUE flight) were part of a strike force from Takhli attacking JCS 82.24, which included 16 strike aircraft (of which BLUE flight was one and the flight of Event III-212 and GREEN flight of Event III-207 were also members). In addition, the force included a flak suppression flight and an IRON HAND flight was in the area between 21°34'N/105°33'E and 21°21'N/105°45'E.

The strike force was supported by a MIGCAP of eight F-4Cs. The flight of Event III-207 was part of these.

## II. DATA SOURCES

Messages, Reports:

355TFW 041330 May 67 OPREP-3 DOTO-011557

## 12. NARRATIVE DESCRIPTION

BLUE flight was warned of a MIG attack by its F-4 cover (Event III-207) and was directed to break right. The flight broke retaining ordnance but when warned a second time, dropped its ordnance in the vicinity of Phuc Yen airfield. The flight observed one MIG-21 break off after a single pass.

Two MIG-17s pressed an attack on egress but the flight successfully evaded them.

[redacted]

Event III-212

Aircraft Involved: Four F-105s vs one MIG-21
Result: No damage
Vicinity of Encounter: Near 21°08'N/105°51'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 May 1967/Shortly after 1435H

Four F-105s (BLUE flight) were part of a strike force from Takhli attacking JCS 82.24, which included 16 strike aircraft (of which BLUE flight was one and the flight of Event III-211 and GREEN flight of Event III-207 were also members). In addition, the force included a flak suppression flight and an IRON HAND flight was in the area between 21°34'N/105°33'E and 21°21'N/105°45'E.

The strike force was supported by a MIGCAP of eight F-4Cs. The flight of Event III--207 was part of these.

8. ORDNANCE

| | Soviet AAM | Remarks |
|---|---|---|
| MIG-21 | 1/0 | Fired out of range |

11. DATA SOURCES

Project Interviews: BLUE 3, June 1967
Messages, Reports:

355TFW 041330Z May 67 DOTO-0 11557

12. NARRATIVE DESCRIPTION

BLUE flight was part of the strike force and was armed with 18 x 750 lb bombs and 6 x 500 lb bombs. It is not known which member carried the 500 lb bombs. BLUE 3 had 2 x 450 gal tanks, an AIM-9B and a QRC-160 pod. The bombs were mounted on a MER rack on the centerline. BLUE 4 had two QRC-160 pods, two 450 gal tanks, and bombs.

On egress from the target, still retaining the MER rack, AIM-9B, pod and tanks, BLUE 3 and 4 headed up Thud Ridge. They were at about 8000 ft and 550 kts when BLUE 3 looked down and saw a single, silver MIG-21 with red markings.

The MIG was about 4000 ft below and 2000 ft out at 8 o'clock, paralleling their course. The MIG followed BLUE 3 and 4 about a quarter of the way up Thud Ridge when he started an easy left turn and disappeared.

Although not seen by BLUE 3, on egress a MIG-21 launched a missile at BLUE flight but the launch was out of range and the missile was ineffective.

It was surmised that the MIG-21 seen by BLUE 3 was the same MIG who was trying to catch up with the flight for an interception when the flight turned at the top of Thud Ridge.

[redacted]

Event III-213

Aircraft Involved: Two RF-4Cs vs Two MIG-17s

Result: Sighting

Vicinity of Encounter: 21°59'N/104°30'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 May 1967/1615H

II. DATA SOURCES

432 TFW 041200 May 1967 OPREP-3 TUOC -3267

12. NARRATIVE

Two RF-4Cs were on a mission against JCS 82.24. The weather was scattered clouds with two-eights coverage, with bases at 4500 feet MSL. Visibility was 7 miles in haze.

The flight departed Udorn and flew to 18°25'N/103°25'E at 20,000 feet. From there they proceeded to 20°26'N/103°43'E then to 21°55'N/104°14'E and then to 21°58'N/104°30'E. From there, at 2000 foot altitude, they proceeded to 20°26'N/103°43'E and then to Udorn at 29,000 feet.

At 1614H when at 21°50'N/104°30'E the two RF-4Cs heard a MIG call from Red Crown of "MIGs heading 310 degrees Northwest." At the same time the flight received a yellow border violations call.

Descending from 20,000 feet to 2000 foot altitude, the flight did not receive any signals.

At 1615H when at 21°54'N/104°30'E in a descent on a heading of 010 degrees the flight observed two MIG-17s. The MIGs were at 10,000 foot altitude at 10 o'clock position heading 310 degrees.

The RF-4Cs descended to the deck and broke left and did not notice the MIGs to make any move to engage. The mission was aborted and the flight returned to base. No markings were observed on the MIGs.

[redacted]

[redacted]

Event III-214

Aircraft Involved: Four F-105s vs one MIG-21

Results: Sighting

Vicinity of Encounter: 21°28'N/105°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 May 1967, 1441H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

ALFA strike flight saw MIG four miles ahead; flight was descending through 10,000'; MIG made no hostile moves.

Event III-215

Aircraft Involved: One EB66C vs one unident

Results: No damage

Vicinity of Encounter: 21°06'N/103°55'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 May 1967, 1453H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

ECM flight at 32,000' escorted by the aircraft in Event III-209, observed a dark, unident A/C making a low pass, coming in to 6 miles from 1:30 o'clock and then departing.

Event III-216

Aircraft Involved: Four F-105s vs two MIG-21s

Results: Sighting

Vicinity of Encounter: Yen Vien RR Yard

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 May 1967, 1730H, 1748H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Number 4 of ALFA strike flight, after completing bomb run, saw one MIG and recovered at alternate base due low fuel; at second time shown, remainder of flight was egressing at 22,000' when it saw one MIG, 20 miles away at 8 o'clock position in a tight orbit; no hostile action observed.



[redacted]

[redacted]

Event III-217

Aircraft Involved: Eight F-105s vs one MIG-21

Results: No damage

Vicinity of Encounter: 21°06'N/103°55'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 4 May 1967, 1453H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Two flights reported seeing one MIG-21 in the general vicinity of Sam Neua in Laos; MIG made a descending pass on #2 of one flight and came within 4,000' before #2 broke hard left and lost sight of MIG.

Event III-218

Aircraft Involved: Eight F-105s vs two MIG-21s

Results: Sighting

Vicinity of Encounter: 20°58'N/105°33'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 May 1967, Unknown

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight unable to acquire target due to poor visibility and heavy cloud cover; flight leaving target vicinity when they heard another strike flight call two MIGs at first flight's 6 o'clock position; first flight jettisoned ordnance safe but did not see any MIGs.

Event III-219

Aircraft Involved: One RF4C vs ? Unident

Results: No damage

Vicinity of Encounter: 21°20'N/104°37'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 8 May 1967, 0343H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Inbound photo A/C received X-band signal ahead while at 1,000' altitude; subsequent stronger X-band signal at 6 o'clock led to mission abort; photo A/C broke right and egressed, followed for 8 minutes by X-band signal.

[redacted]

[redacted]

Event III-220

Aircraft Involved: Four F-4Cs vs two MIG-21s

Result: Sighting only

Vicinity of Encounter: Approximately 15 miles northwest of Hanoi

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 12 May 1967/1638H

A flight of four F-4Cs (ORANGE flight) was providing TARCAP for a strike group of 16 F-105s. The target was the Ha Dong Army barracks/supply area three miles northwest of Hanoi, JCS 31.00.

5. INITIAL DETECTION

Two MIG-21s were observed to be in pursuit of four F-105s.

6. ACTION INITIATED

The F-105s continued toward the target area as the F-4Cs engaged the MIG-21s.

11. DATA SOURCES

Messages, Reports:

388 TFW OPREP-3121155Z May 1967 OPNAV OP-OSW Box Score

12. NARRATIVE DESCRIPTION

Sixteen F-105s, in flights of four aircraft (including BLUE, GREEN, and BLACK flights of Event III-221), were on a strike against target number JCS 31.00, Ha Dong Army barracks and supply area northwest of Hanoi. A flight of F-4Cs was providing MIGCAP in the area.

The entire strike force encountered intense AW/37/57 and 85 mm AA fire from the target area. An extremely hostile environment of heavy flak, SAMs and MIGs prevailed in the target area.

While inbound to the target area, BLUE flight (a flight of F-105s) was briefly pursued by two MIG-21s. The MIGs broke off their attack as they were engaged by ORANGE flight. GREEN flight (another F-105 flight) observed two MIG-21s during ingress to the target and one MIG-17 during egress. No attempt to engage was made by either side. BLACK flight ( a flight of F-105s) sighted four MIG-17s while inbound to the target but no attempt was made to engage.



[redacted]

[redacted]



Aircraft Involved: Twelve F-105s vs two MIG-21s and five MIG-17s

Result: Sighting only

Vicinity of Encounter: Approximately 3 to 15 miles northwest of Hanoi

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 12 May 1967/1638H

Sixteen F-105s (including BLUE, GREEN, and BLACK flights), in flights of four aircraft, were on a strike against target JCS 3[illegible].00, Ha Dong Army barracks and supply area northwest of Hanoi. A flight of F-4Cs was providing MIGCAP in the area.

2. MISSION ROUTE

The strike group from Korat, approached the target area from the northwest.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1, 2, 3, 4; BROWN 1, 2, 3, 4; BLACK 1, 2, 3, 4

6 - M-117 bombs
1 - M-61 GREEN

F-105 GREEN 1, 2, 3, 4

4 - CBU-24
1 - M-61 GREEN

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

The entire strike force encountered intense AW/37/57 and 85 mm AA fire from the target area. An extremely hostile environment of heavy flak, SAMs and MIGs prevailed in the target area.

5. INITIAL DETECTION

While inbound to the target area, BLUE flight was briefly pursued by two MIG-21s. The MIGs broke off their attack as they were engaged by a flight of F-4s (see Event III-220). GREEN flight observed two MIG-21s during ingress to the target and one MIG-17 during egress. No attempt to engage was made by either side. BLACK flight sighted four MIG-17s while inbound to the target but no attempt was made to engage.

6. ACTION INITIATED

None.

11. DATA SOURCES

Messages: 388 TFW OPREP-3121155Z May 1967
CINC PACFLT staff study 6-68

12. NARRATIVE DESCRIPTION

See paragraphs 1, 4 and 5.

[redacted]

[redacted]

Event III-222

Aircraft Involved: Four F-4Cs vs five MIG-17s
Result: One F-4C lost
Vicinity of Encounter: 20°59'N/105°30'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 12 May 1967/1644H.

A flight of four F-4Cs (BLUE Flight) was providing MIGCAP for a strike group of F-105s. Inbound to the target the entire strike forces encountered SAMs and AA fire. No MIG warning was received prior to the sighting of the MIGs.

## 2. MISSION ROUTE

BLUE Flight departed Danang and proceeded to the WHITE ANCHOR refueling area then to Channel 97 and directly to target JCS 31.00. After egress from the target area the flight refueled at WHITE ANCHOR and returned to a position 40 miles northwest of Hanoi to provide RESCAP for an F-105 pilot who had been shot down earlier. When at BINGO fuel, the flight proceeded to RED ANCHOR for refueling and then returned to base.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 3

2 SPARROW (AIM-7E)
2 SIDEWINDER (AIM-9B)
1 20mm gun (SUU-16)
1 QRC-160 ECM pod

F-4C BLUE 2, 4

4 SPARROW (AIM-7E)
4 SIDEWINDER (AIM-9B)
1 QRC-160 ECM pod

MIG-17s

Silver with red star on top of wings.

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear in the area of the encounter.

| | BLUE | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Altitude: | 5000 to 7000 ft | | | |
| Heading: | northwest | | | |
| Speed: | 400 to 500 kts | | | |
| Fuel State: | No external tanks | | | |

Flight Formation: Fighter escort in two elements of two fighters each.

## 5. INITIAL DETECTION

As the F-105 strike group began egress from the target area with BLUE Flight providing fighter cover, the backseater in BLUE 3 called, "MIGs 11 o'clock, low." No MIG warning had been received.

## 6. ACTION INITIATED

BLUE 4 was told by BLUE 3 to close up the formation and BLUE 4 replied that he was experiencing difficulty with the afterburner in the left engine. BLUE 1 (Lead) reported contact with the MIGs at 10 o'clock low and that he was initiating an attack. BLUE 3 acknowledged and indicated support of the attack.

## 7. SITUATION DEVELOPMENT

Moments later BLUE 3 sighted two more MIGs at 9 o'clock and reported to BLUE 1 that he was terminating his support to BLUE 1 and was attacking the second section of MIGs. While maneuvering to attack, BLUE 3 sighted a fifth MIG making a run on him in his 7-8 o'clock position. A SAM missile call at this time directed the attention of the crew of BLUE 3 elsewhere and the diversion was sufficient to cause BLUE 3 to lose sight of the MIGs. In an effort to relocate the MIGs, BLUE 3 made a jinking climb to approximately 9000 ft. From this position BLUE 3 saw a fireball at one o'clock low which was BLUE 4.

Prior to this, BLUE 1 and 2 pursued the first section of MIGs. BLUE 1 gained a firing position on MIG 2 and launched a SPARROW (AIM-7) missile in the boresight mode. As the missile was launched, MIG 2 tightened his turn. After guiding directly toward the MIG, the missile detonated at approximately 100 ft, 6 o'clock from MIG 2. BLUE 1, with BLUE 2 on his wing, yo-yoed off and maneuvered into position again. Once again the MIG tightened his left turn and the SPARROW, although tracking nicely at the MIG's 6 o'clock position, burst approximately 100 ft short of MIG 2. Again BLUE 1 and 2 yo-yoed off high,



[redacted]

but this time a single F-4C was observed, low, on a reciprocal heading with two MIGs slowly closing from his 7 o'clock position. Repeated warnings were given over the radio but the F-4C failed to take any evasive action. When finally hit, the F-4C burst into flame. This F-4C was BLUE 4.

8. ORDNANCE

| | (No. fired/No. hits) SPARROW AIM-7E | Gun SUU-16 | Remarks |
|---|---|---|---|
| BLUE 1 | 2/0 | 1/0 | Gun would not fire. |
| BLUE 2, 3 | 0/0 | | |
| MIG 1 | | | One F-4C shot down. |

9. EQUIPMENT PROBLEMS

BLUE 1 - Gun would not fire. No firing pulse to the electric primer, electrical leads broken.

BLUE 3 - APQ-100 failure. No SPARROW capability. Generator malfunction indicated after refueling during ingress to the target.

BLUE 4 - Experienced some difficulty with the afterburner on the left engine.

10. AIRCREW COMMENTS

BLUE 1 (Lead) - BLUE Flight was using a discreet communication channel for internal flight communication while monitoring the strike group frequency on an auxiliary receiver. Guard channel was also being monitored for any MIG warnings. None were received.

11. DATA SOURCES

Project Interviews: BLUE 1 (Lead) front, 22 June 1967.

Messages: 366TFW OPREP-3 121330Z May 1967
366TFW OPREP-3 122100Z May 1967
366TFW OPREP-3 131425Z May 1967
AIM-7D/E Missile Firing Report

12. NARRATIVE DESCRIPTION

A flight of four F-4Cs (BLUE Flight) was providing MIGCAP for a strike group of F-105s against target JCS 31.00. While in the target area the flight encountered SAMs and AA fire. Previous to entering the area BLUE 1 test fired his gun, but it failed to fire.

As the strike group began egress from the target area on a northwesterly heading, BLUE Flight was providing fighter cover. Four MIGs were sighted at 1 o'clock, low, by BLUE 3 (back). When directed by BLUE 3 to close up the formation, BLUE 4 advised that he was experiencing difficulty with the afterburner on his left engine. BLUE 3 decided at that time not to use afterburner to insure that BLUE 4 could maintain a fighting wing position. Within seconds BLUE 1, with BLUE 2 in fighting wing, and BLUE 3 and 4 providing support, initiated an attack on MIG 2 (the second MIG of the section). A moment later BLUE 3 sighted two more MIGs at 9 o'clock with approximately one mile separation from the lead section. BLUE 3 called BLUE 1 and reported the MIGs stating that his element was separating from the lead element to attack this second section of MIGs. BLUE 1 acknowledged this transmission and pressed on with his attack.

The lead element, BLUE 1 and 2, made a descending left turn in behind the lead MIG section and closed the range to about one mile for the trailing MIG, MIG 2, which was in a gentle left climbing turn at approximately 4500 ft AGL, 500 ft below BLUE 1, at the 12 o'clock position. MIG 2 was acquired in the boresight mode and BLUE 1 launched one SPARROW (AIM-7E) missile. As the missile fired, MIG 2 tightened his left turn. Although the missile appeared to be guiding directly toward the MIG, the fuze detonated the warhead 100 ft short of the target at the MIG's 6 o'clock position. To prevent overshooting the MIG as he continued his left turn to the inside, BLUE 1 and 2 pulled up into a higher yo-yo. At this time BLUE 1 feels he could have made a successful gun attack against the MIG if his gun had been operating properly. As he maneuvered down from the yo-yo, BLUE 1 kept MIG 2 at his 12 o'clock and descending to co-altitude, 5000 ft AGC. MIG 2 was acquired in the manual track mode and another SPARROW was launched from a range of 1-1/2 mile. Once again MIG 2 tightened his left turn and the missile, although tracking nicely at the MIG's 6 o'clock position, detonated approximately 100 ft short of MIG 2.

Again BLUE 1 and 2 yo-yoed off high to gain separation. At this time BLUE 1 saw an F-4C at 11 o'clock low, on a reciprocal heading, in a slight left turn, with two MIG-17s slowly closing from his 7 o'clock position. It is possible, according to BLUE 1, that the two MIGs were MIG 1 and 2. After checking that BLUE 2 was still in his fighting wing position, BLUE 1 called over his radio, "Single F-4, you have two MIGs on your tail!" This F-4C was BLUE 4 who had become separated from BLUE 3. BLUE 1 called several times for the F-4 to take it down and left but there was no visible response. The single F-4 continued in a slight left turn as the MIGs closed the range to approximately 1500 ft and

fired two bursts of what appeared to be 37mm which missed. The F-4 then began to climb slightly while still in a left turn and the MIGs continued to close to about 1000 ft in range. BLUE 1 then called, "Ok, take it up!" hoping that the MIGs would pass under the F-4. But, once again the F-4 (BLUE 4) failed to respond and continued in a slight, left, climbing turn. The MIGs closed to a range less than 1000 ft and fired three more bursts at BLUE 4 as the entire aft section of the airplane burst into flames. After about five seconds during which the turning airplane maintained pitch and bank, the left bank increased and the airplane pitched nose down. As the nose of the airplane passed through the horizon, BLUE 1 saw one seat eject and saw a good chute open. BLUE 2, who was trailing BLUE 1 saw one chute collapsing on or near the ground and saw another good chute approximately 2000 ft above it.

From the point where BLUE 3 sighted the second section of MIGs the two BLUE elements separated. Because of a radar failure, BLUE 3 did not have a SPARROW capability but did have two SIDEWINDERS and a 20mm. M61-16 gun. As BLUE 3 maneuvered to attack it is not definitely known whether BLUE 4 followed, although from his previous position, and in the absence of any radio transmission to the contrary, it was assumed that he did follow the maneuvers. As BLUE 3 made a descending 3 g left turn towards the MIGs (MIG 3 and 4) he was attacked by a single MIG (MIG 5) from the 7-8 o'clock position. Continuing in a left descending turn, BLUE 3 increased to about 4 g which was more than adequate to cause MIG 5 to overshoot. At this time a SAM call directed the attention of the crew of BLUE 3 elsewhere and although the SAM was not sighted the diversion was sufficient to cause BLUE 3 to lose sight of MIG 5 as well as MIG 3 and 4. A jinking climb at high speed was made to about 9000 ft in an effort to relocate the MIGs. The MIGs were not sighted, so BLUE 3 maneuvered to position his element opposite and above the lead element in an effort to get a rear quartering shot at the MIG which BLUE 1 was chasing. After at least one 360 degree, low-g turn at speeds from 420 kts to 500 kts between altitudes of 5000 ft and 10,000 ft, all during heavy flak and occasional SAM calls, BLUE 3 sighted a fireball at 3 o'clock low. His first impression was that an F-105 had been hit by a SAM but a quick visual and radio check confirmed BLUE 4 was not with BLUE 3. Just prior to seeing the fireball, BLUE 3 heard the transmissions of BLUE 1. BLUE 3 observed one chute, well away from the fireball.

While making a circle of the chute BLUE 1, 2 and 3 received a loud and clear signal from one emergency beeper.

During the entire encounter, which lasted four to five minutes, BLUE Flight encountered extremely heavy flak, five MIG-17 enemy fighters, and several SAMs. BLUE Flight departed the area with BINGO fuel, proceeded to WHITE ANCHOR for aerial refueling, and returned to a point 40 miles northwest of Hanoi to provide RESCAP for a F-105 pilot who had been shot down earlier. Intense ground fire was encountered while trying to pinpoint a beeper signal. At BINGO fuel, BLUE Flight proceeded to RED ANCHOR and aerial refueled before returning to base. Flight duration was 4 hours, 50 minutes.

MISSILE FIRING PARAMETERS
SPARROW (AIM-7E) FIRING BY BLUE 1

| | Attempt | Attempt |
|---|---|---|
| ITEM (AT TIME OF FIRING) | 1 | 2 |
| AIRCRAFT TYPE | F-4C | F-4C |
| ALTITUDE | 6000 ft | 5000 ft |
| MACH | .85 | .85 |
| HEADING | | |
| ATTITUDE | Level | Level |
| FIGHTER ASPECT TO TARGET | 10° | 0° angle-off |
| TARGET TYPE | MIG-17 | MIG-17 |
| ALTITUDE | 5000 ft | 5000 ft |
| SPEED | MACH .75 | MACH .75 |
| MANEUVER | Left-hand turn | Left-hand turn |
| FIRING RANGE | 1-1/4 mile | 1-1/2 mile |
| FIRING MODE | Boresight | Manual track range only |
| POLARIZATION CLUTTER GATE SELECTION BIT CHECK AND READY AND SELECT LIGHT | With range track linear override narrow satisfactory | Linear override narrow satisfactory |
| RESULTS | After initial drop AIM-7 guided up the MIG's tail but burst about 100 ft short at the MIG's 6 o'clock. | Same as first firing |

[redacted]

Event III-223

Aircraft Involved: Four F-105s vs five MIG-17s
Result: No damage
Vicinity of Encounter: 21°15'N/105°95'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 12 May 1967/1642H

Four F-105s (BLUE Flight) were providing flak suppression for a following strike flight of F-105s. (See Event III-225).

2. MISSION ROUTE

The flight approached the target area from the northwest, flying southeasterly along the west side of Thud Ridge.

3. AIRCRAFT CONFIGURATIONS*

F-105 BLUE 1, 3

2 450-gal. external fuel tanks
6 750-lb bombs
1 SIDEWINDER (AIM-9B)
1 QRC-160 ECM pod
1 M-61 20mm gun

F-105 BLUE 2, 4

2 450-gal. external fuel tanks
6 750-lb bombs
2 QRC-160 ECM pods
1 M-61 20mm gun

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Low, scattered clouds at 2500 ft with good visibility under the clouds, tops at 5000 ft.

| | BLUE | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Altitude: | | 2000 ft AGL | | |
| Heading: | | 152° | | |
| Speed: | | 550 kts plus | | |

Flight Formation: QRC-160 ECM Pod formation

5. INITIAL DETECTION

BLUE 1 (Lead) called, "MIGs at 12 o'clock." A flight of four MIG-17s was sighted at a range of approximately 1 to 1-1/2 miles in front of BLUE Flight. The MIGs were heading in the opposite direction.

6. ACTION INITIATED

BLUE Flight engaged afterburner and continued on course as the MIGs maneuvered toward the rear of BLUE Flight.

7. SITUATION DEVELOPMENT

At approximately the same time the flight of four MIGs was sighted, a single MIG-17 was sighted very low at 3 o'clock. The MIG made a climbing right turn towards BLUE Flight and fired his gun at BLUE 4, who was furthest to the right in the formation of BLUE Flight. BLUE Flight had accelerated to more than 600 kts. Unable to close the range, the MIG fired two missiles or unguided rockets at BLUE 3 and 4 which fell short by 2000 ft. The missiles (rockets) were fired at an estimated range of 1-1/2 miles. The flight of four MIGs, that had turned and attempted to close the range, turned too late and BLUE Flight outran them without further expenditure of ordnance. At some point during the encounter BLUE 4 fired a burst from his gun without effect.

8. ORDNANCE

| | (No. fired/No. hits) | |
|---|---|---|
| | 20mm | |
| BLUE 4 | Short burst/0 | |
| | 23/37mm | Rockets/AAM |
| MIG 5 | Unknown/0 | 2/0 |

*Estimated configurations obtained from an aircrew interview, but not definitely identified with this event.

[redacted]

10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 2 | | 600 | 70 | Instructed in the RTU |
| BLUE 3 | 5000 | 85 | | |
| BLUE 4 | 600 | 338 | 68 | |

Comments on this Encounter:

It looked like areas had been set up. First a MIG area followed by a heavy flak area nearer the target.

11. DATA SOURCES

Project Interviews: BLUE 2, 30 May 1967
BLUE 3, 30 May 1967

Messages: 355TFW OPREP-3 121359Z May 1967

12. NARRATIVE DESCRIPTION

During ingress to the target, BLUE Flight was intercepted by a flight of four MIG-17s and by a single MIG-17. The flight of four MIGs approached nearly head-on and were unable to attain a firing position on BLUE Flight, which had increased speed to more than 600 kts. The single MIG made a climbing, turning intercept into a position behind BLUE Flight. After firing at BLUE 4 with a gun, MIG 5 launched two AAMs or rockets. No hits resulted from either the gun firing or the rockets. At some time during the encounter BLUE 4 fired his gun. No hits were observed. BLUE Flight opened the range on the MIGs and continued to the target. After bombing the flak sites the flight departed the area heading northwesterly along the north side of Thud Ridge and crossed to the west at the northern end of the ridge.

A MIG warning had been received that positioned the MIGs relative to Hanoi. This allowed BLUE Flight to determine that the MIGs were in their area.

See Event III-225.

Aircraft Involved: Four F-105s vs MIG-17s
Result: No damage
Vicinity of Encounter: 21°15'N/105°45'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 12 May 1967/About 1642H

Four F-105s (BLUE Flight) were part of a large strike force from Takhli attacking a target near Phuc Yen aircraft. BLUE Flight was attacking with the flight of Event III-223. The force also included the flight of Event III-225.

9. EQUIPMENT PROBLEMS

Although the AIM-9B that BLUE 1 carried checked out all right on the ground, he could not get a tone after becoming airborne.

11. DATA SOURCE

Project Interview; BLUE 1, June 1967 (See Event III-225 for experience)

12. NARRATIVE DESCRIPTION

As BLUE Flight came off the target, BLUE 1 was several hundred yards in front of BLUE 2, 3 and 4. At this time some MIG-17s came in from the right and rolled in behind the trailing flight members.

BLUE Flight was at 600 kts and stayed ahead of the MIGs. There was no firing.

[redacted]

Event III-225

Aircraft Involved: Four F-105s vs four MIG-17s
Result: One MIG-17 destroyed
Vicinity of Encounter: 21°15'N/105°44'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 12 May 1967/1643H

Four F-105s (BLUE Flight) were inbound to the target on a bombing mission. A flak suppression flight of F-105s was approximately 2 to 3-1/2 miles ahead. (See Event III-223).

2. MISSION ROUTE

The strike group departed TACAN Channel 97 and proceeded to Thud Ridge then southeasterly along the west side of the ridge toward the target area.

3. AIRCRAFT CONFIGURATIONS

F-105 BLUE 1 and 3

2 450-gal. external fuel tanks
6 750-lb bombs
1 SIDEWINDER (AIM-9B)
1 QRC-160 ECM pods
1 M-61 20mm gun

F-105 BLUE 2 and 4

2 450-gal. external fuel tanks
6 750-lb bombs
2 QRC-160 ECM pods
1 M-61 20mm gun

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Low, scattered clouds at 2500 ft with tops at 5000 ft. Visibility was good below the clouds and was approximately five miles with haze among the scattered clouds.

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 6000 ft | | | |
| Heading: | 150° | | | |
| Speed: | 600 kts | | | |
| Fuel State: | 11,000 lb | | | |

Flight Formation: QRC-160 ECM Pod formation, echelon to the right.

5. INITIAL DETECTION

A MIG warning from the lead flight was received prior to sighting the MIGs. Two MIGs were sighted as they were maneuvering to attack the flight ahead.

6. ACTION INITIATED

BLUE 1 (Lead) turned right about 25° and fired approximately 200 rounds of 20mm at an angle-off of about 60° (4 o'clock to the MIG) at a range of 4000 ft.

7. SITUATION DEVELOPMENT

As the MIGs reversed their turn and commenced a descending turn to the left, BLUE 1 closed the range to 1000 ft and fired approximately 200 rounds to a range of 800 to 600 ft with 90° angle-off (9 o'clock to the MIG). BLUE 1 broke off his run at 3000 ft of altitude with the MIG trailing white smoke as it continued in a steep dive (70°) with about 130° of left bank. With about 75° angle-off, at a range of 1200 ft, BLUE 2 fired a short burst and noted that the MIG was already smoking. BLUE 2 lost sight of the MIG due to clouds but did observe a flash on the ground which could have been the MIG.

8. ORDNANCE

| | (No. fired/No. hits) 20mm | Remarks |
|---|---|---|
| BLUE 1 | 400 rds/unk | Gun was fired in two bursts of about 200 rounds each. Hits not observed; however, the MIG was trailing smoke after the second burst. Fired one burst. May have fired snapshots at MIG 3 and 4. See paragraph 10. |



[redacted]

[redacted]



9. EQUIPMENT PROBLEMS

No specific problems, but BLUE 1 stated he fired his gun in the air-to-ground mode rather than the air-to-air mode because he did not have time to change the switches in the cockpit.

10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 2912 | 1115 | 85 | |

Comments on this Encounter: BLUE 1 (Lead) -- BLUE 3 and 4 may have fired snapshots at MIG 3 and 4. The high speed of the F-105 (600 kts plus) prevented the MIGs from attaining a firing position on the F-105s.

11. DATA SOURCES

Project Interviews: BLUE 1 (Lead), 29 May 1967

Messages: 355TFW OPREP-3 1314312 May 1967

12. NARRATIVE DESCRIPTION

BLUE Flight was part of a strike group that encountered MIG-17 fighters while inbound to the target. As the lead flight, a flak suppression flight of four F-105s, approached the target area, the strike group was intercepted by five MIG-17s. In trying to intercept the lead flight the MIGs ended up in position for BLUE Flight to attack. One MIG was damaged and although not actually observed to impact with the ground, a fireball was sighted below a cloud which was attributed to the crash of the MIG. The MIGs left the area and BLUE Flight continued to the target without further MIG encounters.

Event III-226

Aircraft Involved: Four F-105s vs two MIG-17s

Results: Sighting

Vicinity of Encounter: 21°17'N/105°49'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 12 May 1967, 1645H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight ingressing to target at altitude 6000' and jinking observed two silver MIGs pass on a reciprocal heading at the same altitude.

[redacted]

[redacted]

Event III-227

Aircraft Involved: Two F-105Ds vs one MIG-21

Result: No damage

Vicinity of Encounter: 21°08'N/104°19'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 12 May 1967/1755H

Two F-105D airplanes (BLUE Flight) were on a road interdiction mission but were diverted to RESCAP. While performing the RESCAP mission a MIG-21 launched an AAM at BLUE 2. The missile did not appear to track and missed BLUE 2 by about 2000 ft. BLUE Flight was in a turn at an altitude of 20,000 ft when the MIG launched the missile. The MIG broke off his attack after launching his missile.

8. ORDNANCE

| | (No. fired/No. hits) AAM | Remarks |
|---|---|---|
| MIG-21 | 1/0 | Missile did not appear to guide, missed by 2000 ft. BLUE 2 in a turn at 20,000 ft. |

11. DATA SOURCES

Messages: 388TFW OPREP-4 121236Z May 1967
FASTEL DOI 1633 May 1967

Event III-228

Aircraft Involved: Four F-105s vs six MIG-17s

Results: No damage

Vicinity of Encounter: 21°25'N/105°42'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 13 May 1967, 1618H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight in ALFA group at altitude 9000' observed two silver MIGs approx five miles out and approaching flight from 9 o'clock, swinging to 7 o'clock; lead lowered nose to increase speed as a flight of F-4s proceeded to intercept MIGs; on egress, #3 and 4, while in vicinity of 21-35/105-35 at altitude 6000' were approached by 4 MIGs from 10 o'clock high in descending left turn; MIGs were attempting to pull into 6 o'clock position; when #3 first observed MIGs, he called for afterburner and turned on westerly heading; MIGs came to within 3500' of #3 at 4's 6 o'clock position, but broke off as section gained speed.

[redacted]

[redacted]

Event III-229

Aircraft Involved: Two RF-4Cs vs one MIG-21

Result: No damage

Vicinity of Encounter: 19°34'N/104°20'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 13 May 1967/1610H

## 11. DATA SOURCES

Messages, Reports:

432TRW 131108Z May 1967 OPREP-3 TUOC 03717
432TRW 131325Z May 1967 OPREP-3 TUOC 03724

## 12. NARRATIVE DESCRIPTION

Two RF-4Cs (BLUE Flight) departed Udorn and flew at 20,000 ft to 19°11'N/104°10'E. They then proceeded to the target (Route 7, segment J) at 19°24'N/104°08'E at 5000 ft AGL. The weather was broken clouds with four-eighths coverage with tops at 12,000 ft. It was clear above the clouds with good visibility.

At 1610H, after completion of the target run, BLUE Flight climbed to 22,000 ft, heading 098°, with a speed of 540 kts. When at 19°34'N/104°20'E, BLUE 1 Front saw a dark-colored aircraft at 14,000 ft altitude. The aircraft was at 9 o'clock position about 7 mi away and was on a heading of 098°. The aircraft turned into BLUE Flight and gained altitude in an attempt to make a tail pass.

BLUE Flight broke left, lit afterburners and turned into the aircraft. The aircraft seemed to be in excess of MACH 1 and could not turn with the RF-4C. At this point both BLUE 1 Front and Back identified the aircraft as a MIG-21. In the turn, the aircraft were about 1 mi apart.

The MIG-21 then departed the area heading 360°. BLUE 1 received three rings plus X-band TWS and range only for 10 sec as the MIG was making the pass from 7-8 o'clock position.

BLUE 1 then rejoined BLUE 2 and returned to Udorn.

The F-102 pilots from Udorn were querried but they were not in RP III, nor made a pass on any aircraft during this time. Another flight of RF-4Cs heard MIG calls as, "Bandits 80 southwest" at approximately 1558H. BLUE 1 and 2 did not hear this or any other MIG call, however. Also, there were no other F-4s in the area at the time of the incident.

[redacted]

[redacted]

Event III-230

Aircraft Involved: One F-105 vs one MIG-17

Results: One MIG-17 destroyed

Vicinity of Encounter: 21°19'N/105°36'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 13 May 1967/Just after 1623H

Four F-105s (BLUE Flight) were part of a force of 16 aircraft attacking the Vinh Yen Army Barracks (JCS 34.00). The actions of the other aircraft of this force are described in Events III-231, -233, and -238. The probable order of flights attacking the target was that of Events III-230, -231, -235, and -238.

2. MISSION ROUTE

Departed Korat and after refueling proceeded overland, via Channel 97, across the Red River delta to the target. Egress was overland. (See also Event III-233).

3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1

6 750-lb bombs
1 AIM-9B
2 450-gal tanks
1 QRC-160 pod
IFF standby

(BLUE 2, 3, 4 were probably identical except for the lack of AIM-9B on 2 and 4.)

MIG-17

Drop tanks
Camouflaged

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Visibility very good, some scattered cumulus clouds in the target.

| | BLUE 1 |
|---|---|
| Altitude: | 7000 ft |
| Heading: | 280-300° |
| Speed: | 550-600 kts |
| Fuel State: | 10,000 |
| Flight Formation: | BLUE 1 had just pulled off the target. Other flight members strung out behind. |

5. INITIAL DETECTION

On pulling out from his bomb run, BLUE 1 saw a camouflaged airplane at 10 o'clock low, turning to the left. The airplane was about 1000 feet away.

6. ACTION INITIATED

As BLUE 1 continued to observe the airplane, he saw a red star on the aircraft which identified it as a MIG. BLUE 1 then pulled in behind the MIG, who was opening on BLUE 1.

7. SITUATION DEVELOPMENT

The MIG apparently did not see BLUE 1 and without a sight, BLUE 1 fired 500 rounds at the MIG, hitting the MIG in the right wing. The MIG caught fire and broke down and to the right. BLUE 1 could not follow, but BLUE 2 saw the MIG burning. BLUE 1 is credited with a kill.

8. ORDNANCE

(No. Fired/No. Hits)

| | Cannon 20mm | Remarks |
|---|---|---|
| BLUE 1 | 2/1 | Two bursts for a total of 500 rounds. |

9. EQUIPMENT PROBLEMS

None



[redacted]

## 10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 4000 | 900 | 53 | Primarily TAC experience. First time he had seen a MIG. |

Comments on this Encounter:

Felt his training and long experience helped, since things happened so fast that he was forced to react without thinking about it. An individual with less experience would have had some problems.

Would have liked a shorter-range missile.

Comments from Overall Experience:

Wants to be able to switch from ground attack mode to air-to-air attack without letting go of throttle and stick.

Would like a computing gun sight that can be used for missiles-air at the same time.

The enemy does not hesitate to use flak even when there are MIGs in the area. They appear to have a system in which the AAA outside a given corridor will shoot across or over the corridor where the MIGs are operating. In this case the MIGs apparently have an altitude restriction. SAMs are also fired when the MIGs are up.

## 11. DATA SOURCES

Project Interviews: BLUE 1, 6 June 1967

Messages, Reports: 388TFW 131145Z May 1967 OPREP-3 DOI 1654
388TFW 131208Z May 1967 OPREP-3 DOI 1658

## 12. NARRATIVE DESCRIPTION

BLUE Flight was one of four flights attacking JCS 34.00. BLUE Flight was the last flight to hit the target, and the force had proceeded inbound in a gaggle.

Inbound to the target BLUE Flight got launch lights intermittently but no SAMs were launched. The IRON HAND Flight, which proceeded the strike flights, indicated that it was probably a MIG day. MOTEL, the warning agency, also was broadcasting numerous MIG warnings over guard channel. No flak was seen inbound.

As BLUE Flight proceeded inbound, they heard the first flight to hit the target call, "MIGs over the target." BLUE 1 concentrated on acquiring the target, and as he rolled in he heard members of previous flights calling that they were engaged with MIGs.

BLUE 1 concentrated on the target, and dropped his ordnance. As he started to pull the nose up he looked left and low and saw a camouflaged airplane. At this time BLUE 1 was at 6,000 to 7,000 feet altitude, in full afterburner, heading 280° to 300°, with a speed between 550 and 600 knots. The MER and external tanks were still on the airplane.

BLUE 1 felt that it was not unusual to see a camouflaged airplane, when hitting a target, due to the proximity of other friendly aircraft. When first seen, the aircraft was about 1000 feet away at 10 o'clock low. The aircraft was in a left turn and was going faster than BLUE 1.

As BLUE 1 continued to observe the aircraft he saw red stars on it and therefore recognized it as a MIG. (BLUE 1 felt that perhaps the MIG was attempting to position on F-105s which had already struck the target and never saw him.) BLUE 1 then saw the big vertical tail and identified it as a MIG-17. He did not notice the external tanks until they were seen in the gun camera film.

The MIG made no evasive maneuvers and BLUE 1 pulled in behind the MIG and started firing. He observed no hits, and realized that this was due to the fixed-sight pipper which was set at 126 mils for bombing.

BLUE 1 then stopped firing and was going to set up the sight when the MIG reversed to the right. BLUE 1 then had to pull hard to stay with the MIG. BLUE 1 pulled his nose past the MIG and started firing again, still without a computing sight. As BLUE 1 passed his bullet stream through the MIG, he observed hits on the MIG's right wing tip, and then an explosion at the right wing root. BLUE 1 also saw hits on the MIG's nose and some pieces coming off the airplane.

When he opened fire the second time, BLUE 1 scored hits at about 2000 to 2200 feet range. The first attempt was made at a closer range since the MIG was pulling away from BLUE 1.

When the MIG was hit, he broke down sharply and to the right. As the wing exploded, BLUE 1 stopped firing, then broke left and passed over the MIG. The MIG at this time was at about 110° to 120° of bank. BLUE 1 heading in a generally southeasterly direction could then see Thud Ridge.

BLUE 1 looked back and saw the other members of his flight at 7 o'clock, 3000 to 4000 feet back. He continued to turn and the flight rejoined. No flight member except BLUE 1 actually saw the MIG-17. However, when coming off the target one other flight member (OPREP indicates BLUE 2, interview says BLUE 3) saw an explosion and thought that BLUE 1 had been hit. While seeing this, the flight member was turning right as a pre-planned post-target jink and when he turned back to the left BLUE 1 came up in front. No flight member saw the MIG impact.

The whole encounter was estimated by BLUE 1 to have lasted 5 to 90 seconds.

In all firings BLUE 1 expended a total of approximately 500 rounds of ammunition. BLUE 1 fired the gun at the MIG because he was too close to fire the SIDEWINDER. By the time the MIG had gained separation, he was maneuvering too much for BLUE 1 to use the missile.

While in the target area BLUE 4 saw a SAM but no evasive action was required. The flight did encounter intense 37/57/85mm AAA from the target area.

[redacted]



Aircraft Involved: Four F-105s vs 4 MIG-17s
Results: No damage
Vicinity of Encounter: 21°17'N/105°35'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 13 May 1967/about 1623H

Four F-105Ds (BLUE Flight) were part of a strike force of 16 aircraft attacking the Vinh Yen Army Barracks (JCS 34.00). BLUE Flight was performing flak suppression for the other flight members. The actions of the other aircraft of this force are described in Events III-230, -233, and -238. The probable order of flights striking the target were the flights of Events III-230, -231, -233, and -238.

2. MISSION ROUTE

Departed Korat and after refueling proceeded overland via Channel 97, across the Red River delta direct to the target. Egress was also overland. (See also Event III-235).

3. AIRCRAFT CONFIGURATIONS

F-105D — BLUE 1, 2, 3, 4

4 CBU-24s
2 450-gal tanks
1 QRC-160 pod
1 AIM-9B SIDEWINDER on B-1 and B-3 only

MIG-17

Silver

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Visibility good with scattered clouds over the target.

| | BLUE 1, 2 |
|---|---|
| Heading: | 250° |
| Altitude: | 6,000 ft |
| Airspeed: | Unknown |
| Fuel State: | " |
| Flight Formation: | " |

5. INITIAL DETECTION

BLUE Flight sighted 2 MIG-17s over the target as they rolled in.

6. ACTION INITIATED

BLUE Flight hit the target, ignoring the MIGs.

7. SITUATION DEVELOPMENT

As BLUE 1 and 2 jinked off the target, 2 MIG-17s appeared in front of them. BLUE 2 got a shot at one of these MIGs but scored no hits. Also a single MIG-17 passed between BLUE 3 and 4 as they started their roll-in.

8. ORDNANCE

(No. fired/No. hits)

| | 20mm Cannon | Remarks |
|---|---|---|
| BLUE 2 | 1/0 | Fired 440 rounds |

9. EQUIPMENT PROBLEMS

None.

10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 2 | -- | 300 | 55 |

Comments on this Encounter:

BLUE 1 - Since they were dropping CBUs and did not require precise sighting, the sight was set up for guns-air. The MIG was too close to set up the sight if it was already set up.

[redacted]

[redacted]



11. DATA SOURCES

Project Interviews: BLUE 1, 7 June 1967

Messages, Reports: 388 TFW 131140Z May 1967 OPREP-3 DOI 1655
388 TFW 131208Z May 1967 OPREP-3 DOI 1658

12. NARRATIVE

BLUE Flight was one of the first two flights on the target. As they rolled in, they sighted 2 MIG-17s (MIG 1,2) right over the target. By the time they expended their ordnance, however, MIG 1 and 2 were out of sight.

Immediately after pull off from the target, when BLUE 1 and 2 were jinking left at an altitude of 6,000 ft, heading 250°, they saw two more MIG-17s (MIG 3,4). At this time BLUE Flight was one mile south of 21°17'58"N/105°35'22"E. MIG 3 and 4 were at BLUE 1's 2 o'clock going to 10 o'clock at 1,500 ft range, and were turning in front of BLUE 1.

BLUE 1 was unable to achieve a firing position. BLUE 2 stayed with the MIGs as they moved to his 12 o clock and fired 440 rounds at one (MIG 4) without any visible results.

As soon as MIG 4 saw BLUE 2 coming in on him, he broke hard right and passed between BLUE 1 and 2 who were about 300 ft apart at this time. MIG 4 was silver with two external wing tanks. The other MIG was not observed again.

As BLUE 3 and 4 started their roll into the target from 17,000 ft altitude a MIG-17[1] (MIG 5) passed between them. This MIG was headed in the opposite direction to BLUE 3 and 4.

When in the target area BLUE Flight observed AAA and a SAM which burst in front of the flight about 300 ft in front of BLUE 4.

[1]Suspected to be one of the others seen.

[redacted]

[redacted]

Event III-232

Aircraft Involved: Four F-4Cs vs nine MIG-17s
Results: No damage
Vicinity of Encounter: 21°40'N/105°12'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 13 May 1967/1610H

Four F-4Cs (BLUE Flight) were flying MIGCAP for a strike force which was attacking JCS 19.00 (see Events III-230, -231, and -233 for strike force MIG encounteres). The flight of Event III-235 also was part of the MIGCAP.

## 2. MISSION ROUTE

BLUE Flight departed Ubon and after aerial refueling proceeded to the northwest end of Thud Ridge. It was in this vicinity that the engagement occurred. (See Event III-235.)

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

4 AIM-7E SPARROW
4 AIM-9B SIDEWINDER
1 370-gal external tank
1 600-gal centerline tank
1 QRC-160 ECM pod

MIG-17

Bright silver
Red star on vertical tail
Wing tanks on one MIG
One MIG had four broad orange and green stripes around rear of fuselage
Had afterburners
One had black rails on the wings

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered clouds at 4000 feet with tops at 6000-8000 feet. Visibility good.

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 9-10,000 ft | | | |
| Heading: | 096° | | | |
| Speed: | 540 KTAS | | | |
| Fuel State: | 14-16,000 lb | | | |

Flight Formation: Pod formation on the left rear of the strike flights. Elements to the right, BLUE 2 on the left.

## 5. INITIAL DETECTION

BLUE Flight heard MIG calls from the agencies and inbound strike flights, but not for the MIGs that BLUE Flight saw. BLUE 1 backseat initially acquired four MIG-17s at 9 o'clock low. The MIGs were in an east-west turn at about 5000 feet altitude.

## 6. ACTION INITIATED

BLUE Flight went to manual frequency and turned left into the four MIGs.

## 7. SITUATION DEVELOPMENT

In the turn, BLUE Flight was jumped by four more MIG-17s. BLUE 2 was unable to communicate with BLUE 1 because he was on a different frequency, and became separated from BLUE 1 when he was attacked by two MIG-17s, one of which fired at him. BLUE 2 then disengaged and egressed.

[redacted]

BLUE 1 then attacked the MIGs that were originally sighted and fired two SPARROWS at one MIG. Both SPARROWS missed when fired in the boresight mode. BLUE 1 subsequently made six more passes at the MIGs but could not achieve a firing position. Although BLUE 1 never saw a MIG fire at him, BLUE 1 backseat observed one MIG-17 to fire at them from out of range.

During the initial turn, BLUE 3 and 4 were attacked by four MIG-17s who overshot. BLUE 3 and 4 then started to come back but were fired on by two more MIG-17s. BLUE 3 and 4 disengaged again. On return to the battle area, they saw four more MIG-17s, low. As BLUE 3 and 4 turned to attack the MIGs, they were, in turn, attacked by two more MIGs. The MIGs were firing. One of the low MIGs made a head-on pass, and when BLUE 4 reached BINGO fuel, they egressed.

8. ORDNANCE

(No. fired/No. hits)

| | SPARROW AIM-7E | Cannon | Remarks |
|---|---|---|---|
| BLUE 1 | 2/0 | | Fired in boresight |
| MIG-17 | | 1/0 | At BLUE 2 |
| MIG-17 | | 1/0 | At BLUE 1 |
| MIG-17 | | 1/0 | At BLUE 3 and 4 |
| MIG-17 | | 1/0 | At BLUE 3 and 4 |
| MIG-17 | | 1/0 | At BLUE 3 and 4 |
| MIG-17 | | 1/0 | At BLUE 3 and 4 |

9. EQUIPMENT PROBLEMS

None

10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 (Front) | 3000 | 250 | 65 | ADC experience |
| BLUE 2 (Front) | 3300 | 200 | 65 | TAC and KC-135 |
| BLUE 3 (Front) | 3000 | 170 | 54 | TAC background |

Comments on this Encounter:

BLUE 1 (Front) - Should have tried for more separation on the attacks.

BLUE 2 (Front) - When engaged, his airspeed was too low. This was due in part to the requirement to stay with the F-105s. Due to the location of the encounter the F-105s had not started to increase their speed for the run into the target.

It appeared that the MIGs were staying in a fixed geographical area. Therefore the tactic was to enter this at high speed and then dash out after the attack.

BLUE 3 (Front) - The lack of visibility at 6 o'clock prevented BLUE 3 from knowing when the MIGs had disengaged.

The biggest lesson learned was the experience gained for the backseater so he could know when the enemy was in a really critical position. The backseater needs to be able to provide this information since he can see more to the rear than the frontseat.

11. DATA SOURCES

Project Interviews: BLUE 1 (Front), 4 June 1967
BLUE 2 (Front), 4 June 1967
BLUE 3 (Front), 4 June 1967

Messages, Reports: 8TFW 131600 May 1967 OPREP-3 DOI 05234
8TFW 131220 May 1967 OPREP-3 DOI 05229
8TFW 140714 May 1967 OPREP-3 DOI 05243
AIM-7D/E Missile Performance Report, BLUE 1

12. NARRATIVE DESCRIPTION

BLUE Flight was part of the MIGCAP for a strike force attacking JCS 19.00. BLUE Flight was trailing the strike force about 2000 feet high and one-half to three-quarters of a mile back, and the other F-4 flight (Event III-231) was about half way up the line of bombers.

When the centerline tank became dry (at near the point where they crossed the Red River) it was jettisoned.

On the way into the target, just before the flight reached Yen Bay, they heard a MIG warning saying that the MIGs were north and west of Hanoi. The lead F-4 flight (Event III-231) also called a single MIG at 9 o'clock. Consequently, BLUE flight was looking for MIGs at 9 o'clock.

BLUE 1 backseat then saw four silver MIG-17s circling low at 9 o'clock. BLUE 1 then started a left descending turn into the MIGs. At this time BLUE 1 called the flight to make

a prebriefed change from the common strike frequency to a manual frequency which would be used just by BLUE flight (a change not made by BLUE 2).

As BLUE flight turned to attack the four low MIG-17s, other MIG-17s made a coordinated attack on BLUE flight from the right and high. These latter MIG-17s were not seen by any member of the strike force or the other flight of F-4Cs. As a result of this attack, BLUE flight split up, and the actions of the three independent units will be described separately.

BLUE 1

BLUE 1 broke to the left after the four low MIGs. Since he did not know that BLUE 2 was out of radio contact, he assumed all was well since no calls of MIGs at 6 o'clock was received. After about 90 degree of turn, BLUE 1 looked for BLUE 2 but could not find him. However, BLUE 1 continued to maneuver, mostly in the vertical, and subsequently lost contact with BLUE 3 and 4 also.

As BLUE 1 continued to turn, he again saw the original four low MIG-17s going around in a small orbit at about 2000 feet altitude. BLUE 1 was in a good position so he started an attack. However, since the aircraft he was attacking was tail on, he was not sure if they were BLUE 3 and 4 or MIGs. At a range of about 2 miles, BLUE 1 made positive identification and obtained a lock-on in the boresight mode. At about one and one-half miles, BLUE 1 fired a SPARROW missile. When he fired, BLUE 1 was at 480 KTAS, and 3000 feet altitude pulling a 2 g, in a slight climb. The MIG-17 was at about 300 knots. About the time BLUE 1 fired, the MIG-17 had tightened his turn and was pulling 6-8 g's in a 90 degree bank. BLUE 1 kept tracking the MIG with the pipper during the missile flight. The SPARROW seemed to guide, but did not make the turn and missed the MIG by 200-300 feet, passing behind.

BLUE 1 then pulled some lead on the MIG-17 and about one-half mile range fired the second SPARROW. BLUE 1 had pulled sufficient lead so that the MIG was just on the radome. The missile went ballistic and passed 100 feet in front of the MIG. When the second missile was fired, BLUE 1 and the MIG were at about the same altitude and airspeed as the first shot, with the MIG still in a high-g turn. At the second firing the MIG was almost 90 degree angle off to BLUE 1.

Although BLUE 1 thought he was firing in full system, interlocks out, the backseat had not switched to full system. Therefore, BLUE 1 fired in the boresight mode with a range lock.

Before firing, the select and ready lights were indicating satisfactory. The polarization was linear and clutter was normal. Gate selection was wide.

BLUE 1 then went into a high speed yo-yo to reposition on the MIGs. He pulled up to 8-10,000 feet altitude, clearing his 6 o'clock. The MIGs were still turning in their "wagon wheel," so BLUE 1 went 4-5 miles away and then descended low and approached the MIGs at 600 knots, trying to get a lock-on. BLUE 1 did not stay high for long periods due to the threat of SAMs. BLUE 1 made 6 passes, similar to the one described above, and although he obtained a radar lock-on to a target on two of these, no ordnance was fired. This occurred, since that by the time acquisition and lock-on was completed, BLUE 1 was too close. As BLUE 1 would start his attack, the MIGs would start to turn into him and three of the attacks resulted in head-on passes. The passes were not all made on the same MIG. All of the lock-ons that BLUE 1 achieved were made in the boresight mode. Due to the MIGs' maneuvers, BLUE 1 was unable to achieve a tail shot with a SIDEWINDER.

During the maneuvers BLUE 1 backseat was clearing the 6 o'clock, since he was able to see MIGs closer to the 6 o'clock then BLUE 1 front. Although the MIGs tried to get into a firing position, they were unsuccessful except for one case. In this situation BLUE 1 back saw a MIG-17 firing but the MIG was out of range.

BLUE 1 called BLUE 3 and 4, and after 3-4 minutes located them. Sometime during BLUE 1's passes he saw BLUE 3 and 4 making a head-on pass with a MIG.

BLUE 1 reached BINGO fuel as the strike force was passing back through the area, so he egressed. When BLUE 1 reached the tanker, the flight of Event had preceded him.

BLUE 2

During ingress BLUE 2 heard MIG calls, one for a silver airplane, but was unable to identify them as having been made by any specific flight. When BLUE Flight was several minutes prior to the turn point, BLUE 2 heard a call of MIGs at 9 o'clock.

BLUE 2 then saw BLUE 1 start a gradual left turn, but BLUE 2 did not see any MIGs. BLUE 2 continued to look for MIGs and then noticed that BLUE 1 had increased his turn to the left. At this time BLUE 2 went to afterburner and executed a barrel roll over the top to get on the outside of BLUE 1's turn and get into position.

As BLUE 2 dropped down on BLUE 1's right wing, BLUE 2 front looked to his left and saw a single MIG-17 about 1200-1500 feet away, making a diving turn from 7-7:30 o'clock. BLUE 2 was heading about east and the MIG was approaching from a southerly heading.

BLUE 2 front had prebriefed to have the backseat change radio channels, but this was not accomplished. Therefore, the other flight members did not hear BLUE 2's call of "MIGs at 7 o'clock." Also BLUE 1 did not see BLUE 2's situation.

BLUE 2 did not realize that he was on the strike frequency so he then started to turn right to permit BLUE 1 to sandwich the MIG. As BLUE 2 started to turn, BLUE 2 back called for a tank drop, and since BLUE 2 was at 330 KIAS at this time, he jettisoned the left outboard tank. (The centerline tank had been previously jettisoned.) When the tank was jettisoned the first MIG broke off. (This was seen by BLUE 3 backseat.)

As BLUE 2 continued in his right break, he was attacked by another MIG-17 who was shooting at BLUE 2. This MIG was about 750-1000 feet away. BLUE 2 backseat could see the underside of the MIG and the tracer ammunition. BLUE 2 at this time was at 6 g in burner but at a low airspeed.

With the backseat keeping track of the MIG, BLUE 2 then unloaded and tried to pick up airspeed, and at the same time attempted to jink sufficiently to spoil the MIG's tracking solution. BLUE 2 passed through a cloud at about 4000 feet and then saw the Red River. He did a 180 degree turn and since neither the MIG nor the other flight members were seen, BLUE 2 then egressed to a position outside of SAM coverage. On instructions, he then went to the tanker.

BLUE 3 and 4

BLUE 3 and 4 heard the MIG calls from the F-105s indicating MIGs to the left. They followed as BLUE 1 went into a left turn, selecting afterburner to stay with him. The left turn took them away from the strike force and after about 20 degrees of turn BLUE 3 saw a MIG-17 off to the left, making a 90 degree, low attack on BLUE 3 and 4. The MIG was pointed directly at BLUE 3 at this time, making it difficult to judge the distance to the MIG.

BLUE 3 continued to unload, thinking that BLUE 1 had seen this MIG; therefore, he did not call it. As the MIG closed, BLUE 3 and 4 tightened their turn and the MIG overshot. There were three more MIGs behind the first one. The second two were together, followed by a single MIG at the end. During this turn BLUE 3 backseat called a MIG-17 on BLUE 2.

At this time BLUE 3 and 4 split off from BLUE 1 and 2, turning inside from the right, and unloaded and accelerated to about 600 knots, after about 180 degrees of left turn. At this time BLUE 3 started to pull the nose up to turn back, but the backseat called two MIG-17s at 6 o'clock shooting. Although the MIG-17s were at about 1200 feet range, they were not visible from the front seat, and BLUE 3 felt they were not an immediate threat. He continued a 2 g descending turn and headed for the Red River.

BLUE 3 could not tell when the MIG disengaged due to the poor visibility at 6 o'clock. He also was not communicating well with the backseater (semantics confusion, not equipment problems).

BLUE 4 stayed with BLUE 3 throughout the encounter. They both came under 85mm AAA fire from along the Red River. When BLUE 3 reached the Red River he came out of afterburner, turned, slowing to 400 knots and jettisoned his external tank. Then BLUE 3 and 4 selected afterburner and after contacting BLUE 1 returned to the battle area at 520 knots, and 5000 feet altitude, heading east. The fuel state at this time was about 8000 pounds.

BLUE 3 then saw four MIG-17s in a left turn at about 10 o'clock low. The MIGs were at about 3000 feet, so BLUE 3 started to execute a high speed yo-yo to 10,000 feet altitude to position for an attack. As he passed through 6000 feet, BLUE 3 backseat called two MIG-17s at 6 o'clock. These MIGs were shooting at BLUE 3 and 4.

BLUE 3 and 4 then unloaded and continued to turn. The two MIGs at 6 o'clock fell behind, out of position. The MIGs which were seen at low altitude reversed in a right turn, and as BLUE 1 continued his left turn at 3 g he spotted a MIG-17 in a right turn. BLUE 1 was about 40 degrees angle off and considered shooting, but the backseater was looking at the trailing MIGs. At this time another aircraft came into view. The aircraft was heading toward BLUE 3 and BLUE 3 had a shot, but hesitated for a moment to make a positive identification. By this time the aircraft, identified as a MIG, was inside missile range and after approaching to several thousand feet, the MIG broke right.

BLUE 4 at this time called BINGO with 6000 pounds of fuel so BLUE 3 and 4 egressed by unloading and accelerating to 600 knots. As they crossed the Red River they again received AAA fire and a SAM was fired, passing between BLUE 3 and 4.

BLUE 3 and 4 then continued to the tanker.

BLUE Flight was engaged with the MIGs for about 12 to 15 minutes.

It was felt that the MIG tactics in this encounter were to decoy the F-4s with the low flight of MIGs while a high flight of MIG-17s performed the attack.

Aircraft Involved: Five F-105s vs three MIG-17s
Results: Two MIG-17s destroyed
Vicinity of Encounter: 21°28'N/105°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 13 May 1967/About 1620H

Four F-105Ds (GREEN Flight) were part of a 20 aircraft strike force attacking the Yen Vien Railroad Yard (JCS 19.00). The other flights of this force which encountered MIGs were those described in Events III-237 and -238. The MIGCAP for this force was provided by the aircraft of Event III-232.

There was IRON HAND, and ECM (B-66 aircraft) support for this mission.

2. MISSION ROUTE

GREEN Flight departed Takhli and proceeded to refuel on GREEN ANCHOR. The flight then proceeded to the Red River on a heading of 030 and then on a heading of 090 to Thud Ridge. They then proceeded down Thud Ridge to the target. Egress was the reverse route.

3. AIRCRAFT CONFIGURATIONS

F-105D GREEN 1,3

Centerline MER rack (Stores had already been jettisoned on the target)

2 450 gal tanks (dry)

1 AIM-9B

1 QRC-160 POD

F-105D GREEN 2, 4

Carried a QRC-160 pod in place of the 1 AIM-9B.

IFF-standby; TACAN-receive only

MIG-17

Dull silver

One was observed to have an afterburner

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered cumulus, clear below the clouds.

| | GREEN 1, 2, 3, 4 |
|---|---|
| Altitude: | 7000-7500 |
| Heading: | 260° turning from 310° |
| Speed: | 0.9 Mach (550 knots) |
| Fuel State: | 8000 lb |

Flight Formation: Pod formation modified for MIG defense. GREEN 3 was line abreast of Lead. Element was to the right.

5. INITIAL DETECTION

While egressing two MIG-17s turned in front of GREEN Flight, about a mile away.

6. ACTION INITIATED

GREEN Flight attacked the MIGs.

7. SITUATION DEVELOPMENT

GREEN fired a SIDEWINDER at a MIG, resulting in a kill. GREEN 3 attacked another MIG and also shot him down with a SIDEWINDER. GREEN 3 was subsequently attacked by another MIG-17 who fired at him. GREEN 3 disengaged and the flight egressed without further encounters.

8. ORDNANCE

| | SIDEWINDER AIM-9B | Cannon | Remarks |
|---|---|---|---|
| GREEN 1 | 1/1 | | One MIG destroyed |
| GREEN 3 | 1/1 | | One MIG destroyed |
| MIG-6 | | 1/0 | At GREEN 3 |

9. EQUIPMENT PROBLEMS

None.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| GREEN 3 | 2500 | 3-40C | | ADC Experience |

Comments on this Encounter

Don't try to turn with a MIG-17. Must attack only those MIGs that are in a 10-15 degree cone in front of the F-105, so that the speed can be kept up, and the MIG closed on rapidly.

A MIG flying in between other aircraft is a difficult target. During ingress the aircraft are spaced too tightly to fire.

If you have a two mile separation of flights, the SIDEWINDER can be fired at MIGs between the flights.

GREEN 3 liked the SIDEWINDER, and if the MIGs stayed out in force he would propose carry the two missile pylon.

11. DATA SOURCE

Project Interview: GREEN 3, June 1967.

Messages, Reports:

355 TFW 131400Z May 1967 OPREP-3 DOTO-O-11685

355 TFW 131531Z May 1967 OPREP-3 DOTO-O-11691

12. NARRATIVE

GREEN Flight was the last flight to strike the target. On ingress, as GREEN Flight turned to go down Thud Ridge, the escort flight of F-4C (Event III-232) broke off to the left and became engaged behind GREEN flight, to the east. This engagement was still under way in the same area some four minutes later when GREEN 3 came back up the Ridge.

While coming down Thud Ridge, GREEN 3 had seen the IRON HAND aircraft off to the left at 10 o'clock, firing their SHRIKE missiles toward the target area.

During ingress MIGs were called by MIG alert, which indicated that the MIGs were at Hanoi and were moving to the northwest of Hanoi. GREEN 3 did see some MIG afterburner lights as the MIGs broke through the overcast about three minutes prior to the target. (This was at the same point at which MIGs were met on the way out.)

GREEN Flight expended its ordnance on the target and started to egress up Thud Ridge. A member of a previous strike flight had become separated due to engine trouble, and this F-105 (BLUE 2 of Event 162) had joined and was flying formation with the four members of GREEN Flight. GREEN 2 was on left of Lead, GREEN 3, GREEN 4 and BLUE 2 were stacked up to the right of Lead.

The flight of five members proceeded up Thud Ridge at a heading of about 310 deg. They passed through a cloud for about five seconds and on coming out found themselves at the turn point at the northwest end of Thud Ridge.

As they started to turn to the left one of the other flights called MIGs at the turn. GREEN 3 then saw two MIG-17s (MIG 1, 2) abou[redacted] off to the right and about a mile away. GREEN 1 called for the flight to at[redacted]Gs. GREEN 3 lit his afterburner at this time to gain speed.

When sighted the flight was at 21°28'N/105°30'E, heading 260 deg, at 550 knots at 7500 feet altitude. The MIGs were at about 1 o'clock to GREEN 3 and were at 7500 feet altitude, slightly descending, and turning to the right. This put GREEN flight at the MIG's 6 o'clock.

GREEN 3 rolled right and selected the MIG on left of the pair (MIG 2). As soon as GREEN 3 centered on the MIG, he received a tone from the SIDEWINDER. GREEN 3 had been off of the target for several minutes and he had set up for missiles.

At the same time as GREEN 3's attack, GREEN 1 selected the other MIG-17 (MIG 1) and commenced on attack. GREEN 1 fired his SIDEWINDER and the missile impacted directly on or very near the tail pipe. Pieces of MIG 1 immediately began coming off of the aircraft and grey smoke was trailing from the aft section. MIG 1 immediately broke hard left and headed down. GREEN 1 followed MIG 1 down and observed its impact at 21°33'N/105°28'E. This impact was also observed by BLUE 1 of Event III-237.

MIG 2 who was under attack by GREEN 3, started a left hand turn, however GREEN 3 had no trouble tracking the MIG with about 10 deg of left bank and only 1 g on the aircraft. At 4000 feet range level, GREEN 3 fired and the missile tracked true and exploded at MIG 2's right rear quarter at 4 o'clock. Just after GREEN 3 fired, GREEN 1 crossed over in front, but was behind the SIDEWINDER fired by GREEN 3.

When hit, MIG 2 immediately rolled up into a steep left bank to about 45 deg of bank with oil or a light grey smoke emanating from the rear.

GREEN 3 lit afterburner and pulled up into a hard left turn to try to keep MIG 2 in sight. MIG 2 at this time was heading about 120 deg and going back to GREEN 3's 8 o'clock position. GREEN 3 pulled up to 6-9000 feet and in doing so reduced his speed considerably.

Since GREEN 3 heard more calls of MIGs in the area, he continued a left turn but started down to pick up speed. At this time, he lost sight of MIG 2. When last seen MIG 2 had started a right turn. BLUE 2 saw MIG 2 impact at 21°31'N/105°28'E, and observed the tail to come off previous to the crash.

As GREEN 3 lowered his nose, he had completed about 180 deg of turn from his original heading. At this time GREEN 3 picked up a MIG-17 on the inside of GREEN 3's turn. This MIG-17 was MIG 6 of Event III-237. MIG 6 was above GREEN 3 and pointed at him. Although MIG 6 was shooting in the general area of GREEN 3, MIG 6 was too far away and was not pulling sufficient lead to threaten GREEN 3.

GREEN 3 felt that perhaps GREEN 4 was trailing and might be under attack so he rolled up and headed down at about a 30 deg dive until he reached 550 knots. By this time GREEN 3 could not see MIG 6.

GREEN 3 had separated from GREEN 1 and 2 on his initial attack on MIG 2. GREEN 4 had remained with him throughout the engagement although he did not see GREEN 3' SIDEWINDER detonate or the attack by MIG 6. GREEN 3 and 4 then egressed and by the time they reached the RED RIVER they had been joined by BLUE 2 and a single F-4C.

GREEN 3 did not see GREEN 1 fire his missile.

Event III-234

Aircraft Involved: Four F-4Cs vs at least ten MIG-17s

Results: Two MIG-17s destroyed

Vicinity of Encounter: 21°31'N/105°25'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 13 May 1967/1621H

Four F-4Cs (BLUE Flight) were part of a MIGCAP for a strike against JCS 19.00 (for strike flight events, see III-231, -232, -233). The flight of III-235 was also part of the MIGCAP.

2. MISSION ROUTE

BLUE Flight departed Ubon and refueled on ORANGE ANCHOR. From refueling, they proceeded direct to Channel 97, then direct to 21°38'N/105°55'E, then direct to 21°34'N/105°33'E, then direct to 21°05'N/105°55'E, then direct to 21°34'N/105°33'E, then direct to 21°38'N/105°55'E, then direct to Channel 97.

3. AIRCRAFT CONFIGURATION

F-4C BLUE 1, 2, 3, 4

4 AIM-7E SPARROW
4 AIM-9B SIDEWINDER
1 370-gal tank
1 QRC-160 pod
1 600-gal centerline tank
Camouflage paint

MIG-17

Bright silver, red stars bordered in gold on the wings
Had afterburner

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered clouds at 4000 ft. Tops at 6000-8000 ft. Visibility good.

| | BLUE 1 2 3 4 |
|---|---|
| Heading: | 270° turning from 330° |
| Altitude: | 9000-10,000 ft |
| Airspeed: | 550 kts |
| Fuel State: | 9000-10,000 lb |

Flight Formation: Pod element to the right, BLUE 2 on the left.

5. INITIAL DETECTION

While inbound, BLUE 1 backseat saw two MIG-17s low at 9 o'clock and called them. These MIGs were not a threat however and BLUE flight continued on with the strike force.

On egress BLUE 4 saw a MIG but it was lost in the clouds. Shortly thereafter, BLUE Flight saw an engagement between F-105s and MIG-17s.

6. ACTION INITIATED

BLUE 1 and 2 broke to go after the MIGs on the F-105s and BLUE 3 and 4 stayed high for cover.

7. SITUATION DEVELOPMENT

BLUE 1 started to attack one of the MIG-17s and fired two SIDEWINDERs at him as the MIG reversed. One SIDEWINDER hit the MIG for a kill.

BLUE 1 saw two more MIG-17s high and fired a SIDEWINDER at them. BLUE 1 did not have a tone and the missile missed. BLUE 1 attacked a third MIG with a SPARROW but the MIG and missile both disappeared into a cloud.

During the initial break, BLUE 2 became separated and egressed separately from the rest of the flight.

BLUE 3 and 4 saw a MIG and BLUE 3 locked on and fired three SPARROWs at the MIG. One hit and destroyed the MIG.

BLUE Flight then egressed.

8. ORDNANCE

(No. fired/No. hits)

| | SPARROW AIM-7E | SIDEWINDER AIM-9B | Cannon | Remarks |
|---|---|---|---|---|
| BLUE 1 | 1/0 | 3/1 | | Tried to fire two SPARROWs; one MIG kill |
| BLUE 3 | 3/1 | | | Tried to fire two SPARROWs; one MIG kill |
| MIG-17 | | | 1/0 | At BLUE 4 |

9. EQUIPMENT PROBLEMS

The centerline tank on BLUE 4 would not jettison.

10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 (Front) | 4200 | 825 | 22 | |
| BLUE 3 (Front) | 2800 | 150 | 25 | Second Route Package VI mission |
| BLUE 3 (Back) | 450 | 250 | 68 | |
| BLUE 4 (Front) | 3500 | 150 | 34 | All fighter experience |

Comments on this Encounter:

BLUE 1 - This was the first time that he saw indications of coordinated tactics between two flights of MIGs. This required the F-4s to keep flight integrity and element support. The offensive split is not any good if you are outnumbered.

The MIG tactic displayed on this day was as follows:

There were two groups of MIG-17s. One was a low element who stayed in a tight turn. There was also a high element of two or a flight of four. As the F-4s would attack the low element, the high flight could achieve an attack position. As the F-4s would disengage, the MIGs would switch with the low element floating high, and the gigh flight staying low.

BLUE 3 (Front) - On this day, SAMs were fired at then, and the F-4s dropped chaff. It was felt that the SAMs exploded in the chaff clouds. The Air Force and the Navy had experienced good results from chaff against SAMs. However, the F-4s had no chaff dispenser so the chaff was carried in the speed brakes. The chaff was dropped just before a turn since the ECM pod coverage was limited during maneuvers. There should be an intergral chaff dispenser on the aircraft.

Must stay in the vertical in order to successfully fight the MIG-17. Most of the fighter pilot training and experience is to get in close for a gun kill and this has become something of a reflex. It will take a lot of training to educate pilots to keep back in missile parameters. Due to the lack of experience, pilots returning with a little excess fuel were practicing air combat tactics.

BLUE 3 (Back) - Even though the first lock-on failed, a second try was worthwhile since the second lock-on held. It pays to keep trying. The battle is not over just because you have fired.

BLUE 4 (Front) - The man in the backseat was helpful due to the extra set of eyes since he could keep track of the MIGs. The failure of the centerline tank to jettison could have caused real problems if they had not disengaged when they did. The performance with the tank on is reduced sufficiently that BLUE 4 felt he could not successfully disengage or fight the MIG-17.

The flight was prebriefed for the wingman not to call MIGs unless they were a real threat.

It was important for the F-4 to be worked in the vertical. The vertical was used for two purposes, to out-zoom an enemy and to help reduce your turn radius. However, the maneuver was not used for both purposes at the same time (i.e., either/or).

The roll axis was used (i.e., a roll about the longitudinal axis) to reduce the angle off for AIM-9 firing.

When the element lead pulls out from a vertical maneuver, the wingman must use a roll opposite to the leader's direction of turn in order to stay in place. This makes the roll rate important, as well as slab (horizontal tail) authority.

11. DATA SOURCE

Project Interviews: BLUE 1 Front, 2 June 1967
BLUE 3 Front, late June 1967
BLUE 3 Back, 4 June 1967
BLUE 4 Front, 4 June 1967

Messages, Reports: 8TFW 131222 May 1967 OPREP-3 DOI 05229
8TFW 140714Z May 1967 OPREP-3 DOI 05243 Sections I and II
8TFW 131600Z May 1967 OPREP-3 DOI 05234
8TFW 140926Z May 1967 OPREP-3 DOI 05252
AIM-7D/E, Missile Performance Report BLUE 1 and 3

## 12. NARRATIVE DESCRIPTION

BLUE Flight was part of a MIGCAP supporting a strike force composed of 20 F-105 aircraft which were attacking JCS 19.00. The first three F-105 flights were in a "V" formation; two other flights followed 2 miles back. BLUE Flight was with the first three flights while the other MIGCAP flight (Event III-233) trailed the last F-105 flight.

The centerline tanks were jettisoned near Yen Bay but the tank of BLUE 4 would not release. Although this could have caused an abort, it was decided to continue on with the hung tank.

As the flight turned right to a heading of east, they heard MIG calls of 30 miles; 40 miles and then 50 miles northwest of Hanoi so they felt that they would see MIGs. About halfway between the Red River and Thud Ridge, BLUE 1 backseat saw two MIG-17s very low at 9 o'clock and called them out. BLUE 1 front did not see these MIGs as they passed under a cloud, but BLUE 3 did. Since the MIGs were not a threat to the strike force, BLUE flight maintained position and continued on.

About one minute later, MIGs started to threaten the last two strike flights and the other CAP flight (Event III-332) went after these MIGs. BLUE 1 heard the communication from that flight that they were changing frequency and, as prebriefed, BLUE Flight also changed over to an auxiliary channel. At this time the strike frequency was severely cluttered with SAM, AAA, and MIG calls from the strike and IRON HAND flights.

As BLUE Flight started down Thud Ridge, they heard the communications[1] resulting from the start of the engagement described in Event III-231. BLUE 1 contacted the lead of that event and inquired if help was needed.

The reply was "I've got one" and BLUE 1 interpreted this to mean there was one MIG, so BLUE Flight continued on with the strike force after advising the other F-4 flight.

As BLUE Flight continued down Thud Ridge they received 57mm and 85mm flak from the southern part of the ridge. Also four SAMs, in trail, were fired at the flight but they did not appear to guide. As the F-105s hit the target, BLUE Flight made a turn and positioned to escort the egressing F-105 flights back up Thud Ridge.

The F-105 force was spread out as they started back up the ridge. There were singles as well as groups of four and six; some were going up the west side, and others were going up the east side of Thud Ridge. BLUE Flight elected to stay with the group on the east side. Although BLUE Flight could see the F-105s on the west side of the ridge, they were partially obscured by the broken cloud deck. BLUE Flight found it difficult to keep up with the egressing force due to the F-105's high airspeed. Also during this time, two more SAMs were fired at BLUE Flight and BLUE Flight dropped some chaff.

On the way up the ridge, BLUE 4 called a MIG at 10 o'clock very low. BLUE 1 did not see this MIG and called BLUE 4 to take it. BLUE 3 then saw the MIG at 12 o'clock but he, too, lost sight of the MIG as it went into cloud. Several members of the flight observed the MIG at different times but they were unable to maintain contact long enough to start an attack.

All during the egress, BLUE Flight had continued to monitor the conversation of those members of Event III-233 which were engaged with MIGs. The number 3 man of this event requested aid; and at the northwest of Thud Ridge, BLUE Flight turned west to assist the other F-4s.

At this time, BLUE Flight was 2-3 miles east of Thud Ridge; and as they turned to a westerly heading, BLUE Flight saw at 10 o'clock a dogfight on the west side of the ridge between four F-105s and four MIG-17s.

The MIGs were first seen as flashes of silver at 5 to 10 mile range, and then were identified as enemy at 2 to 3 miles. The MIGs and the F-105s appeared to be in a level left turn at about 6000-7000 ft altitude in the vicinity of 21°30'N/105°25'E.

BLUE Flight jettisoned tanks (except BLUE 4's centerline tank), went afterburner, and approached in two elements in trail. On reaching the area of the engagement, BLUE 1 and 2 broke down into the MIGs while BLUE 3 and 4 crossed over to provide high cover. When they reached the area of the F-105s, BLUE Flight was at Mach 1.2. The elements split and the following description covers first, BLUE 1 and 2, and then BLUE 3 and 4.

BLUE 1 and 2

As BLUE 1 and 2 started after the MIGs, they observed the F-105s to be scattered. BLUE 1 and 2 concentrated on one F-105[2] with two MIG-17s about 1000 ft behind, firing at the F-105. BLUE 1 observed this from 2 miles out while he was in his descent. Since BLUE 1 was descending in afterburner, he was overtaking these MIGs rapidly.

[1]Such as "You got MIGs at 7o'clock"; "Little burner"; "Pull more g's"; "Get your airspeed back up."
[2]BLUE 1 thinks there could have been two F-105s.

The F-105, which was in a hard left turn, executed a 270° high-g snap roll underneath and headed for the deck out to the right. The MIGs were forced to overshoot and started to reverse to the right to go with the F-105.

BLUE 1 had been in a slight left diving turn and when the MIGs reversed, he started to pull up because he no longer had a good attack pass. (BLUE 1 could not turn with the MIGs.) Just before the MIGs disappeared under the radome at 6000-7000 ft range, they reversed to the left; so BLUE 1 continued his dive, put the pipper on the second of the MIGs, and fired two SIDEWINDERs.

When he fired, BLUE 1 did not remember (as per interview) having a tone, although a good tone was reported in the OPREP sources.[1] He was at about 500 kts at 6000 ft indicated altitude with the wings level in a slight dive. The MIG was in a slight left turn and BLUE 1 was about 10° angle off. He had 200 kts overtake on the MIG. BLUE 1 had been unable to obtain a radar lock-on in this situation due to ground clutter. BLUE 1 had just pushed the stick forward and put the pipper on the MIG. He had less than 2 g on the aircraft at firing.

After firing, BLUE 1 pulled off hard to the right and then reversed back to see the first SIDEWINDER detonate 30 ft behind the MIG. The second SIDEWINDER was unobserved. The MIGs, when first seen, had been in afterburner and had continued so for the entire engagement.

After the SIDEWINDER exploded, the MIG-17 continued on around to the left in a tight diving spiral, leaving his leader. The MIG was on fire from the left wing root all the way down the left side of the fuselage. Although BLUE maneuvered to try to keep contact with the MIG, the MIG was lost from BLUE 1's sight as it maintained the diving spiral. However, BLUE 4 backseat observed the MIG to enter a spin at 1500 ft altitude, burning fiercely. No ejection was seen. Although no flight member saw the MIG impact, BLUE 1 is credited with a kill.

Shortly after losing sight of the MIG that he killed, BLUE 1 saw two MIG-17s high at 10 o'clock. The MIGs were in a hard left turn. BLUE 1 immediately pulled the nose over and without a tone, fired one SIDEWINDER. The missile went ballistic, but BLUE 1 felt that it was fired too hastily to permit guidance and was fired outside g parameters.

At this time BLUE 1 was at 12,000-15,000 ft altitude. He then saw two MIG-17s at 8-9 o'clock heading down in a straight descent toward a cloud. The cloud was at about 3000 ft altitude. When seen, the MIGs were headed in the opposite direction to BLUE 1.

BLUE 1 turned and got behind one of the MIGs, within SPARROW range and with plenty of overtake. BLUE 1 achieved a lock-on in the boresight mode and switched to full system, interlocks out, although BLUE 1 was looking down on the MIG. BLUE 1 attempted to ripple fire two SPARROWs but the first one did not leave the aircraft.

When he fired, BLUE 1 was at about 4000 ft range. The MIG was at 5000 ft altitude and 0.78 Mach, heading about 200°.

BLUE 1 was at about 6000 ft altitude and 500 kts in a slight turn. He had first seen the MIG at about 2 miles range and lock-on was achieved at 1 mile. BLUE 1 fired under conditions of linear polarization and clutter override.

The SPARROW seemed to be tracking and both the MIG and the missile disappeared into the cloud at 21°36'N/105°23'E with the missile following by 1-1/2 to 2 seconds. BLUE 1 followed with a lock for sufficient time for missile intercept and then pulled off. Due to the size of the cloud, BLUE 1 was unable to check to see if the MIG came out of the cloud.

At this time, BLUE 1 recognized that he had lost BLUE 2 and was operating alone. Therefore, he called for BLUE 2 and both egressed.

BLUE 1 did not know exactly when BLUE 2 became separated; but during one turn, BLUE 1 turned hard into BLUE 2 and at the same time, BLUE 2 came very close to hitting an F-105. As BLUE 2 came over the top to dodge the F-105, he lost contact with BLUE 1. BLUE 2 then egressed.

BLUE 3 and 4

All of BLUE Flight saw the battle between the MIG-17s and F-105s about the same time. As BLUE Flight entered the battle, each element of BLUE Flight started after a separate target.

As BLUE 1 and 2 went after their MIGs, BLUE 3 backseat observed BLUE 1 to fire a missile and the missile to detonate near the wing root and the fuselage of a MIG-17.

As BLUE 3 and 4 entered the fight in a dive, BLUE 3 saw F-105s with two MIGs on their tails. He also saw two MIG-17s high but these were no threat. BLUE 3 also saw two more MIG-17s, inverted, in a rolling turn over the top, trying to dive on the F-105s. The MIGs were at 10,000 to 12,000 ft altitude.

[1]The PIPPER was set for the AIM-9 so BLUE 1 should have had a tone.

[redacted]



BLUE 1 was at Mach 1.2 at this time and since the last two MIG-17s were slow, he pulled up in an attempt to get a radar lock on them. BLUE 1 saw that he was going to be too close so he pulled up and barrel rolled to the outside. After completing this maneuver, he was still too close, so another one was executed. At this time, BLUE 3 was in a good position and achieved a radar lock-on one of the MIGs as the other split off.

BLUE 3 attempted to fire only two missiles from an overhead attack but inadvertently fired three. BLUE 1 had acquired the MIG in the boresight mode and had switched to full system, interlocks out. Just after the first missile was fired, the radar broke lock. BLUE 1 backseat immediately went back to boresight and obtained another lock-on and then switched back to full system. Shortly after the second radar lock was achieved, the second missile was fired followed by the third.

The first missile was fired when BLUE 1 was at about 10,000 ft altitude, at Mach 0.9, pulling 2-3 g's. The MIG was at about 8000 ft at Mach 0.8 heading about 220° in a slight diving turn. BLUE 1 was in a 20° to 30° dive with about 20° angle off, not in afterburner. The closing velocity was 50 to 100 kts. BLUE 1 had detected and locked on to the MIG at 2-1/2 mile range. For all firings, the system was set for linear polarization, normal clutter and narrow gate.

The first missile dropped below the nose out of BLUE 3's sight, failed to guide, and missed the MIG by about 100 ft. The second missile, fired in about the same conditions as the first except for a slightly lower altitude, dropped out of sight but reappeared, and was seen by BLUE 3 to impact the MIG-17 on top of the fuselage just behind the canopy: The MIG-17 disintegrated, resulting in a kill for BLUE 3. When the second missile was fired, the system had been switched to full system by the backseater and interlocks were still out. The third missile was fired in the same parameters as the second. It was last observed apparently guiding to the vicinity of the destroyed MIG-17. When hit, the MIG was at about 6000 ft altitude. All firings were made at 4000 to 5000 ft range.

Shortly after the third missile was fired, BLUE 3 was at a range such that he needed 4 to 5 g's to keep track of the MIG.

Shortly after the MIG exploded, BLUE 3 heard a call indicating MIGs at 3 o'clock. No call signs were given so BLUE 3 turned and checked that position but no MIGs were seen. BLUE 3 reversed and started to look for other MIGs but BLUE 4 called BINGO fuel.

BLUE 4 had stayed with BLUE 3 throughout the flight despite the hindrance of the centerline tank. (BLUE 3 had purposefully limited his use of afterburner.) When BLUE 4 called BINGO, he had 3000 pounds less fuel than BLUE 3.

As BLUE 3 and 4 entered their vertical maneuver, just prior to BLUE 3's firings, BLUE 4 observed a MIG-17 make a pass. BLUE 4 was climbing at the time and the MIG was making a level turn, and had about 40° angle off. Therefore, although the MIG was firing his cannon, he was not a threat to BLUE 4 and this MIG was not called to BLUE 3.

BLUE 4 watched BLUE 3 reverse in the vertical and fire his missiles and as the MIG overshot, BLUE 4 rolled in the opposite direction of BLUE 3's reversal and observed the first missile to miss the MIG-17 by about 100 ft: the second one hit the MIG. BLUE 4 did not see BLUE 3's third missile but he did not have BLUE 3 and the MIG under constant observation.

After BLUE 4 called BINGO, BLUE 3 saw two flights of F-105s with MIG-17s after them but the F-105s were accelerating away from the MIGs and were not in trouble. He saw the MIGs start to break away and BLUE 3 and 4 then unloaded and jinked out, joining some F-105s for egress.

BLUE 3 first saw BLUE 1's MIG spinning and also saw BLUE 1 once during the battle.

Although BLUE 3 was looking down on the MIG when he achieved a radar lock, the use of the boresight mode put the ground line in a different location than the MIG return and permitted acquisition.

BLUE 3 front did not realize that three missiles had been fired until he noticed during egress that three of the lights were out. BLUE 3 front was not certain which of the missiles hit the MIG. His plan was to fire two missiles at the first MIG and then drop back and fire two at the second MIG.

BLUE Flight reported 37/57mm fire from 21°30'N/105°25'E during the MIG encounter.

As part of the overall action of 12, 13, and 14 May 1967, the USAF Tactical Analysis Bulletin 67-4 indicated that intensity of MIG operations on those days was the highest that had been experienced at the time of the Bulletin publication (June 1967).

The aircraft of Events III-232 and III-233 could have encountered the same group of enemy aircraft; therefore, some of the MIGs seen by BLUE Flight of III-234 could be the same MIGs as those seen by the F-4s of Event III-231.



[redacted]

[redacted]

Event III-235

Aircraft Involved: Four F-105s vs 5 MIG 17s
Results: No damage
Vicinity of Encounter: 21°19'N/105°36'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 13 May 1967/1621H

Four F-105s (BLUE flight) were part of a strike force of 16 aircraft attacking the Vinh Yen Army barracks (JCS 34.00). The actions of the other aircraft of this force are described in Events III-230, -231, and -238. The probable order of flights striking the target were the flights of Events III-235, -231, and -230.

2. MISSION ROUTE

BLUE flight departed Korat and refuelled on RED ANCHOR. From RED ANCHOR the flight proceeded direct to 20°28'N/103°43'E then direct to the target 21°19'25"N/105°36'21"E. Egress was direct to 21°00'N/104°54'E, then direct to RED ANCHOR for post strike refueling The altitude to the target was 16,000 feet; from the target 10,000 feet.

3. AIRCRAFT CONFIGURATION

F-105D BLUE 1, 2, 3, 4

6 750-lb bombs (one aircraft had 6 500 lb bombs instead of the 750 lb bombs)

2 450-gal. wing tanks

1 AIM-9B (BLUE 1 and 3 only)

1 QRC-160 pod (BLUE 2 and 4 had 2 pods)

MIG-17

Silver

4. FLIGHT CONDITIONS PRIOR TO THE ENCOUNTER

Weather: 4/8 cover of scattered clouds. Visibility 15 miles.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 15,000 |
| Heading: | Unknown |
| Speed: | 0.9 Mach |
| Fuel State: | - |

Flight Formation: - Pod formation modified for MIG defense.
The element was up about 2000 feet high, with wingman almost level.
All members about line abreast.

5. INITIAL DETECTION

Just prior to roll in, BLUE 1 saw two MIG-17s, low. Inbound, BLUE flight had received MIG warnings from the agencies so they were looking for the MIGs.

6. ACTION INITIATED

BLUE flight proceeded to roll in on the target.

7. SITUATION DEVELOPMENT

BLUE 1 kept in contact with the two MIGs, and after bombing the target, started to attack them. Before he could fire on them, BLUE 1 was attacked by three more MIG-17s from 4 o'clock high. The lead MIG of this latter three fired on BLUE 1, and as BLUE 1 broke, the MIGs overshot and disengaged.

8. ORDNANCE

| | Cannon | |
|---|---|---|
| MIG-3 | 1/0 | at BLUE 1 |

9. EQUIPMENT PROBLEMS

None.

[redacted]

10. AIRCREW COMMENTS

| Experience | Total Hours | F-105 Hours | Combat Msns | Remarks |
|---|---|---|---|---|
| BLUE 1 | 5000 | 350 | 50 | Had flown most of Century series fighters and the F-4. |

Comments on this encounter

The MIGs had used a bait to try to trap the F-105s.

Comments on overall experience

BLUE 1: Liked the light indications on the F-105 to tell when the bombs come off.

There is a real switchology problem in going from air-to-ground to air-to-air. This needs to be simplified. There are too many switches to throw. In this engagement there was not enough time to do it.

Felt the MIG-17 would not use his radar for gun tracking so the radar warning would not do any good.

Liked the high speed at low altitude capability of the F-105.

11. DATA SOURCES

Project Interviews BLUE 1, 5 June 1967

Messages

388 TFW 131208Z May 1967 OPREP-3 DOI 1658

388 TFW 131141Z May 1967 OPREP-3 DOI 1656

12. NARRATIVE DESCRIPTION

BLUE flight was the lead flight of a strike force of 16 F-105s and BLUE 1 was the force commander. The 16 F-105s were in a "box" formation with two flights line abreast. Two flights of F-4s from Danang provided MIGCAP, flying behind and about 2000 feet higher than the strike force. While inbound to the target, BLUE flight heard warnings from the agencies (ETHAN), that MIGs were in the area. While at 15,000 feet altitude and just prior to roll in, BLUE 1 saw two silver MIG-17s (MIG 1, 2) flying in trail formation about 1000 feet apart. MIG 1 and 2 were about 10,000 feet below BLUE flight and did not appear to be making any attack.

BLUE flight then rolled in and just after setting up his bomb run with a roll into the left, BLUE 1, looked to his right and observed MIG 1 and 2 descend, almost parallel to BLUE 1's course, and start to make a left turn towards BLUE flight. At this time, it was not clear to BLUE 1 if the MIGs had seen him.

BLUE 1 released ordnance at 8000 feet, and as he came off the target he was going 0.9 to 0.92 Mach in minimum afterburner. The external tanks were still on. As soon as BLUE 1 got the nose up off the horizon he again saw MIG 1 and 2 who were at 10 o'clock level. The altitude was about 5000 feet.

BLUE 1, with the flight following in fingertip formation made a hard right turn to put the MIGs at 12 o'clock, and then, with the MIGs at about 2000 feet range in a hard left turn, BLUE 1 made a hard left turn to make a high deflection pass on MIG 1 and 2. At this time BLUE flight was at 21°19'N/105°36'E, heading about 340 degrees and the time was 1621H.

As BLUE 1 began to pull lead for a gun attack, he was attacked by three more MIG-17s (MIG 3, 4, and 5). The MIGs were in an echelon with MIG-4 and MIG-5 slightly behind MIG-3. These MIGs were silver in color with no markings noted. They made a quartering stern attack on BLUE 1 from 4 o'clock high. MIG 3 commenced firing across BLUE 1's left wing.

On seeing MIG 3, 4 and 5 attack, BLUE 2 called for BLUE 1 to break right. He called a second time that bullets were passing BLUE 1's wing. BLUE 1 had MIG 1 and 2 in the wind screen and was estimating lead (he did not have time to switch to a computing sight). When warned the second time, BLUE flight broke right and after about 40 degrees of turn reversed back to the left.

The right break caused MIGs 3, 4, and 5 to overshoot and they went over the flight to the south and were not seen again. The first two MIGs, "the bait" (MIG 1, 2) had

initiated a hard climbing turn once they had brought BLUE flight behind them and were now 180 degrees out from BLUE flight heading in an opposite direction to MIGs 3, 4, and 5.

After the engagement BLUE flight egressed on a heading of 250 degrees at 10,000 feet altitude in MIG defensive formation (see paragraph 4).

BLUE flight observed AAA in the target area and saw two SAMS detonate in the distance but took no evasive action.

BLUE 2 was close enough to MIG 2 to see the spoilers on him.

[redacted]

Event III-236

Aircraft Involved: Four F-105s vs three MIG-17s
Results: Two MIG-17 destroyed
Vicinity of Encounter: 21°33'N/105°25'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 13 May 1967/1622H

Four F-105s (BLUE flight) were part of a 20 aircraft strike force attacking the Yen Vien Railroad Yard (JCS 19.000). The other flights of this force which encountered MIGs were those described in Events III-237 and -238. The MIGCAP for this force was provided by the aircraft of Events III-232 and -233. There was an IRON HAND flight and B-66 ECM support also.

2. MISSION ROUTE

BLUE flight departed Takhli and after refueling crossed the Red River at about 21°37'N/104°55'E. From there they proceeded to 21°34'N/105°33'E. They then proceeded down Thud Ridge, north and east of Phuc Yen to the target. Egress was back up Thud Ridge. The attack on the target was on a south-southwesterly heading.

3. AIRCRAFT CONFIGURATION

| F-105D BLUE 1, 3 | BLUE 2, 4 |
|---|---|
| 6 750 lb bombs | 6 750 lb bombs |
| 2 450 gal tanks | 2 450 gal tanks |
| 1 AIM-9B | 2 QRC-160 pods |
| 1 QRC-160 pod | |

BLUE 1 squawking IFF, Rest of flight IFF off TACAN receive only

TACAN receive only

MIG-17

Dull Silver

No external stores

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered cumulus clouds bases 3-4000 feet, tops 5-6000 feet. Visibility good.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 7500-800 feet |
| Heading: | 320° |
| Speed: | 550 kts |
| Fuel State: | 8000 lb |

Flight Formation: Pod formation, element (BLUE 3 and 4) on the right of BLUE 1, almost line abreast, 1000 feet out, level.

5. INITIAL DETECTION

While egressing, BLUE flight detected three MIG-17s at 1000 feet, about 10 miles away. The MIGs were in a climbing right turn, heading west.

6. ACTION INITIATED

BLUE flight turned left to position at the MIG's 6 o'clock.

7. SITUATION DEVELOPMENT

The MIGs continued to turn right and started a head on pass at BLUE flight. As they turned BLUE 1 fired a SIDEWINDER which missed. As the MIGs continued to close from head on, BLUE 1 and 3 fired their cannon. BLUE 2 saw one MIG start to trail smoke and the following flight saw the pilot eject from one MIG and another spinning. BLUE 1 and 3 are each credited with a kill. The MIGs were not observed to fire.

[redacted]

[redacted]



8. ORDNANCE

| | (No. fired/No. hits) SIDEWINDER AIM-9B | Cannon 20mm | Remarks |
|---|---|---|---|
| BLUE 1 | 1/0 | 1/1 | One MIG killed |
| BLUE 3 | | 1/1 | One MIG killed |

9. EQUIPMENT PROBLEMS

BLUE 3 had a pressurization failure.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 3300 | 690 | 97 | This was third MIG engagement. |
| BLUE 3 | 1400 | 550 | 82 | This was third MIG engagement. |

Comments on this Encounter

BLUE 1

The gunsight is bad. The radar is such that a lock-on for ranging cannot be achieved at below about 10,000 feet altitude due to ground return. Unless full capability is used (radar mode) the sight does not compensate for bullet drop. The sight is not suitable for the environment. The switchology necessary to activate the sight is bad.

BLUE 3

Although he heard MIG calls inbound they did not register as being significant.

The aggressiveness of the flight enabled them to get the MIGs.

The pilots entering the theatre do not have sufficient experience.

The engagement was fought on terms advantageous to the F-105.

11. DATA SOURCES

Project Interviews: BLUE 1, June 1967; BLUE 3, June 1967.

Messages, Reports

355 TFW 131400Z May 1967 OPREP-3 DOTO-O-11685

355 TFW 131457Z May 1967 OPREP-3 DOTO-O-11687

355 TFW 131616Z May 1967 OPREP-3 DOTO-O-11688

12. NARRATIVE

BLUE Flight was on a strike against JCS 19.00. A strike force from Korat (See Events 157, 158, 159, 160) was hitting a target in the vicinity about 5 minutes after BLUE Flight TOT. This target was in the vicinity of BLUE Flight's egress route, consequently they were expecting to see MIGs.

On ingress, the force flew in a string of flights in trail, about one mile apart. Although MIG warnings were received, no MIGs were seen by the flight either inbound or in the vicinity of the target.

BLUE Flight struck the target first and was the first flight out during egress. Since MIGs were up but BLUE flight had not been attacked, they anticipated that they would see some.

While egressing up Thud Ridge, at 21°33'N/[illegible]'E on a heading of 320 deg, BLUE flight saw aircraft silhouetted against the white clouds. The aircraft were in a climbing, right turn, heading about west, 10 miles away, at 10-10:30 o'clock to BLUE flight. When first seen the MIGs were a little bit low. All of the flight members saw them simultaneously.

[redacted]

[redacted]



After 3-4 seconds BLUE 1 and 3 recognized the aircraft as MIG-17s by the blunt nose. The three MIGs were in an element with a wingman in a fighting wing position on the lead. The third MIG-17 (MIG 3) trailed as a single aircraft element.

BLUE 1 called for an attack on the MIGs and BLUE Flight lit the afterburner to close on the MIGS. The tanks were not jettisoned. BLUE 1 intended to duck under the clouds so BLUE Flight descended. As the flight closed, the MIGs stayed in their right turn but before BLUE Flight could get into the clouds, the MIGs evidently saw the F-105s because they tightened their turn to the right, to start a head-on pass at BLUE Flight.

At this time BLUE 1 concentrated his attack on MIG lead while BLUE 3 concentrated his attack on MIG 3.

As the MIGs continued to turn right into BLUE Flight, the flight had to reduce their left hand turn.

When the MIGs reached about 5-6000 feet, BLUE 1 fired a SIDEWINDER at the MIGs. At firing BLUE 1 was almost head-on to the MIG-1 when he fired, and did not have a tone. BLUE 1 was straight and level in 1-g flight and fired the missile to try to break up the MIG's attack. The altitude at firing was 7000 feet. The MIGs had gone high in their turn, and were descending slightly as they headed for the flight. The missile went ballistic and passed 200 feet from the MIGs.

As the MIGs had turned, BLUE 3 had a broadside view of a MIG. Although he had a tone from his SIDEWINDER, he was pointed in the general direction of the sun and felt most of the growl came from that source. Therefore he did not fire.

As the MIGs closed to 3000 feet, BLUE 1 and 3, now in a slight (not more than 15 degree) right bank started to fire at the MIGs. They continued to fire in a single burst tracking the MIGs well, as they closed to about 1000 feet.

The MIGs passed by very raipdly within 300 feet of BLUE Flight. As they passed, BLUE 2 saw white smoke with a pink cast trailing from one of the MIGs.

At firing BLUE 1 had the sight set for missile-air but BLUE 3 was estimating lead with a fixed pipper depressed at 12 mils. BLUE 3 fired about 200 rounds at the MIG. BLUE 1 felt that the 15-20 foot diameter dispersion of the M-61 at the range of firing was enough to cover the MIG.

Members of a trailing flight of F-105s saw a pilot eject from one of the MIGs which was smoking and another MIG spinning. BLUE 1 and 3 are credited with kills.

As the MIGs passed over, BLUE 1 looked back to watch, then and saw some other aircraft behind them. He then called for the flight to "take it down". BLUE Flight reversed to the left, rolled, and broke for the deck.

The only aircraft BLUE 3 saw were some F-105s about a mile behind. BLUE lead felt that the flight was not in a good posture to turn after the MIGs and fuel was low so the flight egressed.

BLUE 2 and 4 did not fire.



[redacted]

[redacted]

Event III-237

Aircraft Involved: Three F-105Ds vs six MIG-17s

Result: Two MIG-17s damaged

Vicinity of Encounter: 21°13'N/105°44'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 13 May 1967/1617H

Four F-105s (BLUE Flight) were part of a 20 aircraft strike force attacking Yen Vien Railroad Yard (JCS 19.00). The other flights of this force which encountered MIGs were those described in Events III-236 and -238. The MIGCAP for this force was provided by the aircraft of Events III-232 and -233.

2. MISSION ROUTE

BLUE Flight departed Takhli and ingressed to the target overland. Egress was via the reverse route.

3. AIRCRAFT CONFIGURATIONS

MIG-17

Silver

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered cumulus, clear below clouds.

| | BLUE |
|---|---|
| Altitude: | 6000 ft |
| Heading: | 325° |
| Speed: | Unknown |
| Fuel State: | Unknown |
| Flight Formation: | Unknown |

5. INITIAL DETECTION

While egressing BLUE 1 sighted a single MIG-17 at 12 o'clock, who made a head-on pass at the flight.

6. ACTION INITIATED

The flight continued on.

7. SITUATION DEVELOPMENT

About one minute later BLUE Flight saw three MIG-17s and BLUE 1 attacked one of these, firing his cannon. Although BLUE 1 had to break off his attack when threatened by another MIG-17, the MIG was damaged.

Later another MIG-17 fired rockets at BLUE Flight without effect.

BLUE Flight also saw a MIG-17 crash, and another in a descending spiral, and saw a MIG attacking the number 3 aircraft of Event III-236. BLUE 3 got on this MIG's tail and damaged him.

8. ORDNANCE

(No. fired/No. hits)

| | Cannon 20mm | AA Rockets | Remarks |
|---|---|---|---|
| BLUE 1 | 1/1 | | One MIG damaged |
| BLUE 3 | 1/1 | | One MIG damaged |
| MIG | | 1/0 | |

9. EQUIPMENT PROBLEMS

None

10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 1 | 5800 | 350 | 80 |

[redacted]

[redacted]



11. DATA SOURCE

Messages, Reports: 355TFW 131100Z May 1968 OPREP-3 DOTC-0-11685
355TFW 131456Z May 1968 OPREP-3 DOTC-0-11689
355TFW 131614Z May 1968 OPREP-3 DOTC-0-11690

12. NARRATIVE DESCRIPTION

After hitting the target BLUE 2 became separated from the flight.

While egressing the target area in the vicinity of 21°13'N/105°44'E at 1617H, at 6000 feet altitude, BLUE 1 sighted one MIG-17 (MIG 1) at 12 o'clock. MIG 1 made a head-on pass at co-altitude. MIG 1 and BLUE Flight continued on their respective headings without firing.

BLUE Flight continued on a 325° heading for approximately one minute when at 21°22'N/105°34'E BLUE 1 spotted three MIG-17s (MIG 2, 3, 4) in a gentle left turn at BLUE Flight's 10:30 high position at 8000 feet altitude. BLUE Flight was at the MIG's 6 o'clock.

BLUE 1 positioned himself on the number 2 MIG (MIG 3) and began firing. BLUE 1 fired from 1000 to 400 feet range, with an angle off of 40° at MIG 3's 8 o'clock, slightly high. BLUE 1 was forced to break off the attack on MIG 3 when the number 3 MIG (MIG 4) threatened BLUE 1's 6 o'clock position. BLUE 1 claimed damage to MIG 3.

BLUE Flight continued on course, jinking between 6000 and 8000 feet altitude. In the vicinity of 21°30'N/105°30'E, one MIG-17 (MIG 5) attempted to fire rockets at BLUE 1 and 2 from their 7 o'clock low position. The rockets fell short and dropped off without threatening BLUE Flight.

In the area 21°38'N/105°28'E, BLUE 1 saw one MIG-17 in a descending spiral. The MIG crashed into the ground. This was GREEN 1's kill of Event III-233.

At approximately 1620H, BLUE 3 sighted a MIG-17 (MIG 6) closing on GREEN 3 of Event III-233. GREEN 3 was after two other MIG-17s, one of which was trailing white smoke. BLUE 3 got into firing position on MIG 6 and fired one good burst, observing hits, before MIG 6 broke hard right and was lost from sight.

BLUE 2 saw another MIG-17 crash in the vicinity of 21°34'N/105°28'E. This was GREEN 3's kill of Event III-233.

BLUE Flight had received MIG warnings prior to their encounter. They also had contact with the CAP flights in the proximity but did not request support.



[redacted]

[redacted]

Event III-238

Aircraft Involved: Four F-105s vs seven MIG-17s

Results: No damage

Vicinity of Encounter: 21°19'N/105°36'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 13 May 1967/1623Z

Four F-105s (BLUE Flight) were part of a force of 16 aircraft attacking the Vinh Yen Army Barracks (JCS 34.01). The sections of the other flights are described in Events III-230, -231, and -232. There was MIGCAP and IRON HAND support for this mission. The probable order of flights striking the target were the flights of Events III-236, -231, -238, and -230.

## 2. MISSION ROUTE

BLUE Flight departed Korat and after aerial refueling, proceeded directly to the target from Channel 97 (see Event III-233). Egress was up Thud Ridge and then overland for refueling.

## 3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 3

6 - 750 lb bombs
2 - 450 gal tanks
1 - AIM-9B
1 - QRC-160 pod
Camouflaged

F-105D BLUE 2, 4

6 - 750 lb bombs
2 - 450 gal tanks
2 - QRC-160 pod

MIG-17

Silver with red star on fuselage
Drop tanks

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered cumulus with bases at about 10,000 ft, clear with good visibility below clouds.

| | BLUE 1 2 3 4 |
|---|---|
| Altitude: | 15,000 ft |
| Heading: | 300° |
| Speed: | 550 kts |
| Fuel State: | About 8000 lb |
| Flight Formation: | BLUE Flight was in a dive starting a bomb run. BLUE 1 and 2 were together as an element and, some distance behind, BLUE 3 and 4 were together (BLUE 4 was only several hundred feet away from BLUE 3). |

## 5. INITIAL DETECTION

The flight had heard MIG calls and were looking for MIGs. BLUE 3 saw two MIG-17s at low altitude as he started to roll-in.

## 6. ACTION INITIATED

BLUE Flight ignored the MIGs and continued the bomb run.

## 7. SITUATION DEVELOPMENT

At various stages of the bomb run, individual members of BLUE Flight encountered MIG-17s.

BLUE 1 was attacked by a single MIG-17 during pullout from the target. The MIG fired at BLUE 1, and BLUE 1 escaped by breaking for the deck.

BLUE 2 heard BLUE 3 call MIGs during the bomb run but the first MIG he saw was one that pulled in front of him from 11 o'clock. BLUE 2 fired at the MIG but no hits were observed.

During his dive on the target, BLUE 3 saw two MIG-17s following himself and BLUE 4 Immediately thereafter, three MIG-17s in trail overshot BLUE 3 from 9 o'clock high. BLUE 3 then saw BLUE 4 attacking some MIGs and went to join him.

BLUE 4 initially started after the MIG on BLUE 1 and fired on this MIG. BLUE 4 then went after another MIG but did not achieve firing position. BLUE 4 then joined with BLUE 3 for egress.

[redacted]

8. ORDNANCE

| | 20mm Cannon | 23/37mm Cannon | Remarks |
|---|---|---|---|
| BLUE 2 | 1/0 | | 170 rounds |
| BLUE 4 | 1/0 | | Several hundred rounds |
| MIG 3 | | 1/0 | Fired at BLUE 1 |

9. EQUIPMENT PROBLEMS

None.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 2 | 4000 | 200 | 45 | |
| BLUE 3 | 3800 | 700-800 | 60 | |

Comments on This Encounter

BLUE 2 - The switchology prevented switching from air-to-ground to air-to-air, consequently he had no sight. He would like a minimum of switching required to go from air-to-ground to air-to-air like a gunsight with trigger actuation.

The M-61 cannon is a better air-to-air weapon than a rocket, due in part to the low altitude of the engagement.

The SIDEWINDER is limited by "g's" and therefore not too useful in this environment.

BLUE 3 - The MIGs which attacked during the bomb run were sufficiently distracting to cause the bombs to miss the target.

The flight integrity was lost (BLUE 2 and 4 left their element leads). This precluded successful attacks on MIGs in the target area after the bomb run was complete.

11. DATA SOURCES

Project Interviews: BLUE 2, June 1967; BLUE 3, June 1967
Messages, Reports:

388TFW 131201Z May 1967 OPREP-3 DOI 1657
388TFW 131208Z May 1967 OPREP-3 DOI 1658

12. NARRATIVE DESCRIPTION

BLUE Flight proceeded to the target in a gaggle. Inbound, MIG warnings were heard which indicated MIGs were in the target area. The MIGs were first encountered by the members of BLUE Flight after the bomb run had commenced. Since each member encountered MIGs at different times and were separated from each other, the actions of each are described individually.

BLUE 1

During pullout from the target, BLUE 1 observed a single silver MIG-17 (MIG 3) at 5 o'clock level, approximately 1500-2000 ft away. MIG 3 was firing at BLUE 1. BLUE 1 then rolled over and broke right and accelerated away on the deck, losing MIG 3.

BLUE 2

As BLUE 2 was bottoming out from his bomb run at about 4500 ft altitude, heading northwest at 550 kts, a single MIG-17 (MIG 4) pulled out in front in a climb. Although BLUE 2 had heard BLUE 3 call MIGs during the dive bomb run, this was the first MIG he saw. MIG 4 was at 11 o'clock to BLUE 2 and about 2000 ft range and filled the windscreen.

BLUE 2 did not have time to switch to air-to-air, so with a fixed pipper depressed for bombing, BLUE 2 fired at MIG 4. BLUE 2 guessed at the lead necessary and fired 170 rounds but none were observed to hit. MIG 4 rolled left to an almost inverted altitude and dived for the ground heading west. This was the last BLUE 2 saw of MIG 4. BLUE 2 retained his tanks throughout the engagement.

BLUE 2 saw another MIG-17 during egress.

BLUE 3

While starting his roll in to the target from 17,000-18,000 ft altitude, BLUE 3 looked down and saw two MIG-17s. The MIGs were at a very low altitude and were in the target area directly underneath BLUE Flight. After setting up his dive, BLUE 3 looked around to check BLUE 4 who was on the right. At this time, BLUE 3 saw two MIG-17s (MIG 1 and 2) coming down at the same dive angle as BLUE 3 and 4. MIG 1 and 2 were not gaining on BLUE 3 and 4 and were at BLUE 3's 4-5 o'clock position. The MIGs were below the plane

of BLUE 3's flight path but were back far enough to be above BLUE 3. Although MIG 1 and 2 were following the bomb runs, they were not in firing position and were not a threat. Since there was another flight of F-105s behind BLUE Flight, the MIGs could not maneuver to attack BLUE 3 and 4 without coming under attack.

As BLUE 3 looked back to acquire the target, he saw three more MIG-17s (MIG 5, 6, and 7) in a level turn at his 9 o'clock. As MIG 5 passed underneath, BLUE 3 felt that MIG 5, 6, and 7 could make an attack on BLUE 4. All three MIGs overshot and when BLUE 3 looked back, he could not find BLUE 4.

After rolling over and looking for BLUE 4, BLUE 3 acquired him as BLUE 4 was going after some MIGs. BLUE 3 then went on and released ordnance on the target. Due to the distractions caused by the MIG attacks, BLUE 3 dropped his ordnance a little long of the target.

BLUE 3 did not see the MIG attacking BLUE 1.

On pullout from his bomb run, BLUE 3 took up a heading of about 030 to pick up BLUE 4. BLUE 4 was attacking a MIG at this time. In front of BLUE 4, BLUE 3 observed two more MIG-17s followed by two F-105s. These F-105s were followed by two more MIGs who were in turn followed by two more F-105s. [BLUE 3 suspects these F-105s were from Takhli.]

After BLUE 4 unsuccessfully attacked the MIG, BLUE 3 joined on him, and BLUE 3 and 4 egressed up Thud Ridge, joining BLUE 1 at the top. They then came back across the delta in a formation for egress.

BLUE 4

During his dive bomb run, BLUE 4 observed MIG 3 attacking BLUE 1 and went after MIG 3. BLUE 4 fired on MIG 3 but no hits were observed. MIG 3 broke off to the right. BLUE 4 then started after another MIG-17 that was in a descending left turn. MIG 8 went into a steep dive at 4000-5000 ft altitude and BLUE 4 broke off. He then was joined by BLUE 3 for egress.

BLUE Flight saw no AAA or SAMs during this mission. The MIGs seemed to be aware of the target area and were orbiting there, waiting for the strike force. The MIG attacks seemed to be well coordinated.

[redacted]

Event III-239

Aircraft Involved: Four F-4Cs vs 16 MIG-17s
Results: Two MIG-17s destroyed
Vicinity of Encounter: 20°46'N/105°08'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 May 1967/Between 1605H and 1625H

Four F-4Cs (BLUE Flight) were part of the CAP escorting a strike force of F-105s from Korat which was attacking JCS 31.00, four miles southwest of Hanoi. The other strike force, from Takhli, was attacking north of Hanoi. The strike flights which encountered MIGs were those of Events III-241, -242, -243 and the other CAP flight which encountered MIGs are the aircraft in Event III-240.

There were the normal B-66 and IRON HAND support aircraft for this mission.

## 2. MISSION ROUTE

Departed Danang and refueled on WHITE ANCHOR. From aerial refueling they went to Channel 97, from there direct to 20°59'N/105°48'E, then direct to the target area, then direct to 20°50'N/105°00'E, then direct to 18°10'N/103°20'E and then back to home base. BLUE 2 missed aerial refueling due to an incorrect vector, since he egressed with another flight (Event III-240) and recovered at Nakkon Phanom due to low fuel.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 3

2 AIM-9B
2 AIM-7E
1 SUU-16 gun pod
1 QRC-160
2 370-gal tanks
BLUE 1 IFF on, TACAN receive only
BLUE 1 had no gun camera on the aircraft.

F-4C BLUE 2, 4

4 AIM-9B
4 AIM-7E
1 QRC-160 pod
1 600-gal tank
1 370-gal tank

MIG-17

Afterburners
Dull silver
Red stars on wing tips and fuselage
Guns
At least one with missiles

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Tops 3,000 to 4,000 ft in some places; visibility good.

| | BLUE | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Altitude: | 19,000 ft | | | |
| Heading: | 075° | | | |
| Speed: | 500 KTAS | | | |
| Fuel State: | (12,000-13,000 lb internal tanks)<br>(1,000-1,500 lb external tanks) | | | |

Flight Formation: Pod; element on the right.

## 5. INITIAL DETECTION

BLUE Flight heard MIG warnings when they departed the tanker. The lead F-105 (Event III-241) flight called the CAP that MIGs were at 12 o'clock low. BLUE 3 called bogeys at 9 o'clock. BLUE 1 then spotted two F-105s outbound being chased by four MIG-17s, in two elements.

## 6. ACTION INITIATED

BLUE 1 and 2 jettisoned tanks and started to attack the one element of MIGs while BLUE 3 and 4 started to attack the other element and jettisoned tanks.

## 7. SITUATION DEVELOPMENT

The engagement separated into different parts, each fought by an element of BLUE Flight.

BLUE 1 and 2 lost the element of MIGs as the MIGs turned away. BLUE 1 and 2 subsequently fired two SPARROWs and some 20mm at two other MIG-17s. BLUE 1 then successfully attacked another MIG-17. In dodging the explosion BLUE 2 became separated and egressed separately. BLUE 1 then fired an AIM-9 at another MIG and followed with a gun attack but was out of ammunition, and egressed.

[redacted]

BLUE 3 and 4 fired an AIM-7 at the MIGs without success. Another attack was made on another MIG-17, and fired another AIM-7 without success. BLUE 3 then selected another MIG-17 and attacked with the gun, scoring a kill. BLUE 3 and 4 then egressed.

8. ORDNANCE

(No. Fired/No. Hits)

| | SIDEWINDER AIM-9B | SPARROW AIM-7E | SUU-16 | Cannon | Soviet ATOLL | Remarks |
|---|---|---|---|---|---|---|
| BLUE 1 | 1/0 | 2/0 | 3/1 | | | One MIG-17 killed. BLUE 1 used all of his 20mm ammunition. |
| BLUE 3 | | 2/0 | 1/1 | | | One MIG-17 killed. |
| MIG-17 | | | | | 2/0 | Seen by aircraft of Event III-240 |
| MIG-17 | | | | 1/0 | | High angle off. |

9. EQUIPMENT PROBLEMS

BLUE 3 had an outboard tank that would not jettison.

10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | 4500 | 250 | 63 | |
| Back | 360 | 93 | 11 | First mission in Route Package VI. |
| BLUE 2 | | | | |
| Front | 2900 | 350 | 72 | Two years in F-105s. |
| Back | 600 | 330 | -- | |

Comments on this Encounter:

BLUE 1 - Front

The MIG pilots were aggressive and good.

The MIG that BLUE 1 hit did not see him.

The MIGs used afterburner freely, as seen when they passed across BLUE 1's nose. When in trouble, they would go to afterburner and descend into the cloud deck.

Looking at the radar scope will not permit detection of the MIG's movements in sufficient time to follow him.

Never had a chance to shoot the SUU-16 air-to-air before this encounter.

Some 20mm were wasted on head-on passes. The tracers that they got later will help a lot. Would like to have had a lead-computing sight.

The SUU-16 was a very good gun.

The backseater was used for lookout, much the same as a wingman, since the frontseater who was flying wing had to pay too much attention to flying in order to stay with his lead.

The SAM was shot at them when they went up high, which could account for the fact that the MIGs did not follow them up.

The enemy appeared to use the F-4's IFF to sort out the F-4s from the MIG-17s.

The second AIM-7 failure to guide could have been due to being locked on the ground clutter.

BLUE 3

The initial MIGs that were seen were probably vectored to attack outbound elements of the Takhli force.

The MIG-17 tactics were good. Missile capability is degraded by the low altitudes, because the radar tends to lock on to the ground return. An IR missile with a good capability against a high-g target would be best. The SPARROW system has suffered from reliability and fusing problems. The AIM-7 is not the answer to this environment.

The kills with the gun mode could not have been made with a missile. The MIG-21 kills by missiles have been due to the MIG-21 climbing away against a clear sky, giving the missile a good target.

The SUU-16 was a very good system.

Comments on Overall Experience:

BLUE 3

The "C" model F-4 is limited in station capability since they must be operated in pairs. It is impossible to make an individual station selection without modifying the aircraft. Lack of minor items such as cannon plugs have complicated making the modifications.

## 11. DATA SOURCES

Project Interviews: BLUE 1 and 3, 22 June 1967.

Messages:

366TFW 141800Z May 67 OPREP-3 JPCCO FASTEL 468 (Pt 1)
366TFW 141800Z May 67 OPREP-3 JPCCO FASTEL 469 (Pt 2)
366TFW 180830Z May 67 OPREP-3 DCO 00157 (Sections 1 and 2)
366TFW 141100Z May 67 OPREP-3 DCOI 443
Letter-Raytheon OLD 0413, 15 May 67

## 12. NARRATIVE DESCRIPTION

BLUE Flight was trailing the strike force, to provide CAP coverage. BLUE Flight was first alerted to the presence of MIGs in the target area by a MIG warning received from the agencies for the Hanoi area at approximately 1600H. At this time BLUE Flight was departing Channel 97 with the strike force. Most of the MIG calls were close to Hanoi with some MIGs coming out of the west. The calls continued all the way to the engagement.

In the ensuing encounters 16 MIG-17s were seen by members of BLUE Flight, seven of which were engaged. Eight MIG-17s were seen by BLUE 1 and 2, and an additional eight by BLUE 3 and 4. The MIG engagement permitted the strike force to attack JCS 31.00.

At 1605H while ingressing 2000 feet above, and in trail of the last strike flight, BLUE Flight heard MIGs being called by the lead F-105 flight (Event III-241). The MIGs were called for 12 o'clock low, coming under.

BLUE 3 (front seat) looked down and saw two silver bogeys going from 12 to 6 o'clock, underneath the strike flights. BLUE 3 then called bogeys at 9 o'clock low and indicated that he felt they were MIGs. At this time BLUE Flight was at 19,000 feet altitude, about 500 KTAS (400 IAS) heading 075° at 20°46'N/105°08'E.

BLUE Flight turned left, and BLUE 3 recognized the bogeys as two F-105s, which had appeared silver from the distance. It was seen that the two F-105s (probably from Takhli, who initially were on a reciprocal heading to BLUE Flight) were being chased by four MIG-17s in two elements of two aircraft each with the elements separated in trail by about one mile.

BLUE 1 and 2 selected the lead element of MIGs and called that they would attack them and continued a left hand turn to engage. BLUE 1 and 2 jettisoned tanks.

BLUE 3 and 4 chose to attack the rear element and from this point on the battle was fought separately. The actions of all members occurred within a 15-mile arc, north and east of 20°46'N/105°08'E, over land enclosed by a horseshoe bend in the Black River.

First Element - BLUE 1 and 2

As BLUE 1 and 2 dived on the lead element of MIGs (MIG 1 and 2), the MIGs reversed from the F-105s and turned into BLUE 1 and 2. The MIGs made a diving left turn; and as they turned inside of BLUE 1 and 2, they passed head-on and were lost from view as they entered the cloud deck.

The MIGs operated close to the cloud deck throughout. Due to the altitude of the mountains in the general area, BLUE Flight did not descend beneath the cloud layer.

BLUE 1 and 2 then pulled up to the right to exchange airspeed for altitude. On reaching 7000 feet, BLUE 1 saw numerous MIG-17s in the area. At this time the other flight of F-4s (Event III-240) joined the battle in the general area.

The F-105s continued on to the target and after striking the target, egressed back through the battle area.

From 7000 feet altitude BLUE 1 saw two MIG-17s (MIG 3 and 4) in trail at 2 o'clock low and made a right diving turn into MIGs.

After making the first pass at MIG 1 and 2, the subsequent engagements were the result of BLUE 1 selecting a MIG and attacking. He attempted to pick a MIG as far away as he could with the backseat attempting to attain a radar lock for a SPARROW shot. The MIG's color blended with the clouds, making large separation difficult. When the MIGs came under attack, they turned into BLUE 1, resulting in a high rate of closure. By the time a lock could be achieved, they were inside minimum range.

BLUE 1 obtained a boresight acquisition on MIG 3, locked on, and switched to a full system lock. The missile was launched from the MIG's 4 o'clock, with MIG 3 at 11 o'clock from BLUE 1. BLUE 1 was at 500 knots true airspeed, and 6000 feet altitude, pulling 3g

in a right turn and had 150 knots overtake. The MIG was at 5000 feet altitude, and the track crossing angle was 110 degrees. BLUE 1 had interlocks out, linear polarity, and wide gate, he was dividing his attention between the radar scope and the MIG and was visually estimating the lead. The SPARROW was fired at one and one-half miles range, and the missile select light had been on for 10 minutes prior to arming.

The missile went straight for the ground and failed to guide, dropping quickly from sight. (The OPREP 180830Z May 67 indicates that the missile was launched in a clutter environment, at approximately minimum range.)

BLUE 1 continued his attack on MIG 3 and switched to the gun and fired one burst at the MIG with no results. The MIG by this time was at a range of about 1500 feet, and had tightened his turn to the right. When he fired, BLUE 1 was in the MIG's forward quarter. The MIG passed beneath BLUE 1 and 2 and ducked into the cloud deck. The altitude was at 4,000 to 5,000 feet.

BLUE 1 and 2 then climbed again and when level at 8000 feet altitude spotted a single MIG-17 (MIG 5) at 2 o'clock low, heading south. BLUE 1 made a right diving turn into the MIG and at 2 miles out acquired a lock-on in boresight, and then switched to a full systems lock -- interlocks out. With the MIG at 12 o'clock, about co-altitude, BLUE 1 fired another SPARROW.

At firing, BLUE 1 was at 450 knots, and 6500 feet altitude, pulling 4 g's. MIG 5 was at 6000 feet in a level turn. BLUE 1 was at 130° angle off from the MIG so the pass was a quartering head-on. Although the sources give 100 knots overtake, the geometry would indicate that the actual closing velocity was much higher (more like 700 knots). BLUE 1 attempted to fire with the dot centered. The missile did not guide and dropped out of sight. There was considerable ground clutter and this could have contributed to the missile not guiding on the intended target.

BLUE 1 and 2 continued to press on after MIG 5, and BLUE 1 fired a long gun burst at MIG 5 as it crossed beneath him in a steep right bank and the MIG was lost from view before he crossed the bullet flight path.

BLUE 1 tried to keep his airspeed above 300 KIAS and stay at high speed and execute high-g pull ups. Both front and backseat were looking around for enemy aircraft and possible SAMs.

Although the MIGs engaged by BLUE 1 and 2 kept turning, they were unable to set up a complete wagon wheel pattern as BLUE 1 and 2 were able to break out individual MIGs.

After firing the second SPARROW at MIG 5, BLUE 1 pulled up tight to try to get behind the MIG after the head-on pass. In doing so, his speed was reduced to just at 300 knots. BLUE 1 then saw a MIG-17 (MIG 6) coming in with a good angle off. MIG 6 was firing cannon. BLUE 1 tightened his turn and let the MIG overshoot. BLUE 1 then reversed, and unloaded and went to afterburner. As soon as BLUE 1 started to accelerate in afterburner, MIG 6 broke off. (Although not seen by BLUE 1 this may have been the MIG which fired two AA missiles.)

BLUE 1 then climbed to 8000 feet and sighted more MIG-17s (MIG 7 and 8) in a spread formation turning right at 2 o'clock low, and 3000 feet away. BLUE 1 reversed and started a right turn with the MIGs, who were in a 60° bank. BLUE 1 selected MIG 8 and started to close on him.

BLUE 1 had a fixed 25 mil depression on the sight. This had been done so that the top of the ring could be used for missile firing pipper. Therefore, BLUE 1 estimated the required lead and with the MIG at about 300-350 knots and BLUE 1 at 450-500 knots (about 150-200 knots overtake). BLUE 1 started to fire at 2500-2000 feet range, over-leading the MIG. BLUE 1 planned to let the sight drift back across the MIG-17 hoping for the bullet stream to rake through him. As BLUE 1 closed to 1000 feet, still firing, the MIG started to tighten his turn. As BLUE 1 closed to about 300 feet range, and was just at the point of breaking off the attack, he saw the MIG fill his windscreen. He then saw his shells hit right behind the canopy and flames break out. The MIG exploded almost immediately. No chute was observed and the position was about 20°57'N/105°20'E. As the MIG exploded BLUE 1 reversed and went high, and reversed again and turned around the MIG. As the MIG descended, it broke in half. BLUE 1 lost contact with his wingman while avoiding the debris.

BLUE 2 saw BLUE 1 pulling lead on MIG 8 but BLUE 1 was pulling so much lead BLUE 2 felt that perhaps BLUE 1 did not see the MIG. During the attack, BLUE 2 moved high and out a little. When BLUE 1 broke, he went under BLUE 2's nose and as BLUE 2 turned aside from the explosion, he lost contact with BLUE 1. BLUE 1 and 2 achieved radio contact, and ascertained that they were not in visual contact. BLUE 2 immediately joined another flight of F-4s and continued with them through egress, eventually recovering at Nakon Phanom due to BINGO fuel.

While calling for BLUE 2, BLUE 1 spotted another single MIG-17 (MIG 9) at 10:30 o'clock low. The MIG was in a level left turn. BLUE 1 dived to the left to slightly above and in trail of MIG 9, and with a good tone, fired a SIDEWINDER. (BLUE 1 had only SIDEWINDER missiles left.)

The SIDEWINDER was fired from 3500 to 4000 feet range with a good tone. However, the missile passed behind and beneath the MIG by 200 feet due to excessive g's (about 4g). The missile was launched from the MIG's 7:30 position. BLUE 1 was at 500 knots at 7000 feet altitude pulling 4g. The MIG was at about 7500 feet and was at about 20° angle off. A good tone was obtained and held for two seconds prior to launch.

BLUE 1 continued in for a gun attack, feeling that he had a better attack on this MIG, since it was felt that the MIG did not see BLUE 1. BLUE 1 rolled out of the turn, yo-yoed for separation and came down on the same MIG's tail but slightly above. BLUE 1 attempted to fire his gun from 2000 feet out but discovered that he had expended all of the 20mm ammunition. BLUE 1 was then too close for a SIDEWINDER attack. Although he had plenty of fuel and one SIDEWINDER left, he did not have a wingman. Therefore, BLUE 1 crossed over the MIG and broke in the opposite direction and egressed.

At this time MIGs were being called on the egress route and BLUE 1 decided to keep some ordnance in case he was attacked during egress. As BLUE 1 egressed he called BLUE 3 and 4 to join him on the outbound track.

Second Element - BLUE 3 and 4

When the elements of BLUE Flight split, BLUE 3 and 4 began to pursue the second MIG element of two which were initially at BLUE Flight's two o'clock position, low, turning from right to left. BLUE 3 and 4 rolled around and in a tight descending left turn caught the MIGs as they crossed and obtained a 6 o'clock position on the trailing MIG of the element of two. BLUE 3 attempted to obtain a radar lock in boresight. As they rolled in, BLUE 3 and 4 jettisoned tanks. One of BLUE 3's wing tanks failed to jettison and it remained on (with fuel in it) throughout the engagement.

The MIG immediately broke down and to the left, heading for the deck. The MIG was at 6000 to 7000 feet initially, and since BLUE 3 and the MIG were below 10,000 feet and with BLUE 3 looking down on the MIG, BLUE 3 was unable to get a lock and as he closed to nearly minimum missile range, he fired a SPARROW in the boresight mode. BLUE 3 felt the missile go but never saw it come out from under the nose of the airplane. At launch BLUE 3 was at 5000 to 6000 feet range and about co-altitude at 2000 to 3000 feet with the MIG who was at BLUE 3's 12 o'clock. BLUE 3 was in a 3-4g turn with 150 knots overtake and the MIG appeared to pull about 5-6g. BLUE 3 pressed in, turning and tracking the MIG. BLUE 3 attempted to fire the gun but could not reach the gun switch. The MIG tightened his turn and disappeared from BLUE 3's view.

BLUE 3 then pulled up into a high speed yo-yo and rolled over and saw two more MIG-17s at 9-10 o'clock low. BLUE 3 and 4 dove to engage in almost an identical attack to the first one. In boresight mode, BLUE 3 (back) was able to attain a radar lock. The aircraft was equipped with a switching device which automatically switched to full system after a boresight lock-on.

BLUE 3 then fired another SPARROW missile which like the first, was felt to leave the aircraft but was unobserved in flight. At firing BLUE 3 had a full system lock with interlocks out. The MIG was at BLUE 3's 12 o'clock in a left turn apparently pulling 5-6g's. BLUE 3 was also in a left turn at 450 knots, 4000 feet altitude pulling 3-4g's. He was closing in on the MIG at 100 knots and the range was about one mile. The MIG was at a track crossing angle of 20° with zero angle off.

Both SPARROW missiles were fired at low altitudes where radar interference can cause the system to break lock or to shift lock to the ground.

After firing the SPARROW, BLUE 3 pressed in making an increasing-g turn and again did a high speed yo-yo and rolled out at 7000 feet altitude.

BLUE 3 immediately saw two more MIG-17s in trail at 9 o'clock low in a left turn, going away from BLUE 3 and 4. BLUE 3 set up for a gun attack at this time.

All of the MIGs seen were in a big left hand orbit. It was not certain if BLUE 3 fired on the same MIGs more than once, however, he had the definite impression that he was looking at a new group of airplanes.

As BLUE 3 and 4 dove left to attack, BLUE 3 noticed a third MIG-17 trailing the previous two by about 3000 feet and chose to attack this one, to keep from getting sandwiched between the trailing MIG and the other element.

BLUE 3 started a yo-yo and a right barrel roll to position himself on the third MIG. At the top of the barrel roll, BLUE 3 observed a SAM to cross from east to west and detonate approximately 1 mile away. BLUE 3 had no warning and took no evasive action but continued to attack the MIG.

As BLUE 3 pressed in from 6000 to 7000 feet out, the MIG started to tighten his turn. Then the MIG reversed to the right. BLUE 3 reversed with the MIG and pulled 150 mills of lead and opened fire at 1500 to 2000 feet range. At firing BLUE 3 had about 100 knots overtake and almost 90° angle off. He fired a 2 to 2-1/2 second burst and as soon as the gun started shooting, he saw fire coming off the MIG. BLUE 3 had just the proper amount of lead and was not shooting in front of the MIG as he had thought. The bullets impacted in the MIG's midsection causing fire to burst from the fuselage. The MIG started burning on the right side about the wing root and aft along the fuselage.

[redacted] [redacted]



To keep from overshooting BLUE 3 did a high speed yo-yo and observed the MIG at 2 o'clock low still flaming, but in controlled flight in a nose low level descent. As BLUE 3 rolled in for another attack and as he passed the MIG he saw flames also coming from the left hand side of the fuselage. At that time the MIG burst into massive flames from cockpit aft, obscuring the tail. The MIG rolled hard right 135° and pitched down, out of control, and passed into the undercast at 4000 feet MSL position 20°54'N/105°16'E. BLUE 3 is credited with a confirmed kill.

At the same time BLUE 3 saw another vertical smoke trail from a crashing MIG-17 approximately 2 miles east.

BLUE 3 and 4 climbed to 7000 feet and looked down and saw a single F-4 (BLUE 1 of Event III-240) chasing a MIG at fairly slow speed. The MIG was weaving back and forth and the F-4 was observed to fire three missiles at the MIG. No other MIGs were seen.

BLUE 4 then reached BINGO fuel, and BLUE 3 and 4 egressed at 12,000 feet and 475 knots indicated until they were outside of the SAM defenses.

At one time during the engagement BLUE 3 saw a MIG at 6 o'clock to an F-4 who was firing missiles at a MIG in front of the F-4. BLUE 3 watched the trailing MIG fire for several seconds. BLUE 3 suspects the MIG fired out. The MIG was not closing and was firing out of range. The MIG scored no hits.

BLUE 3 saw another MIG and an F-4 go by on one of the times when BLUE 3 was firing but he did not pay much attention to them.

All of the MIG encounters of BLUE Flight occurred between 1605 and 1625H.

[redacted] [redacted]

[redacted]

Event III-240

Aircraft Involved: Four F-4Cs vs 10 MIG-17s

Results: One MIG-17 destroyed

Vicinity of Encounter: 21°50'N/105°20'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 May 1967/1611H

Four F-4Cs (BLUE Flight) were part of the CAP supporting a strike on JCS 31.00. The other CAP flight's actions are described in Event III-239. The strike aircraft are those of Events III-241, -242, -243.

## 2. MISSION ROUTE

BLUE Flight departed Danang and refuelled on WHITE ANCHOR. From tanker drop-off they flew direct to Channel 97; from there, direct to 20°59'N/105°48'E, direct to the target then direct to 20°50'N/105°E, then direct to 18°11'N/103°20'E, post strike refuelled and returned to Danang.

## 3. AIRCRAFT CONFIGURATION

| F-4C | BLUE 2 | BLUE 3 | BLUE 4 |
|---|---|---|---|
| | 4 AIM-7E | 2 AIM-7E | 3 AIM-7E |
| | 4 AIM-9B | 2 AIM-9B | 4 AIM-9B |
| | 1 600-gal tank | 2 370-gal tank | 1 600-gal tank |
| | 1 370-gal OBD tank | 1 SUU/16A gun pod | 1 370-gal tank |
| | 1 QRC-160 pod | 1 QRC-160 pod | 1 QRC-160 pod |
| | Camouflage paint | | |

MIG-17

Not "D" model, shiny silver
At least one had missiles

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 6/8 cloud cover bases at 4000 tops at 7000 ft, visitility 10 miles.

| | BLUE Flight |
|---|---|
| Heading: | 070° |
| Altitude: | 17-18,000 ft |
| Airspeed: | 525 KTAS |
| Fuel State: | Unknown |
| Flight Formation: | Pod |

## 5. INITIAL DETECTION

BLUE 1 heard MIG call from the F-105s, but did not see the MIGs. (They were engaged by the F-4s in Event III-239.) He then sighted four silver MIGs at 11 o'clock low and two more at 11 o'clock level.

## 6. ACTION INITIATED

BLUE 1 jettisoned the centerline tank and chose to attack the four MIGs. When getting within 3-4 miles they were positively identified as MIG-17s.

## 7. SITUATION DEVELOPMENT

The MIGs were in a wagon wheel formation. BLUE 1 fired two SIDEWINDERS at a MIG but it turned and the missile missed. BLUE 1 and 2 attacked another MIG and were subsequently attacked by two more MIG-17s, which fired at BLUE 1 and 2.

BLUE 3 and 4 attacked these MIGs with BLUE 4 firing two SIDEWINDERS without results and BLUE 3 attempting to fire a SIDEWINDER which did not leave the aircraft.

BLUE 4 lost the MIGs and then BLUE 4 was fired on by a MIG, but was able to lose him. Another MIG pulled in front and BLUE 4 fired a SIDEWINDER without success. At the same time BLUE 3 disengaged from a MIG at his 5 o'clock. BLUE 3 and 4 then egressed, following a flight of F-105s.

BLUE 1, after the second engagement, saw a MIG-17 at the 11:30 position and attacked, firing two SPARROWS, one of which hit the MIG, resulting in a kill.

Shortly thereafter a SAM was fired at BLUE 1 and 2, and just after the burst BLUE 1 engaged another MIG-17 and fired two more SIDEWINDERS, but they missed. BLUE 1 then fired a SPARROW but it too missed, and BLUE 1 and 2 egressed.



[redacted]

[redacted]

[redacted]



## 8. ORDNANCE

(No. fired/No. hits)

| | SPARROW AIM-7E | SIDEWINDER AIM-9B | Cannon | Remarks |
|---|---|---|---|---|
| BLUE 1 | 3/1 | 4/0 | | One AIM-7E kill |
| BLUE 4 | | 3/0 | | |
| MIG-17 | | | 1/0 | |
| MIG-17 | | | 1/0 | |
| MIG-17 | | | 1/0 | |

## 9. EQUIPMENT PROBLEMS

BLUE 1's radio was not operating correctly and he did not receive the MIG calls from the other flight members.

## 10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-4 Hours | Combat Missions |
|---|---|---|---|
| BLUE 1 (Front) | 2600 | 450 | 63 missions; was a RIO in F-89s in ADC. |
| BLUE 1 (Back) | 400 | 120 | First RF-VI mission |

Comments on this Encounter:

BLUE 1, 2 and 4 all felt that the SUU-16 would have been much more effective against the MIG-17s than any of the missiles.

BLUE 1 felt that they could not get set up for a head-on shot.

The MIG's wagon wheel was effective as a counter to the missiles but it was purely a defensive maneuver. It is subject to attack with a gun, however.

Need a missile with short minimum range, and can attack a target maneuvering at 5 or 6 g's.

BLUE 1 felt that while a gun would be useful against a MIG-17 he would not get a chance to use it against a MIG-21 and needed the missiles to deal with the MIG-21.

## 11. DATA SOURCES

Project Interviews: BLUE 1 Front, 22 June 1967

Messages, Reports: 366TFW 141410Z May 1967 OPREP-3 DCOI 448
366TFW 141100Z May 1967 OPREP-3 DCOI 442
366TFW 180830Z May 1967 OPREP-3 DCO-0 0158
Raytheon letter, Old 0413 15 May 1967

## 12. NARRATIVE

BLUE Flight was ingressing to the target area with the strike force, spaced between the flights of event III-242, -243. About 5 miles from the target, at 17-18,000 ft altitude, 525 KTAS, heading 070° in 5-5 formation, BLUE 1 happened to look down and his attention was drawn by several silver flashes, which on closer look appeared to be airplanes. Due to the silver color they were immediately assumed to be MIGs. There were four MIGs at 11 o'clock low and two more at 11 o'clock level. All of the MIGs were attempting to engage the strike force.

BLUE Flight immediately dived to engage the four low MIGs, and after approaching to within 3-4 miles, BLUE 1 could determine that they were MIG-17s, in a left hand orbit about 1,000 ft above the cloud tops (about 6,000-7,000 ft MSL). BLUE 1 estimated there were at least 10 MIG-17s in various positions in a left hand 360° turn. While the MIGs were in the pattern, they were pulling 2-3 g's. No director aircraft were observed. On seeing the MIGs, BLUE 1 did not jettison stores, because he had already jettisoned the 600-gal tank. He kept the 370 on throughout. BLUE Flight positioned at the 6 o'clock of the four MIG-17s, but the MIGs each broke in a separate direction. BLUE 1 selected one of the MIGs (MIG 1) for his attack.

BLUE 1 closed to 3,500-ft range with the target 30° off the nose and fired two AIM-9B missiles in minimum time. About the time of firing, the MIG tightened his left hand turn to a maximum-g maneuver. The MIG turned until BLUE 1 could see a plan view of the MIG from the top, and the MIG was 90° to BLUE 1's heading. Both missiles apparently did not guide, and missed, passing off to the rear of the MIG, 100 ft to 500 ft away and level.

At firing, BLUE 1 had a fair-to-good missile tone, and he held the tone for 3 seconds prior to launch. He was at 350 KIAS, at 5,000 ft altitude, pulling 2 g, with the MIG also at 5,000 ft. BLUE 1 had no overtake and was 20° angle off from the MIG. BLUE 1 had not achieved radar lock when he fired the missiles. There was cloud background with reflection which could have contributed to the missiles' miss.



[redacted]

[redacted]

[redacted]

[redacted]



As the missiles missed, BLUE 1 Flight started to execute a high speed yo-yo reposition on the other MIGs, who still maintained the left hand "wagon-wheel" pattern.

BLUE Flight rolled over the top and positioned themselves behind another single MIG-17 (MIG 2). The time was now 1612H, and the position was within 10 miles of Lead 39 SAM site. The entire engagement took place in a 10-mile radius of this site.

BLUE 1 and 2 attempted to position on MIG 2, and BLUE 3 and 4 moved to a position about 2,000 ft out and high. MIG 2 rolled and dived into the cloud deck and contact was lost [BLUE 1 felt that he could have fired a SUU-16 during this time as he had good position].

While BLUE 1 and 2 were chasing MIG 2, BLUE 3 and 4 observed and called out two MIG-17s (MIG 3 and 4) who were making a descending hard left turn to position on BLUE 1. BLUE 1, due to a radio malfunction, did not hear the calls from BLUE 2, 3, and 4. Both MIG 3 and 4 were firing cannons.

BLUE 3 and 4 attempted to position themselves on MIG 3 and 4 and BLUE 4 fired two AIM-9Bs at MIG 3 who was at 6 o'clock to BLUE 1 and firing. These missiles did not appear to track and were not observed again. The missiles were fired out of parameters with no tone in an attempt to distract MIG 3 from BLUE 1's tail. The missiles were fired against a dark cloud and ground background.

MIG 3, apparently fired out and slid to the outside and ahead of BLUE 1. At this time BLUE 3 with a good tone triggered one AIM-9B but the missile did not leave the rails.

At this time MIG 4 was on the tail of BLUE 2 and firing. BLUE 2 broke down and left, and went into the cloud shelf and then came back out on top. The MIGs had now disappeared. BLUE 2 rejoined on BLUE 1 at once.

Also at this time, the pilot in BLUE 4 saw a MIG-17 (MIG 5) at his 7 o'clock, 2,000 ft range and closing. MIG 5 was firing, and closing with the projectiles passing the top left side of the canopy about 15 ft distant. BLUE 4 unloaded, went afterburner, broke down and then back up, jinking. When he leveled off at 12,000 ft, MIG 5 was gone.

BLUE 4 immediately saw another MIG-17 (MIG 6) in a left turn, then pulling up in front of him. BLUE 4 fired one AIM-9B from the MIG's 7 o'clock, 2,000 ft high, 2,500 ft range with a weak tone and a cloud IR background. The missile came off the rails but its flight was not observed. [BLUE 4 felt that if he had had a SUU-16 he could have obtained a good position to use it on this MIG.] The MIG broke left and BLUE 4 joined BLUE 3.

While BLUE 4 was attempting to disengage from MIG 5, who was on his tail, BLUE 3 observed still another MIG-17 (MIG 7) closing on his 5 o'clock from about 2,000 ft range. MIG 7 did not fire and BLUE 3 disengaged by turning into MIG 7 and going to afterburner.

BLUE 3 and 4 then joined up at about 1618H, did a 360° turn and proceeded to post strike refueling following a flight of F-105s. BLUE 4 was at BINGO fuel at this time.

After breaking off their engagement with MIG 2, BLUE 1 and 2 visually acquired a lone MIG-17 (MIG 8) in a left turn at 11:30 o'clock, 2,000 ft high and 3,000 ft distant. With boresight acquisition BLUE 1 locked on and the backseater switched to full system, interlocks in. The radar scope showed a "break X." BLUE 1 pulled the trigger about three times but nothing happened. He then went to idle power, because he surmised that he was inside minimum range. After opening slightly on MIG 8, BLUE 1 fired two missiles in salvo at "R min." One missile went straight ahead and did not guide, the other SPARROW guided nicely and impacted on the right wing root of MIG 8.

BLUE 1 and MIG 8 were in a level, left hand turn during the attack with both in a 30° left bank at 5,000 ft altitude, pulling 3 g's. MIG 8 was 20° off the nose of BLUE 1 and both were at about 350 KIAS. At firing the track crossing angle was about 20°, with zero overtake.

The missile which failed to guide passed to the target's 6 o'clock position about 1,000 ft away. The missile which scored the hit was observed by BLUE 1, to go straight out and then break left from the outside of the turn to explode near the right wing root of the MIG-17. MIG 8 burst into flame and pitched up about 30°, stalled out, and descended tail first, in a nose high altitude at a rapid rate into the cloud deck.

The time was now about 1616H and BLUE 1 Front and BLUE 2 Back observed a SAM burst at their 10 o'clock level (8,000 ft MSL) 4,500 ft distant. It was felt that Lead 39 was the firing site and was attempting to hit BLUE Flight.

Just after the SAM burst, BLUE 1 engaged another MIG 17 (MIG 9). The MIG was in a left hand turn, in a 60° bank and appeared to be pulling about 4 g. At 3,500 ft range, BLUE 1 increased his turn to 5 1/2 to 6 g and put the pipper ahead of the MIG and released g to let the MIG come back through the sight. BLUE 1 got a tone (for about 2 seconds) and with MIG 9 20° off the nose (TCA 20°) and BLUE 1 at 350 KIAS and 6,000 ft altitude with 1/2 to 1 g on the aircraft, in a level turn 60° bank to the left and 50 kts opening, BLUE 1 fired two SIDEWINDERS. The SIDEWINDERS guided partially but the MIG started to pull maximum g's and pulled away from the SIDEWINDERS rapidly. The missiles passed aft of the MIG by 500 ft, and detonated about 2 seconds after they passed the MIG. There was no cloud IR background for these firings, and BLUE 1 had a good tone.

[redacted]

[redacted]

BLUE 1 then broke off and went up, and saw three more MIG-17s come under him in an echelon formation. BLUE 1 picked out one of these and got a lock, by going below the MIG. On glancing down, BLUE 1 saw that the dot was in the ASE circle, and so he fired a SPARROW. Just as the missile was fired, BLUE 1 front saw the B-stroke start to travel off to the side. It was surmised that the radar had either been in memory hold, or it had locked on the ground, since the overtake with the MIG was about zero. At firing BLUE was about 350 KIAS and 6,000 ft altitude.

The missile went 90° off to the right and was not observed again.

BLUE 1 then saw two more MIG-17s and followed them through several 360° turns sitting on the tail of one of the MIGs. BLUE 2 was staying with BLUE 1 and BLUE 1 was clear, with the airspeeds varying from [illegible] to 350 knots. He was able to stay inside the turn but was always too close, or at too great an angle off, to get set up to fire. The MIG kept dipping into the clouds and coming back in, but by holding the turn BLUE 1 was able to keep position on him. Finally, the MIG ducked into the clouds and was not seen again. The MIG's wingman had previously disappeared.

The time now was 1620H and BLUE 1 and 2 after clearing the area and observing no more enemy aircraft proceeded directly to post-strike refueling.

Throughout the engagement, the MIGs when present had continued to stay in the left hand pattern, rolling [illegible] until attacked, and when the F-4s reached about 4,000 ft range, would tighten the turn and the F-4s would start to loose out at about 6 g. However, the F-4s could repeatedly reposition by executing a high-speed yo-yo.[1] Despite the capability of repeated attacks, the F-4s experienced difficulty in obtaining successful missile launch conditions due to the MIG maneuvers.

Just prior to BLUE 3's engagement with MIG 7, all of BLUE Flight observed one MIG-17 burst into a ball of flame and dive, at an 80° angle into the cloud shelf. (One of the kills from Event III-239). About two minutes later BLUE 2 and 3 observed a MIG-17 in a 60° dive, at a high rate of speed, with a thin plume of white smoke trailing the aircraft (another of the kills of Event III-239).

At approximately 1615H BLUE 1 Front saw one MIG-17 fire two AA-2 ATOLL missiles at an element of the flight in Event III-239. The ATOLLS went straight ahead and maintained the heading of the MIG. The MIG's intended targets maintained a perpendicular flight path. The missiles appeared to miss by about 5,000 ft.

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[1] The F-4 was brought up, and at the top rolled over to an inverted position. On looking down, invariably another MIG-17 would be coming through and an outside roll would then give the F-4 a favorable position on the MIG.

NOTE: The interview of BLUE 1 and the OPREP sources do not completely agree on the order (number is the same) of missile firings. The OPREP was been followed in this case because of its inclusion of the other aircraft in the flight.

[redacted]



Aircraft Involved: Four F-105Ds vs two MIG-17s
Results: No damage
Vicinity of Encounter: 21°00'N/105°50'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 May 1967/between 1600H and 1630H.

Four F-105 (BLUE Flight) were part of a 19 aircraft strike force from Korat attacking the Ha Dong Army Barracks (JCS 31.00). BLUE lead was the force commander. The other strike flights which encountered MIGs are those described in Events III-242 and -243. The actions of the IRON HAND support aircraft which encountered MIGs are described in Event III-239. The CAP flights which supported this strike are the aircraft whose actions are covered in Events III-237 and -238.

## 11. DATA SOURCE

388 TFW 141225Z May 1967 OPREP-3 DOI 1674

## 12. NARRATIVE

Inbound, BLUE lead saw MIG-17s in the target area and called MIG at 12 o'clock. These were not engaged.

BLUE lead observed two silver MIG-17s in the target area as the flight began egressing. BLUE lead attempted to attack them but had to break off when he came under SA-2 attack.

The SA-2 defenses were particularly strong. BLUE flight came under attack by a SAM just as they rolled in on their bomb run. The missile struck BLUE 2 causing severe damage. Other SAMs were launched and BLUE flight jettisoned 24X M-117 and escorted BLUE 2 from the target area under continuing SAM attack as well as MIG threat. In all, seven SAMs were seen.

BLUE 2 bailed out in the vicinity of 21°19'N/104°49'E due to damage from the SAM, and the rescue was successful.



[redacted]

[redacted]

Event III-242

Aircraft Involved: Four F-105Ds vs at least six MIG-17s

Results: Sighting only

Vicinity of Encounter: About 20°53'N/105°12'E

1. **PRIMARY MISSION AND TACTICAL SITUATION**

Date/Time: 14 May 1967/Between 1600H and 1630H.

Four F-105 (BLUE Flight) were part of a 19 aircraft strike force from Korat attacking the Ha Dong Army Barracks (JCS 31.00). The other strike flights which encountered MIGs are those described in Events III-243 and III-244. The actions of the IRON HAND support aircraft which encountered MIGs are described in Event III-240. The CAP flights which supported this strike are the aircraft whose actions are disclosed in Events III-240 and III-241.

11. **DATA SOURCE**

388 TFW 141225 May 1967 OPREP-3 DOI 1674.

12. **NARRATIVE**

BLUE Flight saw two unidentified aircraft go down in flames in the vicinity of 20°53'N/105°32'E. One of these was also seen by the aircraft of Event III-240.

BLUE Flight also observed the five MIG-17s attack the IRON HAND Flight (Event III-239) as well as a dog fight between MIG-17s and F-4Cs at 20°52'N/105°12'E.

[redacted]

[redacted]

Event III-243

Aircraft Involved: Four F-105Ds vs two MIG-21s and four MIG-17s

Results: Sighting only

Vicinity of Encounter: 20°50'N/105°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 May 1967/1611H.

Four F-105 (BLUE Flight) were part of a 19 aircraft strike force from Korat attacking the Ha Dong Army Barracks (JCS 31.00). The other strike flights which encountered MIGs are those described in Events III-242 and III-244. The actions of the IRON HAND support aircraft which encountered MIGs are described in Event III-240. The CAP flights which supported this strike are the aircraft whose actions are described in Events and III-241.

11. DATA SOURCE

388 TFW 141226 May 1967 OPREP-3 DOI 1674

366 TFW 141100 May 1967 OPREP-3 DCOI 442.

12. NARRATIVE

As the strike force approached the target area two MIG-21s and four MIG-17s were seen by BLUE flight but these posed no threat to the force since the F-4s on MIGCAP (Events III-240 and III-239) immediately engaged them.

BLUE flight observed three SA-2s in the target area. One of which passed 100 feet from BLUE 1.

BLUE flight saw one unidentified aircraft go down in flames and they put the location of their sighting at 21°00'N/105°32'E.



[redacted]

[redacted]

[redacted]

Event III-244

Aircraft Involved: One F-105F and three F-105Ds vs four or five MIG-17s

Result: No damage

Vicinity of Encounter: 20°53'N/104°42'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 14 May 1967/1614H.

Four F-105 (BLUE Flight) from Korat were providing IRON HAND support for a strike against JCS 31.00. The strike flights which encountered MIGs are the flights in Events III-241, -242, -243. The CAP support flights which encountered MIGs are those in Events III-241, -245.

2. MISSION ROUTE

Departed Korat and went to Channel 97 (probably with air-to-air refueling). After departing Channel 97 went overland to the target area.

3. AIRCRAFT CONFIGURATIONS

F-105F BLUE 1

2 - AGM-45
2 - CBU-24
1 - 650 gallon tank

F-105D BLUE 2

2 - AGM-45
6 - 500 lb bombs (MK 82)

F-105D BLUE 3

6 - 500 lb bombs (MK 82)
1 - AIM-9B

BLUE 4

6 - 500 lb bombs

MIG-17

Silver
Tanks.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Some cumulus in the area. Good visibility.

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 8-10,000 ft | | | |
| Heading: | 230-250 degrees | | | |
| Speed: | 550 kts, accelerating | | | |
| Fuel: | 9-10,000 lbs | | | |

Flight Formation

BLUE 2 and 4 in front of BLUE 1 and 3 by about 2000 feet and 500 feet below BLUE 1 and 3.

5. INITIAL DETECTION

BLUE Flight had just launched SPRIKE missiles at a SAM site and had completed a wing-over to the left, when they saw 4 or 5 MIG-17s making a descending, head-on pass.

6. ACTION INITIATED

The MIGs quickly passed through the flight and two of them turned to position on BLUE 1 and 3.

7. SITUATION DEVELOPMENT

BLUE Flight continued to accelerate and the MIGs could not close to firing position.

8. ORDNANCE

None expended.

9. EQUIPMENT PROBLEMS

None.

[redacted]

[redacted]

## 10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions |
|---|---|---|---|
| BLUE 1 | | | |
| Front | 1500 | 900 | 15 |
| Back | Unknown 100 | | 15 background |

Comments on this Encounter

BLUE 1 Front surmised that the MIGs had been trying to follow them through the SHRIKE launch and did not catch up until BLUE Flight turned.

The F-4 MIGCAP certainly helped out, even though they were somewhat separated from the F-105s.

Amazed how quickly the MIG-17 could turn around to follow them without losing much speed. The turn rate of the MIG-17 was amazing.

The speed and acceleration of the F-105 was a saving factor.

Felt the FANSONG radar was directing the MIGs. The FANSONG had opportunity to fire and was illuminating them, but did not fire.

Comments on Overall Experience

Felt the QRC-160 pods did a good job, although they are not used by the IRON HAND aircraft unless there is a SAM launched. While searching, the pods are not operating. This is due to the fact that with pods operating, the electronic gear that is used to locate the SAMs is blinded.

If you can see the SAM in time, it can be outmaneuvered.

The IRON HAND aircraft are jumped by MIGs because of their role and the fact that they are separated from the strike force.

## 11. DATA SOURCES

Project Interviews: BLUE 1 Front and BLUE 1 Back, 6 June 1967.

Messages, Reports:

388TFW 141230Z May 1967 OPREP-3 DOI 1675.
388TFW 141225Z May 1967 OPREP-3 DOI 1674.

## 12. NARRATIVE DESCRIPTION

BLUE Flight had detected a SAM site at 21°04'N/104°44'E which was giving high PRF at 2-1/2 rings intermittant activity. When at 20°53'N/104°42'E at 1614H, BLUE 1 in a 50 degree loft, launched two SHRIKEs, one with a white phosphorus and one with a high explosive warhead. BLUE 2 launched two SHRIKEs also. At launch, BLUE 1 and 2 were heading 355 degrees at 16,000 feet, and 400 knots, and were 12 miles slant range from the site. BLUE 3 and 4 were on the right in fingertip formation (BLUE 2 on the left).

Immediately after firing, BLUE Flight executed a high-g wing-over to the left, and descended to gain airspeed. During this maneuver, BLUE 2 slid to the inside and ahead. BLUE 4 lost contact with the flight momentarily and the first one he saw was BLUE 2 so he joined on him.

On completion of about 130 degrees of turn and still descending BLUE 2 and 4 were out in front of BLUE 1 and 3 by approximately 2000 feet and below them by about 500 feet. BLUE 2 with BLUE 4 on the right bottomed out at 8-10,000 feet and 550 KCAS and a heading of 250 degrees, and slightly left of BLUE 1 and 3.

At this time four MIG-17s[1], in a diving pass from 11 o'clock passed through the flight. The MIGs were silver in color and no markings were seen. Small drop tanks were seen by BLUE 1. The MIGs came through almost head on and quickly passed through the formation. The MIGs were seen by BLUE 1 and 3 to be in trail in a disorganized pass such that they passed between the two elements of BLUE Flight.

The first two MIGs turned into the flight and ended up in trail 2000-3000 back of BLUE 1 and 3, with a slight negative overtake. BLUE 1 observed the 3rd and 4th MIG to roll inverted but did not see them after that although they could have been going after BLUE 2 and 4.

No firing was observed from the MIGs.

BLUE Flight continued to accelerate and joined in a defensive fingertip formation and egressed at 8000 feet altitude heading 260 degrees.

[1] OPREP states 4 or 5 MIG-17s.

[redacted]



On seeing the MIGs, BLUE Flight jettisoned the 650 gallon tank, and when the MIGs started to turn behind the flight the remaining ordnance (18 MK 82 bombs) was jettisoned at 20°53'N/104°42'E.

Although the BULLS EYE system was in effect at this time, no MIG warnings were given for the area in which the flight was operating. No X-band signals were received at any time.

[redacted]

[redacted]

Event III-245

Aircraft Involved: Two F-8Es vs two MIG-17s
Result: Two MIG-17s destroyed
Vicinity of Encounter: Unknown

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 May 1967/unknown

BLUE Flight (two F-8Es) were providing TARCAP and were covering strike aircraft's departure from the target. Aircraft were based on CVAs at YANKEE STATION.

3. AIRCRAFT CONFIGURATIONS

F-8E BLUE 1, 2

SIDEWINDER (AIM-9D)
20mm cannon

5. INITIAL DETECTION

An A-4E called that he had a MIG on his tail. BLUE 1 sighted the MIG. At a later time, after BLUE 1 and 2 had rejoined the strike group, BLUE 2 observed a MIG-17 making a pass on an F-8 aircraft ahead of him.

6. ACTION INITIATED

In the first sighting, BLUE 1 broke downward and commenced tracking the MIG. In the case of the latter encounter, BLUE 2 called a warning and engaged the MIG.

7. SITUATION DEVELOPMENT

BLUE 1 fired an AIM-9D at the first MIG. The missile did not guide, but apparently caused the MIG to level his wings and break off his attack on the A-4. The MIG commenced a turn as BLUE 1 fired another AIM-9D. This missile detonated immediately behind the enemy and severed his tail assembly. The MIG rolled inverted and dove into the ground.

In the second encounter, BLUE 1 fired 20mm and the MIG broke off his run on the F-8. BLUE 2 fired an AIM-9D which did not guide. BLUE 2 continued to track the MIG, firing 20mm and finally two additional AIM-9Ds. Both of these last two missiles impacted in the tail of the MIG. The enemy nosed over and crashed.

8. ORDNANCE

| | (No. fired/No. hits) SIDEWINDER AIM-9D | 20mm | Remarks |
|---|---|---|---|
| BLUE 1 | 2/1 | Unknown | First missile failed to guide. |
| BLUE 2 | 3/2 | Unknown | |

11. DATA SOURCES

Messages: CTG 77.0 OPREP-3 191403Z, May 1967

12. NARRATIVE DESCRIPTION

As above.



[redacted]

[redacted]

Event III-246

Aircraft Involved: Four F-8Cs vs one MIG-17
Result: One MIG-17 destroyed
Vicinity of Encounter: Unknown

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 May 1967/unknown

BLUE Flight (four F-8Cs) on flak suppression mission. Aircraft based on CVAs at YANKEE STATION.

3. AIRCRAFT CONFIGURATIONS

F-8C BLUE 1, 2, 3, 4

One aircraft carried ZUNI rockets and SIDEWINDERS (AIM-9D).
Configuration of rest of flight unknown.

5. INITIAL DETECTION

One of BLUE aircraft was pulling out of a ZUNI firing run when a MIG passed in front of him.

6. ACTION INITIATED

The BLUE aircraft which sighted the MIG turned and commenced tracking.

7. SITUATION DEVELOPMENT

BLUE fired an AIM-9D which blew the tail off the MIG. The MIG crashed. There was no ejection observed.

8. ORDNANCE

| | (No. fired/No. hits) SIDEWINDER AIM-9D |
|---|---|
| BLUE | 1/1 |

11. DATA SOURCES

Messages: CTG 77.0 OPREP-3 191403Z, May 1967

12. NARRATIVE DESCRIPTION

As above.

[redacted]

[redacted]

Event III-247

Aircraft Involved: Two F-8Cs vs two MIG-17s

Result: One MIG-17 destroyed

Vicinity of Encounter: 20°40'N/105°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 May 1967/morning

BLUE Flight (unknown number of F-8Cs) providing TARCAP for Navy strike in the Hanoi area. Aircraft based on CVAs at YANKEE STATION.

3. AIRCRAFT CONFIGURATIONS

F-8C BLUE

SIDEWINDERS (AIM-9D)
20mm cannon

5. INITIAL DETECTION

En route to target area a MIG-17 was sighted directly behind an A-6A. In the target area one of BLUE Flight observed a MIG-17, low, at his 6 o'clock position.

6. ACTION INITIATED

In the first sighting, two members of BLUE Flight turned to attack the MIG. In the sighting in the target area, one member of BLUE Flight maneuvered to attack the MIG.

7. SITUATION DEVELOPMENT

One of the two BLUE Flight members who attacked the first MIG fired two AIM-9D missiles plus 20mm. The MIG dove away and BLUE Flight proceeded to the target area. In the case of the latter MIG, one of the BLUE Flight performed a high yo-yo and maneuvered behind the MIG. He then fired an AIM-9D at a range of 4000 ft. The MIG exploded and the pilot ejected.

8. ORDNANCE

| | (No. fired/No. hits) SIDEWINDER AIM-9D | 20mm |
|---|---|---|
| BLUE | 3/1 | 0 |

11. DATA SOURCES

Messages: CTG 77.0 OPREP-3 191403Z, May 1967

12. NARRATIVE DESCRIPTION

As above.

Event III-248

Aircraft Involved: Two A-6As vs three MIG-21s

Results: No damage

Vicinity of Encounter: 20°15'N/105°25'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 May 1967, 1140H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike pair, part of six A-6 A/C strike group, egressing from target area at 10,000' after weather abort observed three MIGs far below; estimate MIGs were below 500'; one MIG broke upward, passing in front of flight; flight jettisoned 44 MK-82 and proceeded to coast out point; no further contact with MIGs.



[redacted]

Event III-249

Aircraft Involved: Two A-4Cs vs five MIGs

Results: Sighting

Vicinity of Encounter: 20°59'N/105°26'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 May 1967, 1530H

II. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

IRON HAND flight from Kitty Hawk observed five MIGs of unknown type very low in valley; no attempt to engage made.

Event III-250

Aircraft Involved: Three F-4Cs vs one unident

Results: Sighting

Vicinity of Encounter: 20°40'N/104°30'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 May 1967, 1630H

II. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

ECM escort flight at 31,000' observed a silver A/C; unable to distinguish type due to altitude.

Event III-251

Aircraft Involved: Four F-105s vs four MIG-17s

Results: Sighting

Vicinity of Encounter: Kep A/F

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 May 1967, 1641H

II. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight observed four MIGs over Kep airfield; MIGs appeared to be in a traffic pattern and in the process of landing or takeoff, at an altitude of approx 2500'.

[redacted]

Event III-252

Aircraft Involved: Eight F-4Cs vs twelve-fifteen MIG-17s

Results: Four MIG-17s destroyed and one F-4C lost

Vicinity of Encounter: 21°20'N/106°25'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 May 1967/from 1629H to 1640H.

Eight F-4Cs (BLUE and GREEN Flights) were providing MIG CAP for a strike force from Takhli, which was attacking the Bac Le Railroad Yards at 21°31'N/106°26'E (JCS 1079 and 1354). The flights of the strike force which encountered MIGs are those of Events III-245,-246,-247. There was IRON HAND and EB-66 support for this strike.

## 2. MISSION ROUTE

BLUE and GREEN Flights departed Ubon and refueled on TAN ANCHOR. From refueling, they proceeded direct to 19°00'N/106°47'E, then direct to 21°07'N/107°38'E, then direct to 21°20'N/106°32'E, and after the engagement egressed to 21°07'N/107°38'E. From there, they proceeded direct to TAN ANCHOR, for air-to-air refueling, then direct to Channel 109 and then direct to Ubon.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4 and GREEN 1, 2, 3, 4

4 - AIM-7E SPARROW
4 - AIM-9B SIDEWINDER
1 - QRC-160 pod
1 - 600 gallon centerline tank
1 - 370 gallon wing tank.

BLUE 1 - IFF-Off, TACAN-On.

MIG-17s

Silver, red star outlined in yellow with heavy red bar on each side of the star.
Markings on top of wings and fuselage forward of horizontal stabilizer.
No external stores.
Had afterburners.

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear with scattered patches of clouds at 10,000 feet. Visibility was good.

| | BLUE 1 2 3 4 | GREEN 1 2 3 4 |
|---|---|---|
| Altitude: | 8,000 feet | |
| Heading: | West | |
| Speed: | 540 KTAS | |
| Fuel State: | 15,000 lb - some fuel in outboard tank | |

Flight Formation

Pod formation modified to give MIG coverage; BLUE Flight's element was on the right 400-500 feet high. BLUE 2 was down about 200 ft. There was about 1500 ft between aircraft.

## 5. INITIAL DETECTION

BLUE and GREEN Flights heard MIG calls, indicating MIGs at 8-11 o'clock. As these were seen, other MIG-17s were detected at 2 o'clock. The MIGs were low, and, since they were silver, were easily seen and recognized at long ranges (up to 9 miles) against the dark background.

## 6. ACTION INITIATED

BLUE Flight went after the MIGs at 8 o'clock and GREEN Flight went after those at 2 o'clock.

## 7. SITUATION DEVELOPMENT

BLUE 1 engaged a MIG-17 and fired a SPARROW which missed. He then engaged a MIG-17 who was attacking GREEN 1 and killed the MIG with a SIDEWINDER. Meanwhile BLUE 3 engaged a total of three MIG-17s and fired four SPARROWs and three SIDEWINDERs but achieved no hits.

GREEN Flight attacked the MIG-17s and GREEN 1 fired two SPARROWs achieving a kill. During the first attack, GREEN 2 was shot down by a MIG-17. GREEN Flight was fired upon by MIGs in three separate instances, as GREEN 1 fired two more SPARROWs and a SIDEWINDER without success.



[redacted]

[redacted]



GREEN 3 and 4 attacked a MIG-17 and GREEN 3, after firing a SPARROW which missed, fired a SIDEWINDER which killed the MIG. GREEN 3 subsequently fired three more SIDEWINDERs and two more SPARROWs without success. GREEN 4 engaged two MIG-17s and fired two SPARROWs without success.

BLUE and GREEN Flights then started to egress but GREEN 1 reentered the area, and got below a MIG-17. GREEN 1 launched two SIDEWINDERs, one of which hit and killed the MIG.

8. ORDNANCE

(No. fired/No. hits)

| | SIDEWINDER AIM-9B | SPARROW AIM-7E | Cannon | Remarks |
|---|---|---|---|---|
| BLUE 1 | 1/1 | 1/0 | | |
| BLUE 3 | 3/0 | 4/0 | | Attempted to fire one other AIM-9B |
| GREEN 1 | 4/1 | 3/1 | | |
| GREEN 3 | 4/1 | 2/0 | | |
| GREEN 4 | - | 2/0 | | Attempted to fire two other AIM-7E |
| MIG-17 | | | 1/0 | At BLUE 3 |
| MIG-17 | | | 1/0 | First pair that fired at GREEN 1 |
| MIG-17 | | | 1/0 | |
| MIG-17 | | | 1/1 | Hit and destroyed GREEN 2 |
| 2 MIG-17s | | | 1/0 | |
| 2 MIG-17s | | | 1/0 | At GREEN 1 |
| 2 MIG-17s | | | 1/0 | |

9. EQUIPMENT PROBLEMS

BLUE 1 - The radar scope in the rear cockpit of BLUE 1 failed.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | 3000 | 300 | 82 | |
| Back | 650 | 450 | 85 | |
| BLUE 3 | | | | |
| Front | 2500 | 215 | 69 | Six years in B-47s |
| Back | 250 | 80 | 23 | |
| GREEN 1 | | | | |
| Front | 4900 | 225 | 56 | Had been in previous MIG engagements; two MIG kills previous to 20 May; wing commander |
| GREEN 3 | | | | |
| Front | 3100 | 200 | 87 | |
| Back | 500 | 200 | 92 | |
| GREEN 4 | | | | |
| Front | 3500 | 150 | 38 | Had been in fighters all of his career |
| Back | 500 | 100 | 19 | One live missile fired; no simulator runs. |

Comments

BLUE 1, Front - the elements of BLUE and GREEN Flights were coordinated. This coordination was necessary and the wingman had to stay with his lead. It was impossible to determine who the elements were (whether BLUE or GREEN) since there were no markings

[redacted]

on the F-4s. Although they were coordinated, sometimes BLUE and GREEN elements were working together.

It was difficult to get into SIDEWINDER firing parameters against the MIG-17.

Used only minimum afterburner so the wingman would have full afterburner to use to keep up.

Although SAMs and AAA had been observed to be used in conjunction with the MIGs in previous engagements, none were used this day. There were instances in the past where MIG-21s lured F-105s into SAM rings and other MIGs would attempt to lure fighters up valleys into flak traps.

After the radar display failed, BLUE 1 no longer expected the AIM-7E to work so he tried to use HEAT for the rest of the flight.

Two flights of F-4s are needed to provide adequate coverage for the strike force. Mutual support between these flights is necessary. The prebriefed tactics of using the vertical against the MIG-17 were successful.

With the size of the MIG attacking force it was impossible to work as a flight. At best, they were left with coordinated elements. The wingman stays with the element leader and doesn't attack unless instructed to do so by the leader. A single aircraft or a three-ship flight is in a dangerous situation in this type of battle.

The chaff carried in the speed brakes helped against SAMs. If SAMs were guiding, it forced the fighters down to the deck and into flak. There were recorded cases of SAMs guiding at 200 feet AGL.

The MIGs are getting more aggressive.

BLUE 3, Front - by keeping his speed high, he could effectively fight the MIGs.

Communications were a problem since the backseater and the wingman missed several calls by BLUE 3, Front. BLUE 3 had trouble communicating with the backseater due in part to both tenseness and noise on the radio.

GREEN 1, Front - the turning ability of the MIG-17 is fantastic. It must be seen to be believed.

There was a lot of noise on the radio.

The MIG-17, when used as it was this day, is a more formidable opponent than a MIG-21. The MIG pilots were respected and must be. We must know the capabilities and advantages of our aircraft.

The counter to the MIG's wagon-wheel defense requires coordination and timing between two F-4 flights, with each of the flight's elements operating as a coordinated pair. By coming in low and coming up at the wagon-wheel (which can be done in those areas without flak), a coordinated pass with one element keeping the MIGs busy should permit some MIGs to be broken out of the circle.

As long as the MIGs stay in the circle they are very difficult to attack. If a tangential attack is made from outside the periphery, the MIGs can break into the attack, turning inside of the F-4. If an attack is made by cutting across the circle, a MIG can easily get on the tail of the F-4. The attacker cannot go to the inside of the circle since this is usually anchored over their home base, with corresponding dense flak.

The MIG-17 wagon-wheel is strictly a defensive maneuver against the F-4. However, the MIGs could use a low flight in the wagon-wheel pattern, and with a high flight for attack, have some offensive capability.

The addition of the gun on the F-4 would complement the missiles. It could be an advantage at low altitudes and close ranges. However, the gun is not a primary weapon. In some cases, achieving the parameters for a gun shot, would permit attack by the MIGs.

The MIGs are growing more aggressive. The MIG-21s on the second of January (Event III-52) were not the problem that the MIG-17s were this day.

Due to MIG attacks on IRON HAND Flights, the IRON HAND Flights are now getting CAP support. However, the F-4 cannot get too close to the IRON HAND flight due to the ECM pod interference with the SAM detection gear.

The F-105 force is better protected since the F-105s started to bunch up in gaggles. They are difficult to protect when they were strung out.

GREEN 1, Back - the problem with a boresight lock at low altitude is that the target return is difficult to find if the gyro is "in" due to the ground line. However, the target is a distinct blip if the gyro is "out". However, the gyro should be replaced to "in" before firing. The automatic switching to full system is a good feature.

By using the glare shield as a hand hold, and by keeping the shoulder harness lock open, the backseater can pull himself out of the seat and see well back towards 6 o'clock.

GREEN 4 - initially the flights of BLUE and GREEN Flights started separately in different locations. As long as the flights stayed apart, the F-4s were on the defensive. But when the flights merged, the three elements of BLUE and GREEN Flights were able to work

together and gain the offensive. It is now standard that the flights will operate together when engaged by a superior force, since working together complicates the MIGs' coordination.

There was a single MIG operating low and near the center of the wagon wheel. This individual was thought to be the director. Every time that GREEN 3 and 4 would descend to an attack, a MIG would either cut across the circle to meet their attack or one would come up from low.

The MIG wagon-wheel tactic seemed like a good procedure in which to use people efficiently, if there were a lot of inexperienced pilots and only a few experienced ones.

A weapon is needed so that maneuvering targets may be attacked inside 2500-ft range. Due to the overtake and g's which exist in most fights the minimum range on the AIM-4 missile is about 6500-7000 feet. The lack of some sort of gun has given away a good chunk of air space wherein the F-4 cannot attack the MIG. The MIGs have realized this and have adopted tactics to defeat the missiles, mostly by high-g maneuvering.

To fight the MIG-17, the F-4 must be worked in the vertical. To fight the MIG-21 the F-4 must be worked in the horizontal plane. Working in the vertical must be an automatic reaction. The flight crews needed more training in this type of maneuvering. The crews that came to the theatre had diverse backgrounds (ADC, SAC) and had insufficient experience or training.

## 11. DATA SOURCES

Project Interviews: BLUE 1, Front, 3 June 1967; BLUE 3, Front, 4 June 1967; GREEN 1, Front, 4 June 1967; GREEN 1, Back, 3 June 1967; GREEN 4, Front, 4 June 1967.

Messages, Reports:

8 TFW 201215Z May 1967 OPREP-3 DOI 05363.

8 TFW 201535Z May 1967 OPREP-3 DOI 05365.

8 TFW 210245Z May 1967 OPREP-3 DI 05373 Sect. I, II, III.

AIM-7D/E Missile Performance Report for GREEN 1, GREEN 3, GREEN 4, BLUE 1 and BLUE 3.

## 12. NARRATIVE DESCRIPTION

BLUE and GREEN Flights were providing MIG CAP for a large strike force (five to seven F-105 flights). BLUE 1 was the MIG CAP force commander. The strike force was ingressing as a gaggle and BLUE Flight was flying line abreast with the second F-105 flight. Since the ingress was from the east, (heading west) BLUE Flight was about 2 miles north of the F-105s and about 3000 feet higher. The flight formation was a Pod formation slightly modified to give better lookout coverage for MIGs. GREEN Flight was to the right and high of the last F-105 flight, which put them about 3 miles back of BLUE Flight.

The force ingressed from the Gulf of Tonkin and as they crossed the coastal islands, the F-4s jettisoned their centerline tanks. As the force passed by a SAM site, about 20 miles east of Kep Airfield, two SAMs were fired as seen at BLUE 1's 11 o'clock. Just as the SAMs were fired BLUE 1 observed the IRON HAND Flight to pop up and fire two SHRIKEs at the site. The SAMs immediately stopped guiding.

At about the time the SAMs were seen, one of the warning agencies, using the BULLSEYE warning system called "Bandits, BULLSEYE, low". followed by "Bandits 30 east, 36, low". This indicated to the flights that MIGs were 30 miles east of Hanoi at low altitude heading 360 degrees (north). This warning indicated that MIGs would be seen at 8-11 o'clock from BLUE Flight.

The F-105 force had planned to split and hit two targets on the Northeast Railroad and the CAP force had also planned to split in order to cover each part of the force. Before this happened, about 15 miles short of the target, BLUE 1 Front saw MIGs at 9 o'clock low, about 8 miles away. These MIG-17s were silver and were easily seen and immediately identified, even at 8 miles range, since they contrasted against the dark green vegetation. The MIGs passed underneath a cloud and when seen again were at 8 o'clock apparently attempting to attack the strike force. BLUE 1 called them out and GREEN 1 acknowledged. These MIGs were in GREEN 1's 9-10 o'clock position.

Immediately thereafter, a member of GREEN Flight called MIG-17s at 2 o'clock, low, heading south. The warning agency had not indicated these latter MIGs.

At this time the F-105s started to see MIGs and called them. The MIGs at 8 o'clock were still out about 5 miles.

At this time BLUE Flight started left to attack the MIG-17s seen in the 8 o'clock position, and GREEN Flight turned right to attack the MIG-17s seen in the 2 o'clock position. There were six to eight MIG-17s in each group and, at first, the engagements of BLUE and GREEN Flights were separated by 2-3 miles. The fights gradually coalesced, however, with the elements of each flight acting separately to provide support to other elements. The engagements took place within a 10 mile radius of 21°20'N/106°25'E.

Due to the actions which followed, and the fact that each element from time to time was working with different elements (but not always certain of the specific identification) the actions of each element will be described separately.

As the F-4 engaged the MIGs, the F-105 force proceeded on to their assigned targets.

BLUE 1 and 2

As BLUE Flight went to afterburner and turned left to attack the MIGs, the MIGs had turned left and climbed, to attack the F-105s from over the top. This put the MIGs at BLUE Flight's 10 o'clock position, with the F-4s behind the MIGs. BLUE 1 did not immediately drop the outboard tank since it still had some fuel in it.

The MIGs continued to turn left and BLUE 1 concentrated on two MIG-17s at 10-11 o'clock. BLUE 1 locked on in the boresight mode. The backseat then switched to full system, interlocks out, gyro out, and BLUE 1 pulled lead on the MIG and fired a SPARROW. The missile guided perfectly but 2-3 seconds before intercept, the radar scope in the backseat went blank. Although only a faulty fuse had caused the back presentation to turn off (the frontseat scope was still operating) this was unknown to the backseater who then broke lock to go to boresight and the missile missed.

BLUE 1 had been descending, and he had obtained a lock on and fired at 7000 feet range. At the time of firing BLUE 1 was at about Mach 1 at 5000-6000 feet altitude, pulling 4 g's and closing in on the MIG at 350 knots. The angle off was 20-30 degrees. The polarization was linear and the clutter was in the override position. The MIG-17 was in a left turn at about 5000 feet altitude.

Due to the overtake, BLUE 1 closed on the MIG and when about 2000 feet away at several hundred feet altitude, he pulled up in a high speed yoyo, and switched to HEAT.

BLUE 1 made some other passes on MIGs and during one he saw an F-4 pass in front of him on fire. At this time, as he was coming back up in a left spiral, he saw an F-4 at 12 o'clock high, completely on fire. The tail and right wing were missing and above the burning F-4 were two parachutes. BLUE 1 saw the parts of the F-4 fall but lost contact with the chutes.

BLUE 1 made another pass on a MIG-17 but was unsuccessful in achieving SIDEWINDER launch parameters. BLUE 1 was in minimum burner all of the time. As he worked in the vertical (in a left turn) he repeatedly could see, many MIG-17s, all in a left orbit, at 10 o'clock.

BLUE 2 was clearing BLUE 1, and from 8500 feet altitude BLUE 1 saw a single F-4 (GREEN 1, recognized since he was a single) with a MIG-17 on him. BLUE 1 then started to attack this MIG. Before he could alert GREEN 1, GREEN 1 broke hard left. At this time GREEN 1 was about 1-1/2 miles away from BLUE 1. As GREEN 1 broke, the MIG-17 overshot. The MIG-17 made no move to reattack GREEN 1, but rolled to the right and headed straight toward Kep Airfield. (BLUE 1 could look past the MIG and see the runway about 8 miles away.) The MIG had been at about 4000 feet altitude and was diving toward the ground at about 20 degrees, with about one g on the aircraft, and not turning.

BLUE 1 got a good tone and fired a SIDEWINDER. When he fired, BLUE 1 was at 550 knots, at 2500 feet altitude with one g on the airplane. He was closing on the MIG at 250 knots. The MIG was straight ahead (0 degree angle off) at about 1500 feet altitude. The missile detonated to the left of the tailpipe. The MIG rolled over to the left, on fire, and went straight down from 1500 feet altitude. BLUE 1 is credited with a confirmed kill.

BLUE 1 and 2 then turned left and went back up to about 8500 feet altitude and returned to the battle area which was about 4 miles behind them.

BLUE 1 and 2 then made an attack on another MIG-17. This MIG was low, at about 200 feet altitude, and although BLUE 1 chased the MIG around, he could never get in a position for a SIDEWINDER attack. BLUE 1 could not get below the MIG so he could look up and get a tone differentiation.

When BLUE 2 called bingo minus 800 pounds, BLUE 1 and 2 disengaged. By this time the MIGs were seen moving off towards Kep, and BLUE 1 and 2 egressed without further incident. BLUE 1 and 2 had not been below 500 knots indicated throughout the fight.

BLUE 3 and 4

As BLUE 1 and 2 dived to engage their first MIG, BLUE 3 and 4 stayed high and behind for about two turns in order to provide support. After that, BLUE 3 and 4 lost track of BLUE 1 and 2 due to the confusion of MIGs and F-4s.

BLUE 3 and 4 then attacked a MIG-17 (MIG A) that was low. As BLUE 3 came in on the MIG he was unable to obtain a lock-on so he put the pipper on the MIG and fired a SPARROW in the boresight mode, looking down about 10 degrees on the MIG. The missile missed, without appearing to guide. The MIG was in a turn. The range at firing was about 1.5 miles. [See firing 1 of Table 1 for parameters.]

The MIG reversed his turn and BLUE 3 obtained a full system lock. With the steering dot centered, and the in-range light on, BLUE 3 fired his second SPARROW at MIG A. The

missile seemed to guide initially but missed MIG A. [See firing 2 of Table 1 for additional details.]

With interlocks out, BLUE 3 pulled some lead on MIG A and fired his third SPARROW at the MIG. The missile passed just behind MIG A. [See firing 3 of Table 1.] The MIG at this time was in a left descending hard turn. BLUE 3 with good overtake, then went into a left climbing turn above the MIG. The MIG made no attempt to follow and did not come close to BLUE 3, and BLUE 3 successfully disengaged.

BLUE 3 and 4 came back around and rolled in on another MIG-17 (MIG B). BLUE 3 put the pipper on the MIG and achieved a lock-on. Before BLUE 3 could fire, two other F-4s came between BLUE 3 and MIG B.

At the time that BLUE 3 and 4 rolled out, just as the other F-4s got between them and MIG B, BLUE 3 noticed another MIG-17 at 5 o'clock, firing. BLUE 3 could see the top of the wing so this MIG was not a threat to him but the MIG was close to tracking BLUE 4 so BLUE 3 and 4 went to full burner and started a climbing turn. The MIG started to follow but fell back and was only a threat for a few seconds. BLUE 3 and 4 then climbed to altitude to position for another attack.

BLUE 3 saw a lone MIG-17 (MIG C) and turned in on him and attempted to fire two SIDEWINDERs. One SIDEWINDER hung and the other missed. [See firing 4 and 5 of Table 1.] By the time BLUE 3 had got into range, MIG C had seen him and had started a break. In addition, BLUE 3 had a weak tone on the SIDEWINDER. The SIDEWINDER which missed, fell short of the MIG.

BLUE 3 and 4 then broke off since the MIG's actions indicated that BLUE 3 had been seen. BLUE 3 and 4 climbed back to altitude (about 8000 feet) and on checking the fuel state, determined that they were close to BINGO, so they started to egress.

BLUE 3 then saw a lone MIG-17 (MIG D) low and to the right. The MIG was at a very low altitude and appeared to be heading for Kep.

BLUE 3 and 4 had enough fuel for one more pass, so they went to afterburner and turned right and down. When he saw the MIG, BLUE 3 was between 8000 and 10,000 feet altitude and climbing. The MIG was below 1000 feet.

BLUE 3 achieved a radar lock, and went to full system. With the in-range light on and the steering dot centered, he fired his last SPARROW. The SPARROW did not track at all and dived into the ground. [See firing 6 of Table 1.]

Since BLUE 3 had a good rate of closure, and the MIG had apparently not detected BLUE 3, he closed slightly and descended to 200-300 feet AGL in an attempt to get a good tone. BLUE 3 was unsuccessful, and fired a SIDEWINDER against a green hill background with a weak tone. The missile appeared to track and was headed for the tailpipe but fell short. [See firing 7 of Table 1.] BLUE 3 felt he was in range although he does not remember if the backseater called it out. It was indicated in the OPREP source that BLUE 3 had a radar lock during the last two firings.

BLUE 1 then fired his last SIDEWINDER and the SIDEWINDER detonated to the right of the MIG, just outside of the wing. As the missile detonated, MIG D went into a sharp left turn and when the fire ball subsided the MIG was still flying. Since BLUE 3 was out of ordnance and fuel, BLUE 3 and 4 started a climbing turn and disengaged. [See firing 8 of Table 1.]

Although BLUE 4 had stayed with BLUE 3 throughout the encounters, and was calling to clear BLUE 3, BLUE 3 had difficulty hearing BLUE 4. BLUE 3 retained his outboard fuel tank until egress, and did not notice any performance degradation due to it. The lowest speed that BLUE 3 achieved was 450 knots.

GREEN 1 and 2

GREEN Flight turned right to engage the MIGs that were seen coming in from the north. GREEN 1 and 2 made several turns with the MIGs. During these turns, GREEN 1 and 2 had to maneuver to avoid collisions with friendly aircraft. Due to the confusion GREEN 1 and 2 were unable to fire any ordnance.

Early in the engagement, GREEN 1 had to break off a hard turn in order to avoid a collision. GREEN 1 pulled up and reversed and the next time he saw GREEN 2, GREEN 2 was on fire, stalled out, and above GREEN 2 were two parachutes. During this time, GREEN 1 Back was checking the 7 o'clock, and as GREEN 1 was in a left bank, GREEN 1 Back saw an F-4 (GREEN 2) slide to the inside, slow, in a nose high attitude, on fire. He also saw the crew eject.

GREEN 2 was lost at about 1634H in the vicinity of 21°25'N/106°25'E. When first seen, the aircraft was nose low, with fire coming from both wing roots and was at an altitude of 7000 feet. When next seen, the aircraft was in a nose high attitude at 4000 feet. The aircraft was engulfed in flame and debris was falling away. Shortly thereafter two seats and two good chutes were seen, but no beepers were heard. The aircraft was seen to impact in the vicinity of 21°25'N/106°25'E. The cause of loss was a MIG-17.

After GREEN 2 had been lost, GREEN 1 re-entered the fight and attacked a MIG-17 (MIG E) which was out in front. From a boresight [redacted]on and lock on, GREEN 1 went to full

Table 1. BLUE 3 FIRING ATTEMPTS

| Firing Attempt | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Ordnance | AIM-7E | AIM-7E | AIM-7E | AIM-9B | AIM-9B | AIM-7E | AIM-9B | AIM-9B |
| Target | MIG-17 MIG A | MIG-17 MIG A | MIG-17 MIG A | MIG-17 MIG C | MIG-17 MIG C | MIG-17 MIG D | MIG-17 MIG D | MIG-17 MIG D |
| BLUE 3 Flight Conditions | | | | | | | | |
| Altitude (ft) | 5000 | 4000 | 4000 | 1000 | 1000 | 1000 | 200-300 AGL | 200-300 AGL |
| Speed | 0.9 M | 0.9 M | 0.9 M | 0.9 M | 0.9 M | 0.9 M | 0.9 M | 0.9 M |
| G | 2 | 3 | 4 | 1 | 1 | 4 | 1 | 1 |
| Maneuver | Slight Diving Turn | Diving Turn | Diving Turn to Left | Level | Level | Level Turn | Level | Level |
| Target Flight Conditions | | | | | | | | |
| Altitude | 4000 | 3000 | 3000 | 1000 | 1000 | 1000 | 500-1000 AGL | |
| Relative Altitude | Below | Below | Below | Same | Same | Same | Same | Same |
| Speed | 0.8 M | 0.8 M | 0.8 M | 0.8 M | 0.8 M | 0.8 M | 0.8 M | 0.8 M |
| Maneuver | Turn | Turn | Turn | Break | Break | | | |
| Geometry | | | | | | | | |
| Track Crossing Angle | 10° | 40° | 40° | 0° | 0° | 30° | 0° | 0° |
| Relative Velocity (KN) | 200 | 200 | 200 | 100 | 100 | 200 | 100 | 100 |
| Firing Range | 1-1/2 mi | Between 1-1/2 & 1 mi | 1 n mi | | | About 1 n mi | | |
| AIM-7E Firing | | | | | | | | |
| Mode | Boresight | Full System | Full System | | | Full System | Full System Lock Retained | |
| Clutter | Normal | Normal | Normal | | | Normal | | |
| Gate | Narrow | Narrow | Narrow | | | Narrow | | |
| Select Light[a] | Satisfactory | Satisfactory | Satisfactory | | | Satisfactory | | |
| Polarization | Linear | Linear | Linear | | | Linear | | |
| Detection Range | 1-1/2 mi | 1-1/2 | 1-1/2 | | | 1-1/2 | | |
| Lock-On Range | - | 1-1/2 | 1-1/2 | | | 1 | | |
| AIM-9B Firing | | | | | | | | |
| Tone[b] | | | | Weak | Weak | | Weak | Weak |
| Results and Remarks | Missile did not guide, missed 500 ft. | Steering dot in ASE circle, missile guided initially but missed by 300 ft. | Interlocks out dulling lead. | Ordnance hung. | Hill background, the missile missed by 100 ft short of the MIG. | Low Alt, missile hit gnd in back of MIG, interlocks out, missed 500 ft. | Hill background, missile fell short by 20 ft. | Hill background, missile detonated 20 ft away but no kill. |

[a]The AIM-7 missile select light had been on 60 seconds prior to arming.

[b]On firing the tone became a low background chopping noise.

system and ripple-fired two SPARROWs. [See firing 1 and 2 of Table 2.] One of the missiles was not observed, the second tracked well and detonated in the vicinity of MIG E. The MIG caught fire and went down to the left, resulting in a kill for GREEN 1. The impact was observed by a member of BLUE Flight.

GREEN 1 did not see the missile detonate since he was under attack by two other MIG-17s. Just before GREEN 1 had fired, GREEN 1 Back had seen the MIGs coming in from 8 o'clock high going to 6 o'clock. The MIGs were 1-1/2 to 2 miles away and GREEN 1 Back called them out. These MIGs started firing at GREEN 1. By the time GREEN 1 had fired his SPARROWs, these MIGs were in good position and GREEN 1 Front could see the underside of the MIGs. GREEN 1 then made a level left break (about 7-8 g's) but the MIGs stayed with him during the turn shooting. GREEN 1 then started to climb and the MIGs broke off to the right when BLUE 1 attacked them. When GREEN 1 came around again, MIG E was burning on the ground.

GREEN 1 continued to try to attack other MIGs in the area. As GREEN 1 would come across the wagon wheel to attack a MIG who had his tail pointed toward GREEN 1, he in turn would be attacked by other MIGs. This happened three separate times.

During these attacks, disengagements, separations, and reattacks, GREEN 1 fired two SIDEWINDERs and one SPARROW, without success, at three different MIGs.

The first SIDEWINDER was fired out of parameters, and passed behind the target [see firing 3 of Table 2]. The second SIDEWINDER was fired under conditions like the first [see firing 4 of Table 2]. The SPARROW firing was from inside minimum range, and as the MIG broke, the missile passed behind [see firing 5 of Table 2].

GREEN 1 reached bingo fuel and after calling the other flights, started to egress. As the friendly forces left, most of the MIGs had left except for a single MIG-17 (MIG I), circling in the area. At this time GREEN 1 decided to attack this MIG so he descended to low altitude, and from 10 miles away started to approach the MIG. Before he reached firing range the MIG saw GREEN 1 and started to take evasive action.

The MIG stayed low, turning, and GREEN 1 followed, attempting to stay below the MIG. GREEN 1 throttled back and stayed behind the MIG, 3000 to 4000 feet away. The MIG turned up a valley and as he came to the end he flew over a ridge, and was outlined against the sky.

The MIG popped over the ridge in a right turn and immediately reversed to the left. GREEN 1 got a good tone and launched two SIDEWINDERs. The first was unobserved and the other exploded under the MIG's tail [see firing 6 and 7 of Table 2]. The SIDEWINDER exploded 5-10 feet on the right side of the MIG and pieces were seen to come from the MIG as the MIG turned left and down from 200 feet altitude. GREEN 1 is credited with a kill.

GREEN 1 then broke over the MIG to clear his 6 o'clock and lost signt of the MIG. GREEN 1 then egressed with a 2000 pound fuel state.

GREEN 3 and 4

After GREEN 1 fired his first missile, GREEN 3 and 4 were instructed to attack other MIGs. As GREEN 3 and 4 attacked from a vertical maneuver, MIGs would cut across the circle to counter their attack. GREEN 3 fired six missiles in separate attacks on different MIGs [see Table 3 for the firing order].

At the time that GREEN 3 fired his first SIDEWINDER, GREEN 4 fired a SPARROW at a MIG. GREEN 4 fired interlocks out, with a full system lock on. The SPARROW was observed tracking but GREEN 4 was unable to keep track of it as he had to maneuver to stay with GREEN 3. However, the radar stayed locked on for about 5 seconds after he lost visual contact with the MIG. At firing, GREEN 4 had 5 degree angle off and was at 8500 feet altitude and 2 g's. The speed was Mach 0.9. He was firing down on a MIG-17 who was at 3000 feet altitude and 0.8 Mach. The overtake was about 300 knots. The firing range was about a mile, with lock-on also occurring at one mile. The switch settings were: polarization, linear; clutter, normal; and gate, narrow. The select light had been on 5 minutes before arming.

About the second or third time around the circle, GREEN 3 and 4 were in a left vertical turn reversal, heading back down when GREEN 4 saw GREEN 2 pass in a 30 degree dive with fire coming from the wing roots. (GREEN 4 thought he was firing his missiles.) Previous to this GREEN 4 thought he heard a call of "GREEN 2, MIG at 7". As GREEN 3 and 4 headed down, they selected some MIGs which had broken off, and after GREEN 3 and 4 fired at them, GREEN 3 and 4 then went back up and as they did, they saw GREEN 2 in a stall, on fire, and two parachutes.

On the previously described descent, GREEN 4 fired his second SPARROW, under conditions identical to the first firing except the track crossing angle and angle off were 20 degrees, and he had 3 g's on the aircraft. Again, a maneuver prevented GREEN 4 from observing the missile flight.

GREEN 4 subsequently attempted to fire two more SPARROWs but they (the two aft missiles) would not fire and did not leave the aircr[redacted]

Table 2. GREEN 1 FIRING ATTEMPTS[a]

| Firing Attempt | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Ordnance | AIM-7E | AIM-7E | AIM-9B | AIM-9B | AIM-7E | AIM-9B | AIM-9B |
| Target | MIG-17 MIG E | MIG-17 MIG E | MIG-17 MIG F | MIG-17 MIG G | MIG-17 MIG H | MIG-17 MIG I | MIG-17 MIG I |
| GREEN 1 Flight Conditions | | | | | | | |
| Altitude (ft) | 3000 | 3000 | 2000 | 1500 | 100 | 250 | 250 |
| Speed | 0.9 M | 0.9 M | 0.9 M | 0.9 M | 0.9 M | 0.9 M | 0.9 M |
| G | 2 | 2 | 3 | 2-1/2 | 1 | 1-1/2 | 1-1/2 |
| Maneuver | Level Turn | Level Turn | | | Level Turn | Turn | Turn |
| Target Flight Conditions | | | | | | | |
| Altitude | 3000 | 3000 | | | 500 | 200 | 200 |
| Relative Altitude (tgt) | Same | Same | Low | Level | Low | Above | Above |
| Speed | | | | | 0.9 M | 0.8 M | 0.8 M |
| Maneuver | Left Turn | Left Turn | Turning | Turning | Hard Turn | Turning Left | Turning Left |
| Geometry | | | | | | | |
| Track Crossing Angle | 0-20° | 0-20° | 0-10° | 0-10° | 0-10° | 0-10° | 0-10° |
| Relative Velocity (KN) | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Firing Range | 0.8-1.0 n mi | 0.8-1.0 n mi | | | About 1 mi | 2-1/2 mi | 2-1/2 mi |
| AIM-7E Firing | | | | | | | |
| Mode | Full System | Full System | | | No lock boresight | | |
| Clutter | Override | Override | | | Override | | |
| Gate | Narrow | Narrow | | | Narrow | | |
| Select Light | Satisfactory | Satisfactory | | | Satisfactory | | |
| Polarization | Linear | Linear | | | Linear | | |
| Detection Range | - | | | | 1-1/2 | | |
| Lock-On Range | 7000 ft | | | | | | |
| Interlocks | In | | | | | | |
| AIM-9B Firing | | | | | | | |
| Tone | | | Yes | Yes | | Yes | Yes |
| Results and Remarks | Not observed | Missile detonated about 10 ft away, MIG was destroyed | Missile fired out of parameters, missed | Missile fired out of parameters, missed | MIG broke, missile fired too close and missed | Unobserved | Detonated near the MIG. A kill |

[a]No source reports that GREEN 1 attempted to fire the other SPARROW. Due to the nature of the battle, an attempt may have been made, however.

Table 3. GREEN 3 FIRING ATTEMPTS[a]

| Firing Attempt | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Ordnance | AIM-7E | AIM-9B | AIM-7E | AIM-9B | AIM-9B | AIM-9B |
| Target | MIG-17 MIG J | MIG-17 MIG K | MIG-17 MIG L | MIG-17 MIG M | MIG-17 MIG O | MIG-17 MIG P |
| GREEN 1 Flight Conditions | | | | | | |
| Altitude (ft) | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 |
| Speed (kt) | 500 | 500 | 500 | 500 | 500 | 500 |
| G | 1 | 1 | 4 | 3 | 4 | 2 |
| Maneuver | Slight Dive | Slight Climb | | | | |
| Target Flight Conditions | | | | | | |
| Altitude | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 |
| Relative Altitude (tgt) | Same | Same | Same | Same | Same | Same |
| Speed | 0.8 M | | 0.8 M | | | |
| Maneuver | Turn | | Turn | | | |
| Geometry | | | | | | |
| Track Crossing Angle | 0 | 0 | 0 | 0 | 0 | 0 |
| Relative Velocity[b] (KN) | 150 | 150 | 150 | 150 | 150 | 150 |
| Firing Range | ≈1 mi | | ≈1 mi | | | |
| AIM-7E Firing | | | | | | |
| Mode | Boresight | | Boresight | | | |
| Clutter | Override | | Override | | | |
| Gate | Narrow | | Narrow | | | |
| Select Light | Satisfactory | | Satisfactory | | | |
| Polarization | Linear | | Linear | | | |
| Detection Range | - | | - | | | |
| Lock-On Range | - | | 1-1/2 | | | |
| Interlocks | - | | Out | | | |
| AIM-9B Firing | | | | | | |
| Tone | | Yes | | No | No | No |
| Results and Remarks | No guide miss | Missile hit, target kill | System broke lock, missile went on and to the right | Not observed | Did not guide, went into ground | Not observed |
| | | | | ---------- Miss possibly due to target --------- | | |

[a]GREEN 4 reports that GREEN 3 called, "I am out of missiles", but is not known if GREEN 3 attempted to fire the other SPARROWs.
[b]Closing.

[redacted]



The F-4s' altitudes during the engagement varied from 100 to 8500 feet. The tactics used by both groups of MIG-17s were to stay in a "wagon wheel" orbit, turning to the left. Both groups of MIGs orbited low (one near 1000 feet and another near 5000 feet) and in the same location. They operated in pairs or in threes, and when an F-4 element rolled in for a pass, at least one MIG would be at their 6-7 o'clock. The MIG-17s would disengage by executing a split-S in the vertical and diving for the deck. The enemy aircraft were extremely agressive. There was also a couple of MIG-17s orbiting very low (100-200 feet altitude) near the center of the orbit and it was surmised that these were director aircraft. The MIG-17s used afterburner intermittently throughout the engagement.

The friendly tactics were to pick an element of MIGs in the orbit and make a high-speed pass, breaking of a minimum range to go high to position for another pass. The speed was kept high.



[redacted]

[redacted]

Event III-253

Aircraft Involved: Three F-4Cs and two EB-66s vs one unident

Results: Sighting

Vicinity of Encounter: 20°01'N/104°02'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 May 1967, 1610H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

ECM escorts sighted a large, high swept wing A/C approaching head-on from the north; the A/C made a wide sweeping left turn at approx speed of EB-66 at altitude of 30,000'; numerous MIG calls were heard.

Event III-254

Aircraft Involved: Three F-105s vs seven MIG-17s

Results: No damage

Vicinity of Encounter: 21°18'N/106°43'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 May 1967, 1630H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight ingressing at 5000'; four MIGs came from the south at flight's altitude, gently dropping below flight altitude to a 6 o'clock position; MIGs were unable to engage due to flight speed; as flight egressed from target, three MIG-17s at 3000' were observed closing on flight; MIGs could not execute turn to engage flight.

Event III-255

Aircraft Involved: Four F-4Cs vs one MIG-? and one unident

Results: Sighting

Vicinity of Encounter: 21°09'N/105°51'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 May 1967, 1630H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

MIGCAP flight, when approx 40 miles short of target, heard MIG call from flight of Event 170; flight continued cover for F-105s on into and out of target area; one MIG sighted by #3 going away from the strike force; one unknown type A/C was observed, silver in color, markings could not be observed due to distance.

[redacted]

[redacted]

Event III-256

Aircraft Involved: Four F-105Ds vs two MIG-17s
Result: No damage
Vicinity of Encounter: 21°31'N/106°37'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 May 1967/about 1630H

BLUE flight (four F-105Ds) was the lead flight of a force of F-105s striking the Bac Le railroad yards at 21°31'N/106°26'E. The MIGCAP was provided by the aircraft of Event III-252. The other strike flights which saw MIGs are described in Events III-260 and -257.

2. MISSION ROUTE

Takhli to target and return via the Gulf of Tonkin.

3. AIRCRAFT CONFIGURATIONS

| P-105D | BLUE 1 | BLUE 2 | BLUE 3 | BLUE 4 |
|---|---|---|---|---|
| | 4 - CBU-24s | 4 - CBU-24s on centerline | 6 750 lb bombs | 6 - 750 lb bombs on centerline |
| | 1 - AIM9B | 2 QRC-160 | 1 - AIM9B | 2 - QRC-160 |
| | 1 - QRC-160 | | 1 - QRC 160 | |

All aircraft carried 2 - 450 gal external fuel tanks and 20 mm guns. All camouflaged.

MIG-17, MIG 1, 2

Clean
Dull silver color, red stars on wings
Cannon

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Some low, fair weather cumulus in the area; good visibility.

| | BLUE 1, 2, 3, 4 |
|---|---|
| Altitude: | 6,000 feet |
| Heading: | 310° |
| Fuel State: | 7,000 lbs |
| Flight Formation: | Line abreast, with 1 and 2 on the right and 3 and 4 on the left. |

5. INITIAL DETECTION

Two aircraft, subsequently identified as MIG-17s, were detected by BLUE flight during ingress, when they were about 1 1/2 minutes out from the target. Bogeys were at 10:30 o'clock, slightly high, about 4-5 miles distance, in a left turn toward BLUE flight. MIG warnings had been heard, but none had been directed at this flight. The bogeys were initially thought to be MIGs due to their shape and the direction from which they came.

6. ACTION INITIATED

BLUE flight lit afterburners and continued their run on the target. The MIGs fell behind as BLUE flight accelerated for the pop up, even though they attempted to position for firing.

7. SITUATION DEVELOPMENT

BLUE flight popped up to about 13,000 or 14,000 ft, making a right hand roll-in for an attack heading of about 020°, then jinking out in a generally south to east direction. BLUE flight lost sight of the MIGs in their maneuvers to strike the target.

Shortly after coming off target, BLUE 4 called that he was being fired upon by a MIG as he observed tracers high over his left wing. BLUE 4 applied negative g's, went afterburner and successfully disengaged.

When BLUE flight had egressed about five miles further from the target and had rejoined in a line abreast formation with BLUE 3 and 4 on the left, BLUE 1 saw a MIG-17 closing and passing behind him in a right turn. The MIG was unable to attack BLUE lead and continued over to attack BLUE 4. The MIG approached 1500 feet range at BLUE 4's

[redacted]

5 o'clock position as BLUE lead called the MIG's position and for the flight to go afterburner, unload and break right. The F-105s accelerated away from the MIG and the range had increased to 2000 feet before the MIG achieved a firing position. However, the MIG was not observed to fire and it is doubtful whether the MIG actually achieved firing position. The MIG fell behind as BLUE flight egressed toward the coast.

Although not definitely ascertained, it was suspected that the latter two MIG-17s attacking BLUE flight were the same ones as those making the pass on BLUE flight prior to striking the target.

8. ORDNANCE

BLUE - none.

MIGs - One enemy fired unknown number of rounds of cannon at BLUE 4. No hits.

9. EQUIPMENT PROBLEMS

None reported.

10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | 3100 | 250 | Unknown | None |

Comments

Knew that they could outrun the MIG-17s.

11. DATA SOURCES

Project Interviews: BLUE 1, 31 May 1967.

Messages: 355 TFW Takhli OPREP-3 201320Z May 67, DOTO-0 11808 May 67.

12. NARRATIVE

See 5, 6, and 7.

[redacted]

Event III-257

Aircraft Involved: Four F-105Ds vs eight MIG-17s

Result: No damage

Vicinity of Encounter: 21°26'N/106°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 May 1967/about 1630H

Four F-105s (BLUE flight) were part of a strike force from Takhli attacking the Bac Le railroad yard. The other strike flights which encountered MIGs were those of Events III-256 and III-260. The MIGCAP aircraft were those of Event III-252.

8. ORDNANCE

| | 20mm Cannon | |
|---|---|---|
| BLUE 1 | 3/0 | 200 rounds |
| BLUE 2 | 3/0 | fired 570 rounds |

10. AIRCREW COMMENTS

| | Total Hours | F-105 Hours | Combat Missions | |
|---|---|---|---|---|
| Experience | | | | |
| BLUE 1 | 3300 | 700 | 90 | Two previous air-to-air engagements. |
| BLUE 2 | 5100 | 260 | 65 | Two prior air-to-air engagements. |

Comments

BLUE 1 - the MIG-17's rate of turn is almost unbelievable.

11. DATA SOURCES

Project Interviews: BLUE 1, June 1967

Messages:

355 TFW Takhli OPREP-3 201400Z, May 67, DOTO-O 11812

12. NARRATIVE

On ingress, as BLUE flight approached the "pop-up", eight silver MIG-17s in fingertip trail formation were encountered. BLUE flight was headed west and the MIGs were turning to come in on BLUE at 6 o'clock. BLUE called the F-4 CAP flight and proceeded into the pop-up, bombed and recovered. At this time MIGs were sighted in all quadrants. As the flight started to egress, BLUE 1 and 2 in succession passed three MIGs at three separate times. Each time BLUE 1 and 2 would fire a burst of 20mm and pass on (vicinity of 21°26'N/106°20'E). BLUE 2 fired a total of 570 rounds. The last of these passes by BLUE 2 was at 100 feet altitude. There was no known damage done to the MIGs. BLUE flight accelerated to 600 kts and continued egress.

During the engagement, BLUE 1 saw a single MIG-17 at low altitude and went down after him. Just as he was pulling lead to fire on the MIG, the MIG broke very sharp and BLUE 1, being unable to follow accelerated away.



[redacted]

[redacted]

Event III-258

Aircraft Involved: Four F-4Cs vs four or five MIG-21s[1]

Results: Two MIG-21s destroyed

Vicinity of Encounter: 21°53'N/105°21'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 May 1967/1625H

Four F-4Cs (BLUE Flight) were one of two F-4 flights providing MIGCAP escort for a strike force attacking the Kinh No motor vehicle repair yards. Although none of the strike flights or the other F-4 flight saw MIGs, the IRON HAND flight (Event III-257) was attacked by MIG-21s.

## 2. MISSION ROUTE

BLUE Flight departed Danang, then proceeded direct to WHITE ANCHOR for refueling. From WHITE ANCHOR, the flight proceeded direct to Channel 97, then direct to 21°55'N/104°38'E, then direct to 21°55'N/105°06'E, then direct to the target. Egress was the reverse route.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

- 4 - AIM-7E SPARROW
- 4 - AIM-9B SIDEWINDER
- 1 - QRC-160 pod
- 1 - 600 gal centerline tank
- 1 - 370 gal outboard tank
- IFF-on-TACAN-on

MIG-21 C and D (at least two were "D")

- Silver
- One MIG-21D had CHICOM markings
- No external stores

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Two-eighths scattered clouds with tops at 5000 ft. Visibility 20 mi.

| | BLUE 1 2 3 4 |
|---|---|
| Altitude: | 12,000 ft AGL (approx. 15,000 ft MSL) |
| Heading: | 137° |
| Speed: | 540 kts |
| Fuel State: | 9000 lb |
| Flight Formation: | Pod |

## 5. INITIAL DETECTION

During ingress, BLUE 4 back saw two MIG-21s attacking the last flight of the strike force. The MIGs were heading 010° at 8000 ft altitude.

## 6. ACTION INITIATED

BLUE Flight immediately broke off to attack the MIGs.

## 7. SITUATION DEVELOPMENT

BLUE 3 and 4 attacked the MIGs with BLUE 3 obtaining a radar lock-on. Before BLUE 3 could fire, a call of "break" was heard and the flight broke off. When reacquired, the MIGs were no longer a threat, so BLUE Flight started to rejoin the strike force.

As BLUE Flight again started down Thud Ridge, BLUE 3 saw another MIG-21 and began an attack. BLUE 3 subsequently fired three SPARROWS at the MIG, the last of which hit, resulting in a kill. Shortly thereafter, BLUE 3 saw a MIG-21D while obtaining a lock on another MIG-21. Before an attack could be initiated, BLUE 4 called BINGO fuel due to a mechanical difficulty, and BLUE 3 and 4 egressed.

BLUE 1 and 2 then picked up a MIG-21D and turned hard into him. BLUE 1 was successful in achieving an attack position and fired a SIDEWINDER which destroyed the MIG-21D. BLUE 1 and 2 then egressed. During egress, BLUE 1 and 2 saw another MIG-21 at 6 o'clock 5 to 6 mi away but the MIG turned away when BLUE 1 and 2 turned into him.

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[1]Five MIG-21s were seen and four were engaged. Two crew members validate five, one crew member validates four, and four crew members validate three aircraft.

[redacted]

8. ORDNANCE

(No. fired/No. hit)

| | SPARROW AIM-7E | SIDEWINDER AIM-9B |
|---|---|---|
| BLUE 1 | | 1/1 |
| BLUE 3 | 3/1 | |

9. EQUIPMENT PROBLEMS

BLUE 4 had a fuel system malfunction which caused the engine to burn more fuel than normal.

BLUE 1's radar display in the backseat had very dim presentation. It was difficult to see the radar return and the presentation had to be held for several seconds before the symbols could be seen. In boresight mode, the scope was so bright no data could be seen so that lock-ons could not be achieved in boresight.

10. AIRCREW COMMENTS

Experience

| | TOTAL HOURS | F-4 HOURS | COMBAT MISSIONS | REMARKS |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | 3600 | 230 | 70 | Flew in Thunderbirds - F-86 pilot |
| Back | 500 | 260 | 45 | |
| BLUE 3 | | | | |
| Front | 5000 | 200 | 54 | Had fired missiles in flight test |
| Back | 610 | 350 | | |

Comments

BLUE 1 Front - The MIGs were trying to hit the F-105s from low with a missile pop-up attack. The MIGs were coming in from a beam position to attempt a hit and run attack.

The MIG solved BLUE 1's problems by his maneuver.

The wingman did a good job.

BLUE 1 Back - The wingman (BLUE 2 and 4) did an excellent job of staying with their element leads. The wingman were briefed to call the 6 o'clock situation every 15 to 20 sec. BLUE 1 never worried about the 6 o'clock.

Although some of the flights had started to carry guns, BLUE Flight had not yet been so configured.

BLUE 1 Front said that due to his experience in firing SIDEWINDERS, he knew exactly what he wanted to see for a firing situation. The one he had this time fitted it exactly - no clouds, clear blue sky, and target going straight away in afterburner.

Due to the failure of the radar set, it was planned to use the SIDEWINDER.

The wingman really made the formation since he was checking the 6 o'clock while BLUE 1 was attacking. The frequent calls kept BLUE 1 from having to look around.

If fuel was left at the end of a mission, the flights would practice ACT, with emphasis on the wingman's functions. In the element lead, the aircraft commander was flying for an attack. The backseat on the lead aircraft was looking at the radar to lock on the target. The front seat of the wingman was following lead and watching to stay with him. The backseat in the wingman's aircraft was really performing the visual search. They were the ones which spotted the MIGs that led to the kills.

BLUE 3 Front - Felt he could have gotten the last MIG on which he had achieved a lock, but he had to leave due to BLUE 4.

If you want MIGs you must go after them and initiate a radar search if you lose visual contact.

The squadron has a lot of people with long experience and they recognize the value of the wingman working closely with the leader.

11. DATA SOURCE

Project Interviews: BLUE 1 Front, 23 June 1967
BLUE 1 Back, 23 June 1967
BLUE 3 Front, 23 June 1967

Messages, Reports:

366TFW 201330Z May 1967 OPREP-3 FASTEL 670
366TFW 201300Z May 1967 OPREP-3 FASTEL 672
366TFW 240300Z May 1967 OPREP-3 DCO 00162
Raytheon letter OLD 0438 22 May 1967

## 12. NARRATIVE DESCRIPTION

BLUE Flight was one of two MIGCAP escort flights escorting the strike force from Korat. The strike force was in a gaggle formation and the other MIGCAP escort flight was about 1000 ft higher than and about in the middle of the strike force. BLUE Flight was behind the last flight of the force, about 2000 ft higher than the rest of the formation and trailing a bit.

During ingress to the target at 1620H, when in the vicinity of 21°35'N/104°35'E, BLUE Flight heard the flight of Event III-257 call launch lights from Lead 12 (a SAM site). Lead 2 (another SAM site) was also reported but no SAMs were observed. MOTEL was active, giving two warnings during ingress and three while the strike force was in the target area.

When the centerline tank became empty, it was jettisoned and shortly after turning down Thud Ridge, BLUE Flight heard the IRON HAND Flight (Event III-257) call MIGs and flight instructions called by the F-105s. The first call heard from the IRON HAND put the MIGs at the F-105's 9 o'clock but BLUE Flight was unable to gain contact with the MIGs. Another call indicated the MIGs were going from right to left, under BLUE Flight, so BLUE 3 and 4 banked in an attempt to see under them.

Finally, BLUE 4 backseat saw two MIG-21s (MIG 1 and 2) under the flight, and BLUE 3 picked up a MIG off to his left (which was to the east). At this time BLUE Flight was at 21°40'N/105°22'E heading 137° at 540 KTAS and 12,000 ft AGL. The time was 1625H. MIG 1 and 2 were heading 010° at 8000 ft AGL and 450 KTAS and were attacking the last flight of F-105s.

When BLUE 3 picked up the MIG (it was felt that this was one of the first two seen), he called it and turned left to start an attack. BLUE 1, who did not see the MIGs at that time, then indicated that BLUE 1 and 2 would provide cover. The MIG seen by BLUE 3 was identified as a MIG-21 due in part to its flashing silver color. BLUE 3 started to close in on the MIG as it turned north and then west. Although there had been two radar contacts, BLUE 3 went boresight and the backseat locked on to one of them. At this time, BLUE 3 lost visual contact with the MIG but followed him by using the steering dot on the radar.

BLUE 3 followed the contact through about 135° of turn and as the ASE circle started to expand and he was ready to fire interlocks in, BLUE 4 called for a break and indicated that there were MIGs at 7 o'clock. At this time, 1626H, BLUE flight was at 21°53'N/105°21'E with BLUE 1 and 2 following BLUE 3 and 4 by about 5000 ft at their 6-7 o'clock high.

BLUE Flight, after BLUE 3 requested and received confirmation of the break call, broke left. BLUE 3 broke radar contact during the break. No MIGs were seen, and the aircraft observed by BLUE 4 were really BLUE 1 and 2. BLUE 1 attempted to call off the break but, due to the crowded communications channels, the message was not heard.

When seen again, the MIGs posed no threat to the strike force so BLUE Flight turned to the southeast to continue to follow the strike force.

The subsequent actions take place within a 10 mi radius of 21°53'N/105°24'E.

Shortly after rolling out with BLUE 1 and 2 still behind, BLUE 3 saw another MIG-21 (MIG 3) off to the east, going rather fast. BLUE 3 went to boresight and locked on MIG 3. The sun glints from MIG 3's silver surface had alerted BLUE 3 to the presence of MIG 3 who was attempting to attack the strike force. When seen, BLUE 3 and MIG 3 were both at 10,000 ft altitude, with BLUE 3 heading 137° at 540 kts. When initially detected, MIG 3 was at 6 mi range and lock-on was immediate.

After lock-on, BLUE 3 continued to track MIG 3 visually with only an occasional reference to the steering dot.

BLUE 3 closed slightly on the MIG, and both BLUE 3 and MIG 3 started a left descending turn. When at about 5-6 mi range, BLUE 3 fired his first SPARROW with full system lock, interlocks in. BLUE 3 was at 10,000 ft altitude and about 0.9 Mach. BLUE 3 was about 20-30° angle off from MIG 3, pulling about 2 "g's". The closing velocity was small.

The missile came off the aircraft and tucked down and to the left and went ballistic, passing out of sight.[1]

[1]OPREP 240330Z May 1967 reports a 200 ft miss distance at the MIG's 6 o'clock.

BLUE 3 continued to turn left with MIG 3, closing slowly, and at a range of 4 mi with BLUE 3 at 8000 ft and about .95 Mach, BLUE 3 fired his second SPARROW. The MIG was at about 8000 ft also with the other conditions of firing about the same as the first except the interlocks were out. The second SPARROW also went ballistic.[1]

BLUE 3 maintained position and fired his third SPARROW at 2-3 mi range. In the last firing, BLUE 3 and MIG 3 were at about 6000 ft altitude with BLUE 3 at 1.1 Mach. The other firing parameters were about the same as the previous two firings with interlocks out. The SPARROW tracked into MIG 3 and impacted directly on the left wing root while MIG 3 was presenting a plain view to BLUE 3. On impact, the MIG exploded and the left wing separated from the aircraft. As MIG 3 was engulfed in an orange ball of fire and trailing a plume of black smoke, the MIG pilot ejected. The pilot's seat had drag chute action similar to the Martin-Baker seat, and the main chute had orange and white panels, as seen by four members of BLUE Flight. BLUE 3 backseat saw MIG 3 impact at about 21°53'N/105°27'30"E. MIG 3 was a MIG-21C.

Throughout the encounter BLUE 3 had been in afterburner but had retained his outboard tank. The lock-on to the MIG had been made against a clear sky and although the turns put mountains in the background, the radar did not break lock. For all firings, the polarity switch was on linear and the gate was narrow. For the first firings, the dot was near centered or centered and for the last firing the dot was centered. The first two missiles were not fired out of parameters and the reason for the lack of guidance is not known.

After destroying MIG 3, BLUE 3 and 4, with BLUE 1 and 2 still providing cover, turned south again and BLUE 3 front saw another MIG-21 (MIG 4). This MIG was a MIG-21D. MIG-4 was seen off to the left and BLUE 3 started to turn to the left. Simultaneously BLUE 3 backseat achieved a full system lock on a MIG contact (MIG 5) that was a 1 o'clock, 5° low, and 6 mi range. As BLUE 3 turned left, his wingman, BLUE 4, called absolute BINGO (minus).[2] Despite BLUE 3's use of afterburner, he still had plenty of fuel but BLUE 4 had a mechanical difficulty and was using more fuel than normal. Although BLUE 4 called BINGO at 6200 lb and 4000 lb should have been used to get to the tanker, BLUE 4 arrived with only 300.

At this time, the MIG under visual contact, MIG 5, reversed back to the right in a nose high altitude, about 500-1000 ft above BLUE 3. BLUE 3 was in danger of overshooting and he called BLUE 4 to break off and egress to the west. BLUE 3 stayed with MIG 5 in his right turn as MIG 5 attempted to disengage by using speed. [BLUE 3 felt that he could have fired on this MIG if he could have stayed.] When MIG 5 was no longer a threat, BLUE 3 broke off and headed west with BLUE 4 to post strike refueling.

Although BLUE 1 and 2 had followed the action and covered BLUE 3 and 4, BLUE 1 and 2 broke off from BLUE 3 and 4 as the latter two egressed for the tanker.

At this time BLUE 2, heading southeast toward Thud Ridge, saw a single MIG-21D at his 10 o'clock [thought to be MIG 5] and BLUE 1 and 2 turned into the MIG. This MIG was starting to descend and turn left into BLUE 1 and 2. BLUE 1 and 2 turned hard left into MIG 5 and started to descend to gain speed. In the left turn, BLUE 1 and 2 lost visual contact with MIG 5 but regained it within 5 sec.

As soon as BLUE 1 and 2 started to turn into MIG 5, the MIG reversed his turn to the right and lit his afterburner and started a climb, going away. BLUE 1 and 2, in afterburner, kept the nose down and gained airspeed. BLUE 1 and 2 then pulled the nose up and fired one SIDEWINDER at MIG 5 who was still climbing away against a clear blue sky.

BLUE 1 had selected the SIDEWINDER due to a malfunction of the radar display in the backseat which made it difficult for the backseater to find the target for a radar lock. Nevertheless, immediately previous to firing, the backseat had obtained a radar lock and, at firing, had a full system lock-on.

The MIG had started to climb from about 9000 ft altitude and at firing was at about 9000 ft altitude. BLUE 1 was about 6000 ft MSL (4000 ft AGL) at 475-500 KIAS and at 1 "g". MIG 5 was dead ahead at zero angle off. At firing, the range was about 3500-4000 ft with BLUE 1 closing at about 100 kts. He had a good tone for about 5 sec prior to launch.

The SIDEWINDER went straight out not making large corrections and exploded aft to the right of the MIG's tail by about 10-15 ft.

Just after the missile detonated, BLUE 1 saw pieces start to come off of the MIG which appeared to be part of the stabilator. BLUE 1 had a good overtake and pulled up in a sort of high speed yoyo to 10,000 ft altitude and ended up high behind the MIG, which looked as if it was still flying.

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[1]Note on previous page.
[2]Normal BINGO that day was [redacted] Absolute BINGO that day was 6500 lb.

At this time the nose of MIG 5 pitched up and the MIG snapped over to the right and went into a flat lazy spin. BLUE 2 backseat saw the MIG pilot eject as the MIG rolled over the first time. The pilot had chute with orange panels. BLUE 1 front lost sight of the MIG as it continued in the lazy spiral at about 1000 ft AGL. BLUE 1 was about 3000 ft at this time. However, BLUE 1 backseat kept contact with the MIG and saw it impact on the ground at about 22°00'30"N/105°22'E.

The strike force was now well clear of the threat area so BLUE 1 and 2, who were at BINGO fuel level, started to egress. BLUE 1 dropped his outboard tank on the way out to improve his fuel consumption.

While egressing at 21°56'N/105°05'E at about 1645H heading 270° at 550 KTAS and 12,000 ft AGL, BLUE 2 backseat saw a single bright silver MIG-21 at his 6 o'clock, 5-6 mi distant and 5000 ft below. The MIG-21 was attempting a stern chase but as soon as BLUE 1 and 2 maneuvered to get a better view, the MIG broke off with a hard right turn and was not seen again.

BLUE 1 and 2 continued their egress when at 1647 H at 20°57'N/104°48'E, heading 265° at 14,000 ft AGL and 550 KTAS, they observed from Lead 12 a large white column of smoke rise to about 500 ft and then appeared to hang motionless and slowly dissipate. No flame, projectiles, or detonations were observed.

Later at 1651H while at 21°28'N/104°20'E, heading 210°, climbing through 20,000 ft MSL at 450 kts, BLUE 1 and 2 saw another column of smoke from Lead 12. It had the same characteristics as the previous smoke sighting. The elements continued to egress without further incident.

[redacted]

Event III-259

Aircraft Involved: Two F-105s and two F-105Ds vs three MIG-21s

Results: No damage

Vicinity of Encounter: 21°40'N/105°30'E and 21°35'N/105°35'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 May 1967/1628H

Two F-105s and two F-105Ds (BLUE flight) were operating as the IRON HAND flight for a fourteen F-105 strike force from Korat attacking the Kinh No motor vehicle repair yards (JCS Target No. 5286) BLUE flight was from Korat and a flight of F-4s from Danang were providing MIGCAP (Event III-258). Flights from the strike force hit the target from 1630H to 1635H and encountered SAMs and AAA but no MIGs.

3. AIRCRAFT CONFIGURATIONS

F-105F BLUE 1, 3
1 AGM-45
2 CBU-24
20mm cannon

| F-105D BLUE 2 | BLUE 4 |
|---|---|
| 1 AGM-45 | 6 500 lb bombs |
| 2 CBU-24 | 20mm cannon |
| 20mm cannon | |

Tank configuration unknown, but probably two 450 gallon external tanks were carried as well as a QRC-160 ECM pod.

8. ORDNANCE

(No. fired/No. hits)

| | 20mm cannon |
|---|---|
| BLUE 1 | 1/0 |

9. EQUIPMENT PROBLEMS

BLUE 1 - CBU-24 would not release.

11. DATA SOURCES

Messages:

388 TFW Korat OPREP-3 201225Z May, 1967 DOI 1779
388 TFW Korat OPREP-3 201250Z May, 1967 DOI 1780

12. NARRATIVE DESCRIPTION

BLUE flight was at 21°40'N/105°30'E, heading 133°, 550 kts 5000 ft altitude at 1628H when two silver MIG-21s were observed approaching the flight from the 4 o'clock position. When BLUE flight lost them at 6 o'clock, BLUE flight turned to the right and the MIGs then passed the flight and turned left. No firing from the MIGs was observed. BLUE flight continued their turn to the right and then to the left, making a complete figure eight over Thud Ridge. They again started in on a heading of 130° at 550 kts, and 4000 ft altitude. When at 21°35'N/105°35 E at 1634H, BLUE flight observed a silver MIG-21 attacking them from the 2 o'clock high position. At this time BLUE lead jettisoned 1 CBU-24 (the other would not release) and BLUE 2 and 4 jettisoned 6 MK82 bombs each. The MIG overshot the flight, and as he passed in front BLUE lead noticed that the MIG was clean of external ordnance. BLUE lead turned to the left to follow the MIG and fired 68 rounds of 20mm with undetermined results. The MIG turned right and climbed, and BLUE flight turned left to heading 310° up Thud Ridge.



[redacted]

Event III-260

Aircraft Involved: Four F-105s vs one MIG-17

Results: No damage

Vicinity of Encounter: 21°13'N/106°46'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 May 1967/Approximately 1630H

Four F-105s (BLUE Flight) were part of a strike force from Takhli attacking the Bac Le railroad yard. The flight of Event III-256 and -257 was part of this strike force, and the flights of Event III-252 were providing MIGCAP.

8. ORDNANCE

| | (No. fired/No. hit) |
|---|---|
| | Cannon |
| MIG-17 | 1/0 |

11. DATA SOURCES

Messages, Reports:

355TFW Takhli 201320Z May 67, OPREP-3, DOTO-O-11808

12. NARRATIVE DESCRIPTION

When at 21°13'N/106°46'E, BLUE Flight (four F-105s) observed MIG-17s engaging a flight of two F-105s at approximately 7000 ft. The flight then noticed a single MIG-17 at BLUE 4's 6 o'clock, low position 3000 ft range, closing and firing on BLUE 4. The flight engaged afterburner and BLUE 3 and 4 made a hard right turn, losing the MIG. BLUE Flight returned to base with no further incident. MIG warnings were heard throughout the mission but there were none directed at this flight.

[redacted]

Event III-261

Aircraft Involved: Four F-4Cs vs one unident

Results: Sighting

Vicinity of Encounter: 20°25'N/107°15'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 May 1967, 0853H

II. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Number 3 of escort flight over Gulf of Tonkin observed a light colored A/C of unknown type; bogey was heading south at approx altitude 5000'; bogey turned to a westerly heading and proceeded inland, posing no threat to flight.

Event III-262

Aircraft Involved: Eight F-105s vs one MIG-17 and two unidents

Results: Sighting

Vicinity of Encounter: 21°07'N/107°30'E
21°15'N/107°00'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 May 1967, 0856H

II. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike/flak supp flight at altitude 16,000' observed 1 MIG-17 at 13,000' heading southwest; MIG passed in front of flight from left to right; second F-105 flight, on strike mission at 6000', observed two unidentified dark colored A/C at same altitude at second position shown; unident flight was in a diving turn toward 6 o'clock; bogeys were 3-5 miles away; no attack attempted.

Event III-263

Aircraft Involved: Four F-4Cs vs two unidents

Results: Sighting

Vicinity of Encounter: 21°05'N/104°30'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 May 1967, 0900H

II. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

F-4C escort flight was at 29,000' when, starting a left turn, they spotted two silver, delta wing A/C; bogeys at 10,000' altitude turned away.



[redacted]

[redacted]

Event III-264

Aircraft Involved: Four F-105s vs two unidents

Results: No damage

Vicinity of Encounter: Unknown

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 May 1967, 0905H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight at 7000' sighted two unknown A/C at 6:30 o'clock low, approx two miles away; bogeys attempting to get into position for a tail chase; flight lit afterburners and exited; visibility difficult as flight was in and out of clouds.

Event III-265

Aircraft Involved: Two RF-4Cs vs unidentified

Results: No damage

Vicinity of Encounter: 20°56'N/105°10'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 May 1967, 1420H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Photo flight aborted mission due MIGs and SAMs; flight received two ring X-band steady signals at 12 o'clock position, and subsequently made sighting; flight broke right and down; during break, PIRAZ issued a MIG warning which placed MIGs in flight's immediate vicinity; no prior MIG calls received.

Event III-266

Aircraft Involved: Three F-105s vs two MIG-17s

Results: Sighting

Vicinity of Encounter: 21°45'N/105°43'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 May 1967, 1616H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight saw MIGs at 16,000'.

[redacted]

[redacted]

Event III-267

Aircraft Involved: Two F-4Cs vs two MIG-17s

Results: Sighting only
Vicinity of Encounter: 21°10'N/104°10'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 May 1967/1620H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

ECM escort flight observed two silver-grey MIGs. MIGs were at flight's 10 o'clock low position, 2 miles away. After passing flight, MIGs made a gentle left turn and rolled out and moved away from flight. Flight did not attempt to engage due to No. 3 and No. 4 having departed 10 minutes before due to engine problems. This left only two aircraft covering three EB-66 and Lead felt there might have been a trap to draw protection away.

Event III-268

Aircraft Involved: Three EB-66s vs one Mig-?

Results: Sighting only
Vicinity of Encounter: 20°30'N/104°25'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 May 1967/1034H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flight, for which the flight of Event III-267 was providing escort, reported seeing a possible MIG 14 minutes later than the sifhting by that flight. No hostile intent was evident.

Event III-269

Aircraft Involved: Four A-4s vs three unidentified

Results: Sighting only
Vicinity of Encounter: Unknown

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 May 1967/Unknown

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Three bogeys were briefly observed by IRON HAND Flight.



[redacted]

[redacted]

Event III-270

Aircraft Involved: Four F-4Cs vs three MIG-17s

Result: No damage

Vicinity of Encounter: 20°30'N/105°20'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 May 1967/0903H

BLUE Flight (four F-4Cs) was assigned MIGCAP for a strike against JCS Target 31.00, the Ha Dang Army Barracks and Supply Depot.

## 2. MISSION ROUTE

Departed Da Nang, direct to pre-strike refueling over Thailand, direct to target at 20°58'51"N/105°47'42"E, outbound heading 257° until clear of SAM rings, direct Channel 97, direct post-strike refueling, direct Channel 37.

## 11. DATA SOURCES

Messages, Reports:

366 TFW, OPREP-3/PINNACLE 017, 220455Z May 67, SECRET.

## 12. NARRATIVE DESCRIPTION

BLUE Flight was outbound on a heading of 257° at 8000 ft altitude in the vicinity of 20°30'N/105°20'E when three MIG-17s were sighted at 0103Z. "The MIGs were approximately 10-15 n mi distance and at very low altitude and appeared to be attempting to keep from being sighted." BLUE Flight had heard seven MIG calls for BULLSEYE and southeast of BULLSEYE. No additional information provided.

[redacted]

[redacted]

Event III-271

Aircraft Involved: Two RF-101s vs two probable MIG-17s

Result: Sighting only

Vicinity of Encounter: 20°51'N/105°42'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 May 1967/1351H

11. DATA SOURCE

Messages, Reports: 432TRW 221226Z May 1967 OPREP-3 TUOC 04252

12. NARRATIVE DESCRIPTION

Two RF-101s (BLUE Flight) were on a mission against the XAC MAI motor pool. The weather was clear with four miles visibility. The flight departed Udorn and proceeded to 20°35'N/104°25'E, then to 21°19'N/105°23'E, and returned to Udorn at 27,000 feet altitude. The altitude over the target was 12,000-14,000 feet.

At 1347H, while en route to the target at 20°57'N/105°32'E, the flight got a SAM activity light and Lead saw a single SAM. A second SAM was seen at 1348 as the flight was heading 090, at a position of 21°00'N/105°39'E.

As the missile passed, the flight also received some 85mm fire. The flight changed altitude to 18,000 feet and were again fired on by flak. At 1350, when over the target, heading 180 degrees, a SAM was seen to come from 6 o'clock and detonate at 1 o'clock, 500 feet away.

Two more SAMs were fired when the flight was over the target.

Over the target the flight heard a MIG alert call on guard at BULLSEYE. At 1351H, while egressing the target area, heading 220 degrees, two probably MIG-17s were seen at 8 o'clock. The MIGs were heading south.

At 1352H, when at 20°51'N/105°42'E heading 230, BLUE 2, who was ahead of BLUE 1 by one mile, saw a SAM. This was followed by another about two minutes later when the flight was at 20°42'N/105°35'E.

At 1353H BLUE Flight heard a MIG call on guard and then guard channel was jammed. BLUE Flight was heading 220-230 degrees and went into afterburner for three minutes to clear the mountains and then descended to low level to a point southeast of Channel 97.

The flight then returned to Udorn.



[redacted]

[redacted]

Event III-272

Aircraft Involved: Four A-4Es vs two MIG-? and one MIG-17

Results: No damage

Vicinity of Encounter: 20°48'N/105°38'E and 21°58'N/105°43'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 May 1967/Before 1500H

8. ORDNANCE

(No. fired/No. hit)

| | AAM or Rockets |
|---|---|
| MIG-17 | 1/0 |

11. DATA SOURCES

CINCPACFLT Staff Study 6-68

12. NARRATIVE DESCRIPTION

As a flight of four A-4Es left the mountains on ingress to the target at 20°48'N/105°38'E, two MIGs (unidentified type) were seen at 9 o'clock high at a range of 6 mi. These MIGs made no run on the strike aircraft.

Later, when the flight was at 21°58'N/105°43'E, a MIG-17 was seen at 11 o'clock high passing left to right and was observed to fire an AAM or rockets. The MIGs target was apparently a strike aircraft on another target.

[redacted]

[redacted]

Event III-273

Aircraft Involved: Two RF-4Cs vs three unidentified

Result: Sighting

Vicinity of Encounter: 20°55'N/104°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 May 1967/1445H

11. DATA SOURCE

432 TRW 221228Z May 1967 OPREP-3 TUOC 04254

12. NARRATIVE

Two RF-4Cs (BLUE Flight) on a mission to JCS 21.11 left Udorn and proceeded to 20°30'N/103°40'E at 18,000 feet MSL. From there they proceeded to 21°20'N/104°53'E at 500 feet MSL and from there returned to Udorn at 20,000 feet. There were thunderstorms covering the area with tops at 35,000 feet.

En route to the target at 1445H, when at a position of 20°55'N/104°20'E, and an altitude of 18,000 feet, heading 050 degrees, BLUE Flight observed an unidentified aircraft. The aircraft was at 9 o'clock position, 8-10 miles away and was on a heading of 230 degrees.

As the bogey aircraft passed BLUE Flight's 8 o'clock position it was observed to turn into BLUE Flight and head for the cloud deck at 12,000 feet. No signals were received on the APR 25/26 nor were any MIG warnings heard at this time.

At 1446H, BLUE Flight received x-band at 2 rings and audio indications from the 7 o'clock position. BLUE Flight continued to receive x-band for three minutes from 6-7 o'clock at two rings strength. The time now was 1450H and the flight was at 21°18'N/105°53'E.

BLUE Flight then aborted, due to weather, and turned to a heading of 240 degrees and went afterburner at 15,000 feet MSL, when two unidentified aircraft were observed five miles away at 9 o'clock and closing. A check with Ethan Charlie indicated no bandits were being painted in the area of BLUE flight. Blue Flight again went afterburner and egressed the area.



[redacted]

[redacted]

Event III-274

Aircraft Involved: Four F-105s vs two MIG-17s

Results: No damage

Vicinity of Encounter: 21°18'N/105°54'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 May 1967/1527H

II. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight sighted two MIG-17s, 1/2 mile away at their 7 o'clock position in orbit at 6000 ft. MIGs appeared to set up orbit for tail chase but flight lit afterburners and departed.

Event III-275

Aircraft Involved: Four F-4Cs vs two MIG-17s

Results: No damage

Vicinity of Encounter: 21°17'N/105°46'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 May 1967/1527H

II. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

MIG CAP on ingress observed two silver MIGs at a high speed 1 mile to left. Flight broke hard to intercept but MIGs disappeared into haze.

Event III-276

Aircraft Involved: Four F-105s vs one MIG-21 and one MIG-?

Results: Sighting only

Vicinity of Encounter: Ha Dong

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 May 1967/1605H

II. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

One of flights escorted by the aircraft of Event III-270 observed one MIG-21 and one MIG of unknown type in vicinity of target, Ha Dong Army Barracks. Flight was not engaged by either.

[redacted]

[redacted]

Event III-277

Aircraft Involved: Four F-4Cs vs four MIG-21Ds
Result: Two MIGs destroyed
Vicinity of Encounter: 20°54'N/105°30'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 May 1967/1605H

BLUE flight (four F-4Cs) was one of two MIGCAP flights assigned to escort an F-105 strike force against JCS 31.00 (the Ha Dong Army Barracks and Supply Depot) on the southwestern outskirts of Hanoi.

## 2. MISSION ROUTE

Departed Danang, direct to White Anchor extended refueling track, direct Channel 97, direct to target at 20°59'N/105°48'E, direct 20°50'N/105°03'E, direct White Anchor post-strike refueling track, direct Danang.

## 3. AIRCRAFT CONFIGURATION

F-4C BLUE 1, 3

4 - SPARROW (AIM-7E)
2 - SIDEWINDER (AIM-9b)
1 - 20mm cannon pod
2 - 370 gallon wing tanks
1 - QRC-160 ECM pod
Camouflage paint.

F-4C BLUE 2, 4

4 - SPARROW (AIM-7E)
4 - SIDEWINDER (AIM-9B)
1 - 600 gallon centerline tank
1 - 370 gallon wing tank
1 - QRC-160 ECM pod
Camouflage paint.

MIG-21 MIG 1, 2, 3, 4

Silver with red stars and bars outlined in yellow on both wings.
AAMs
No external stores observed.

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Cirrus clouds at 22,000 ft AGL, 1/8 coverage. Visibility at flight level, 25 n mi.

| | BLUE 1 2 3 4 |
|---|---|
| Altitude: | 16,000 ft AGL |
| Heading: | 090° |
| Speed: | 500 kts |
| Fuel State: | 10-11,000 lbs |

Flight Formation:

Standard four-ship ECM pod formation.

## 5. INITIAL DETECTION

Encounter 1 - BLUE flight had heard seven MIG calls while inbound to the target. BLUE lead was searching at 12 o'clock in response to a "Bullseye" (vicinity of Hanoi) call when the Aircraft Commander visually sighted an unidentified aircraft ahead of the strike force. The pilot subsequently identified two separate aircraft on radar.

Encounter 2 - As BLUE flight was rejoining on the tail end of the strike force after terminating Encounter 1 above, BLUE lead looked over his left shoulder to check his formation and sighted a MIG-21 closing at a high rate of speed "a slight back from 6 o'clock to the formation."

## 6. ACTION INITIATED

Encounter 1 - BLUE lead locked on to one of the suspected MIGs and the flight accelerated ahead of the strike force in AB. BLUE lead lost sight of the aircraft after it started a left turn and then reversed to the right. BLUE lead continued a radar steering dot pursuit in a hard right turn through a climb, descent, and level flight. After approximately 100° to 120° of turn, BLUE lead could not establish a lead or cutoff on the radar target (steering dot in far righthand side of scope) and elected to break off and return to the strike force. This terminated Encounter 1.



[redacted]

Encounter 2 - BLUE lead immediately initiated a left turn into the MIG-21. As BLUE lead entered the turn the MIG fired an AAM at the strike force and pulled up into a steep climb in a slight left turn. BLUE Lead followed the MIG and fired a SIDEWINDER as the MIG was entering a thick cirrus cloud layer. MIG climb angle approximately 50°.

7. SITUATION DEVELOPMENT

The MIG disappeared into the clouds with the SIDEWINDER tracking towards its tailpipe. BLUE lead rolled off slightly to the right and continued through the cirrus clouds to break out on top and found nothing but smoke and debris floating above the cloud on the left. (This kill was later confirmed by an F-105 in the strike force who saw two pieces of debris, one about the size of a wing or half a fuselage falling from about 20,000 ft in this area.) Almost immediately BLUE lead sighted another MIG-21 at 1 o'clock about one mile away. BLUE lead turned into this MIG and fired the second SIDEWINDER, which failed to guide, passing off to the right and behind the MIG. The MIG entered a hard left diving turn followed by violent evasive maneuvering from 25,000 ft to 2000 ft. BLUE lead closed on the MIG in the descent and began firing a single 253 round burst of 20mm cannon during the pullout with no apparent results. BLUE lead did a pull-up and "wing over" to prevent an overshot and lined up behind the MIG with good overtake for another attack. The MIG had leveled out "in a shallow gliding flight slowly moving his wings, turning left and then right." BLUE lead pulled the trigger as the MIG was passing through 1000 ft; however, the gun jammed. BLUE Lead slid off to the left and directed BLUE 2 to take the MIG. However, BLUE 2 did not have a gun and was not in position to initiate an immediate missile attack. Although no additional action was taken, the MIG continued down in a gliding turn to impact the ground and erupted in a big ball of fire. The flight, having reached BINGO fuel, egressed the area without further incident.

8. ORDNANCE

(No. fired/No. hits)

| | SIDEWINDER AIM-9B | 20mm Cannon | Soviet AAM | Remarks |
|---|---|---|---|---|
| BLUE 1 | 2/1 | 1/1 | | 253 Rounds 20mm (Tracer every 7th Round). |
| MIG 1 | | | 1/0 | |

9. EQUIPMENT PROBLEMS

None.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | 5035 | 139 | 254 | Had previously flown F-5s in SEA combat prior to F-4s. |
| Back | 611 | 351 | 115 | |

Comments

Blue 1 - A lesson learned is to keep the pressure on the MIGs and do not give up. It's quite obvious their pilots do not have the quality training and experience our pilots have and they make fatal mistakes and often fail to exploit their advantages or capabilities. It has taken a long time to convince people that a gun is needed. This configuration compensates for those situations where you are too close to use missiles or the environment is not compatible for radar missiles or the SIDEWINDER. The noncomputing gun sight is not very good at best. With the fixed sight and boresight problems of an external gun, it is a last ditch effort that relies on a tremendous volume of fire to spray the target. Ideally, we need an internal gun in the F-4.

11. DATA SOURCES

Project Interviews: BLUE 1 (Front) - 23 June 67; telecon with BLUE 1 (Front) - 10 July 68.
Messages, Reports:

366TFW, DCOI FASTEL 724, OPREP-3 Serial Number 019, 221030Z, May 67, SECRET.
366TFW, JPCCO FASTEL 749, OPREP-3, Serial Number 021, 221300Z, May 67, SECRET/NOFORN.
366TFW, DCO 00163, 250645Z, May 67, SECRET.

12. NARRATIVE DESCRIPTION

BLUE flight was positioned forward and to the right of the leading group of F-105s in the strike force. As the force "passed in the vicinity of Hoa Lac heading east," at approximately 16,000 ft AGL (500 kts, 10-11,000 lbs fuel), BLUE 1 (Front) "spotted MIGs out in front of the formation; - just an airplane way out that was not supposed to be there." The pilot (BLUE 1-Rear) subsequently identified two aircraft on radar. BLUE lead made a boresight lock-on one of the suspected MIGs and the flight accelerated ahead of the strike force in AB (All external tanks had been previously jettisoned when empty because of numerous MIG calls). BLUE lead lost sight of the aircraft after it started a left turn and then reversed to the right. BLUE lead continued a radar steering dot pursuit in a hard right turn through a climb, descent, and level flight. After approximately 100° to 120° of turn, BLUE lead could not establish a lead or cutoff on the radar target (steering dot in far righthand side of scope) and elected to break off and return to the strike force.

As BLUE flight, still in AB, was rejoining on the tail end of the strike force, BLUE lead looked over his left shoulder to check his formation and sighted a MIG-21D closing at a high rate of speed "a slight back from 6 o'clock to the formation." BLUE lead immediately initiated a left turn into the MIG-21. As BLUE lead entered the turn the MIG fired an AAM at the strike force and pulled up into a steep climb in a slight left turn. BLUE Lead followed the MIG firing a SIDEWINDER just as the MIG was entering a thick cirrus cloud layer. The MIG had at least a 50° climb angle. (The missile was visually launched at approximately 1 "g" after a good 10 second loud growl tone. BLUE 1 was at 18,000 ft AGL, Mach 0.92; the MIG was at 21,000 ft AGL, 12 o'clock high in steep climb, range 2-3 mi.)[1] The MIG disappeared into the cirrus with the SIDEWINDER in pursuit. BLUE Lead rolled off slightly to the right and continued through the cirrus clouds to break out on top and found nothing but smoke and debris floating above the cloud to his left. (This kill was later confirmed by an F-105 in the strike force who saw two pieces of debris, one about the size of a wing or half a fuselage falling from about 20,000 ft in this area.)

Almost immediately BLUE lead sighted another MIG-21 at 1 o'clock about 1 mile away. BLUE lead turned into this MIG and fired the second SIDEWINDER, which failed to guide, passing off to the right and behind the MIG. (The missile was visually launched with the pipper on the MIG after a "medium" growl, 5 second tone. BLUE 1 was at 21,000 ft AGL in a 3 "g" turn. The MIG was at 2 o'clock, range approximately 1 mile.) The MIG entered a hard left diving turn followed by evasive maneuvering including "rapid reversals, snapping, turning, and twisting". During this descent over Hoa Lac Airfield, the "ground erupted with antiaircraft fire and five SAMs passed through the formation." Since BLUE lead was unable to get a radar lock-on to the maneuvering MIG, he selected the gun and closed on him in AB at high speed. As the MIG began a pull out at about 2000 ft AGL, BLUE lead "pulled approximately 7 "g's" and hosed him down good with the gun" firing a single 253 round burst of 20mm cannon with no apparent results. BLUE lead did a pull-up and "wing over" to prevent an overshot and lined up behind the MIG with good overtake for another attack. The MIG had leveled out "in a shallow gliding flight slowly moving his wings, turning left and then right." BLUE lead pulled the trigger as the MIG was passing through 1000 ft; however, the gun jammed. BLUE Lead slid off to the left and and directed BLUE 2 to take the MIG. However, BLUE 2 did not have a gun and was not in position to initiate an immediate missile attack. BLUE 2 overshot to the right. BLUE Lead started a climbing left turn in response to several BINGO fuel calls from the flight. The flight was still drawing heavy flak at this time. The MIG "continued in his gliding turn and finally impacted with the groud just north of the Red River and erupted in a big ball of fire." The flight egressed the area without further incident.

[1]This range figure is quoted from the OPREP-3. BLUE 1 (Front) stated that the range was possibly 2000 ft but no greater than one mile - well within launch parameters.

[redacted]

Event III-278

Aircraft Involved: Four F-105s vs Two MIG-21s
Result: No damage
Vicinity of Encounter: 20°15'N/105°10'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 22 May 1967/1006H.

BLUE Flight (two F-105s and two F-105Ds) was assigned to provide IRON HAND support for a sixteen-ship strike against JCS Target 31.00, the Ha Dong Army Barracks and Supply Area.

## 2. MISSION ROUTE

Departed Korat AB, Thailand, direct to RED ANCHOR pre-strike refueling, direct Channel 97, direct Hoa Binh for IRON HAND Patrol, direct Channel 97, direct RED ANCHOR post-strike refueling.

## 3. AIRCRAFT CONFIGURATIONS

F-105F BLUE 1, 3

1 - 650-gal centerline tank
2 - CBU-24s
1 - AGM-45
1 - ECM Pod
1 - M61 20mm cannon

F-105D BLUE 2, 4

2 - 450-gal wing tanks
6 - MK 82 bombs
1 - M61 20mm cannon
1 - AIM-9D (BLUE 2 only)
1 - AGM-45 (BLUE 4 only)
1 - ECM Pod

MIG-21 MIG 1, 2

Large nose cone (D or F Model)
Silver color
AAMs (suspected ALKALI)

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 9000 ft scattered to broken with cumulus buildups in the encounter, visibility 5-7 miles.[1]

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 6,500-8,000 ft | | | |
| Heading: | 260° | | | |
| Speed: | 480-520 KTAS | | | |
| Fuel State: | 10,000-11,000 lbs | | | |

Flight Formation

Unknown four ship, trolling for SAM sites.

## 5. INITIAL DETECTION

Encounter 1. BLUE Flight was on a heading of 260° at 6,500-8,000 ft AGL, 480-520 KTAS, investigating an active SAM site in the vicinity of Hoa Binh when BLUE 4 sighted a MIG-21 at 6 o'clock to BLUE lead and 2. This MIG was within gun range when first sighted and had a high rate of overtake.

Encounter 2. BLUE Flight was heading 220°, altitude 4,000 ft and was closing on the flight after a SAM break when another MIG-21 attacked the flight from a diving 6 o'clock position. Initial detection was outside of 5,000 ft range.

## 6. ACTION INITIATED

Encounter 1. BLUE Flight initiated a left break just as the MIG overshot and passed in front of the flight in a left climbing turn.

Encounter 2. BLUE Flight broke down and to the left as the MIG fired at least two AAMs at the flight.

[1] OPREP 3 states WX 4000 ft scattered; however, this pilot report agrees with flight conditions described in the OPREP and the interview.

[redacted]

## 7. SITUATION DEVELOPMENT

Encounter 1. BLUE 2 took the lead and fired an AIM-9B at the MIG-21. The missile failed to guide and missed (500 ft low and to the right). BLUE 2 followed up with a 20mm cannon attack which was unsuccessful because the MIG was beyond effective firing range for all three firing bursts. BLUE Flight disengaged with this MIG to evade three SAMs.

Encounter 2. Both AAMs missed BLUE Flight and the MIG-21 apparently disengaged since none of the flight saw this MIG after the initial attack.

## 8. ORDNANCE

(No. fired/No. hits)

| | SIDEWINDER AIM-9B | Cannon 20mm | Soviet AAM | Remarks |
|---|---|---|---|---|
| BLUE 2 | 1/0 | 480 rds/0 | | |
| MIG 2 | | | 2 or 3 | BLUE 2 stated that these were ALKALI missiles. |

## 9. EQUIPMENT PROBLEMS

BLUE 2 - The M61 20mm cannon was apparently "overgreased or something" and large flames would come out when fired causing an engine compressor stall.

## 10. AIRCREW COMMENTS

Experience

| | Total Hours | F-105 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 2 | 750 | 500 | 42 | Went directly from pilot training to F-105s - USAFE to SEA. |
| BLUE 1, 3, 4 | --------Unknown-------- | | | |

Comments

BLUE 2 - The MIG-21 "apparently dove in through the cumulus buildups, or a hole in the cumulus buildups so he knew where we were and to us it was obvious that it was GCI control."

## 11. DATA SOURCES

Project Interviews: BLUE 2, mid-June 1967.

Messages, Reports:

388 TFW, JPCCO FASTEL DOI 1816, 221237Z May 67, OPREP-3 PINNACLE 022, SECRET.
388 TFW, JPCCO FASTEL DOI 1817, 221248Z May 67, OPREP-3 PINNACLE 023, SECRET.

## 12. NARRATIVE DESCRIPTION

BLUE Flight had preceded the strike force by approximately 10 miles to troll for SAM Sites along the ingress route in the vicinity of Hoa Binh which is about 30 miles ESE of the target area near Hanoi. The flight had reversed course over Hoa Binh to investigate an active SAM Site when BLUE 4 called out a MIG-21 at 6 o'clock to BLUE lead and 2. (BLUE Flight was heading approximately 260° at 6500-8000 ft AGL, 480-520 KTAS.) This MIG was within gun range when first sighted and had a high rate of overtake which caused him to overshoot and pass in front of BLUE Flight on their initial left break.[1] There was no indication that the MIG fired any ordnance on this pass. BLUE Flight eased the left turn as the MIG pulled up in front of the flight "30° up to us--top up angled off and I could see a large nose cone which is a D or F Model".

BLUE 1 gave the lead to BLUE 2 who jettisoned wing tanks and bombs, went AB, switched from conventional bombs to missiles air, single sequence, selected 0 mils on the sight, and confirmed a green ready light. (BLUE 2 did not turn up the missile tone volume and subsequently fired a SIDEWINDER without confirming a missile ton or growl.) This MIG-21 continued a climbing left turn in AB, pulling an estimated 1 1/2 g's. BLUE 2 placed the sight reticle on the MIG, relaxed g's and fired an AIM-9B. At launch the MIG was 20 to 30 degrees above the horizon, approximately 4500 ft to one mile range, 10 to 12,000 ft AGL. BLUE 2 launched in a 30° climb, 330 KCAS, at 8-10,000 ft AGL. The SIDEWINDER failed to guide and missed 500 to 1000 ft low and to the right. (A satisfactory airborne tone check had been accomplished. "When I preflighted it, like most of our missiles here, it was well pitted.")

[1] The OPREP states that BLUE Flight broke hard left and down reversing to the right causing the MIG to overshoot; however, BLUE 2 stated that the MIG was out in front of them by the time they reacted for a left break.

The MIG started a dive to the left and BLUE 2 "put the pipper way out in front of him and hosed until he flew through it. As I did this I got large flames out of the gun and the compressor stalled. It was just like putting my speed brakes on". This action was repeated for two additional firing bursts for a total of 480 rounds of 20mm cannon fire. (BLUE 2 stated that the cannon attack was ineffective since he had fired at an estimated range of 4500 ft, "well out of gun range").

At this point, three SAMs were spotted by the flight which broke "hard down and to the left" disengaging from the MIG.[1] As BLUE Lead was joining on BLUE 2, another MIG-21 "came in behind us and fired either 2 or 3 of those ALKALI missiles. He fired in about a 30° dive on us the first time and, of course, the missile had very little effect, it just went down into the ground. As he pulled up the next one went past us . . . . We were in a hard left turn". This MIG-21 was not seen again after this brief encounter. BLUE Flight, now at 500 ft AGL, started a climb out on a westerly heading. The flight made one last 360° sweep of the area and egressed without further incident.

[1]The OPREP states that this MIG started a climbing left turn and fled on a heading of 020° after the AIM-9B missile launch. It further stated that BLUE Flight terminated this initial engagement by breaking down and to the left at 0809Z and then headed west. It reports a second MIG engagement at approximately 0811Z, vicinity of 20°50'N/105°05'E with BLUE Flight "heading 220°, altitude 4000 ft. Another Mig-21 came on from 6 o'clock high. MIG closed to approximately 5000 ft and launched two AAMs. BLUE (sic) Flight broke down to the left, back to the right, and back to the left. Both AAMs passed behind the flight as they made their first break to the left. (Since it was not possible to correlate the interview data with the OPREP, both data are provided for this portion of the encounter.)

[redacted]

Event III-279

Aircraft Involved: Four F-105s vs two MIG-21s

Results: Sighting only
Vicinity of Encounter: Ha Dong

1. PRIMARY MISSION AND TACTICAL SITUATION
Date/Time: 22 May 1967/1611H

11. DATA SOURCE
CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION
Ha Dong strike flight sighted two MIGs in target area but no attempt was made to engage.

Event III-280

Aircraft Involved: Four F-105s vs one MIG-21

Results: No damage
Vicinity of Encounter: Unknown

1. PRIMARY MISSION AND TACTICAL SITUATION
Date/Time: 22 May 1967/Unknown

11. DATA SOURCE
CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION
Strike flight sighted one silver MIG approach at 6 o'clock position within 1-1/2 miles of flight in a harrassment type pass, then pull away.

Event III-281

Aircraft Involved: Four F-105s vs one MIG-17

Results: Sighting only
Vicinity of Encounter:

1. PRIMARY MISSION AND TACTICAL SITUATION
Date/Time: 24 May 1967/after 1715H

11. DATA SOURCE
CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION
Outbound strike flight observed one MIG at low level but no attempt was made to engage.

[redacted]

[redacted]

Event III-282

Aircraft Involved: Three F-4Cs vs one unidentified

Results: Sighting only

Vicinity of Encounter: 21°55'N/105°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 26 May 1967/0858H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

MIG CAP sighted an unidentified aircraft, turning from 3-4 o'clock low, 6 miles distant. Flight turned to investigate but bogey turned north and departed. It was no threat to strike force.

Event III-283

Aircraft Involved: Six F-4Cs vs two unidentified

Results: Sighting only

Vicinity of Encounter: 21°15'N/106°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 30 May 1967/1610H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike escort flights sighted two bogeys at 10 o'clock high but unidentified aircraft were too far away to make positive identification.

[redacted]

[redacted]

Event III-284

Aircraft Involved: Four F-105s vs four MIG-17s

Result: No damage

Vicinity of Encounter: Unknown

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 30 May 1967/1516H

Four F-105s (BLUE Flight) were approaching the roll-in point for an attack against a SAM site (Lead 52) when they were attacked by four MIG-17s.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

| | BLUE | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Altitude: | | 4500 ft | | |
| Heading: | | Turning through a southerly heading, in a turn to the right | | |
| Speed: | | 540 kts | | |

8. ORDNANCE

A section of MIGs fired at BLUE 1 and 2 in a head-on pass. No hits were scored.

11. DATA SOURCES

Message: 355TFW/OPREP-3/301505Z May 1967

12. NARRATIVE DESCRIPTION

During an attack on a SAM site, Lead 52, BLUE Flight was attacked by four MIG-17s. The MIGs attacked from the northwest, four o'clock to BLUE Flight which was turning right at an altitude of 4500 ft and a speed of 450 kts. BLUE 1 (Lead) and 2 continued the attack on the SAM site while BLUE 3 and 4 turned into the attacking MIGs. BLUE 3 and 4 went through the MIG formation which was spread line abreast with the elements approximately 1500 ft apart, 1000 ft AGL. As the MIG elements split, one element of two MIGs broke to the right, headed south and was not seen again. The other element (MIG 3 and 4) broke left. BLUE 3 and 4 jinked left-right then headed back to join BLUE 1 and 2. MIG 3 and 4 engaged BLUE 1 and 2 in a head-on pass and fired at a range of approximately 2500 ft while climbing into BLUE 1 as BLUE 1 and 2 were descending toward the MIGs. No hits resulted. MIG 3 and 4 passed approximately 1200 ft below BLUE 1 and 100 ft below BLUE 2. As the MIG turned for another attack, BLUE 1 and 2 engaged afterburner and egressed the area, in company with BLUE 3 and 4, without further incident.



[redacted]

[redacted]

Event III-285

Aircraft Involved: Three F-105s vs four MIG-17s

Results: No damage

Vicinity of Encounter: 21°10'N/106°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 30 May 1967/1612H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Ingressing strike flight observed four MIGs in right turn toward flight but flight continued, losing sight of MIGs. No ordnance was exchanged.

Event III-286

Aircraft Involved: Four F-105s vs four MIG-17s

Results: Sighting only

Vicinity of Encounter: 21°24'N/106°17'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 30 May 1967/1616H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight was rolling on target when No. 2 observed flight of four MIGs approximately 4 miles east of Kep, headed west at 2-3000 ft and climbing.

Event III-287

Aircraft Involved: Two F-105s vs four MIG-17s

Results: No damage

Vicinity of Encounter: 21°16'N/106°11'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 30 May 1967/1616H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Numbers 3 and 4 of strike flight pulled off target. Passing through 3000 ft they observed four MIGs approaching from 5 o'clock in a left sweeping turn but MIGs overshoot flight and Numbers 3 and 4 continued to egress with no further contact.



[redacted]

[redacted]

Event III-288

Aircraft Involved: Four F-105s vs one MIG-17

Results: No damage
Vicinity of Encounter: 21°14'N/106°20'E

I. PRIMARY MISSION AND TACTICAL SITUATION
Date/Time: 30 May 1967/1616H

II. DATA SOURCE
CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION
Egressing strike flight was a MIG attempting to make a head-on pass but flight went into afterburner and MIG could not maneuver to intercept.

Event III-289

Aircraft Involved: Four F-4Cs vs unidentified

Results: Sighting only
Vicinity of Encounter: 20°45'N/107°45'E

I. PRIMARY MISSION AND TACTICAL SITUATION
Date/Time: 30 May 1967/1635H

II. DATA SOURCE
CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION
While orbiting with escorted aircraft, flight observed two silver delta wing aircraft over water. Aircraft appeared to be going from Hainan to NVN mainland.

Event III-290

Aircraft Involved: Four F-4Cs vs six MIG-17s and three MIG-21s

Results: No damage
Vicinity of Encounter: Kep Airfield

I. PRIMARY MISSION AND TACTICAL SITUATION
Date/Time: 30 May 1967/1656H

II. DATA SOURCE
CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION
While escorting flight of two RF-4Cs, flight encountered four MIG-17s and three MIG-21s on target run. Flight also observed two MIG-17s take off from Kep Airfield. PIRAZ alerted flight to MIGs on two occasions.

[redacted]

[redacted]

Event III-291

Aircraft Involved: Four F-4Cs vs four MIG-17s

Results: One F-4C lost

Vicinity of Encounter: 21°17'N/106°22'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

**Date/Time:** 31 May 1967/1551H

Four F-4Cs (BLUE Flight) were on a MIGCAP mission. While covering the egress of the strike group, four MIG-17 fighters were engaged.

## 2. MISSION ROUTE

Departed Danang and proceeded directly to TAN ANCHOR refueling, thence to points located at 20°07'N/107°43'E, 21°05'N/107°28'E, 21°22'N/106°16'E (target), 21°05'N/107°28'E, 20°07'N/107°43'E, TAN ANCHOR, Danang.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

4 SPARROW (AIM-7E)
2 SIDEWINDER (AIM-9B)
1 SUU-16 20mm gun pod
(QRC-160 pods and external fuel tanks indicated)

MIG-17

Silver color with red stars on the wings

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered clouds, good visibility

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 10,000-12,000 ft | | | |
| Heading: | 090° | | | |
| Speed: | 500 kt | | | |
| Fuel State: | 11,000 lb | | | |

Flight Formation: Pod formation, echelon left

## 5. INITIAL DETECTION

A "MIGs in the area" warning was received approximately two minutes before they were sighted. BLUE 1 (Lead) sighted the MIGs at 3 o'clock low at 2 miles heading 270° in a right turn. The MIGs were in a trail formation.

## 6. ACTION INITIATED

As the MIGs appeared to be turning to engage the strike force, BLUE 1 announced to his flight that he was engaging the MIGs and made an immediate descending right turn into the MIGs.

## 7. SITUATION DEVELOPMENT

When the MIGs were sighted by the F-4s, they broke off their attack against the strike group. As a defensive maneuver the MIGs established a wagon-wheel pattern to the right, 350 kt at 2,000-3,000 ft. BLUE 1 closed on the closest MIG and fired from the 10 o'clock position, slightly above the MIG at a range of 2,000 ft. No hits resulted. After yo-yoing off, BLUE 1 repeated three similar passes on three MIGs and missed each time. BLUE 3 closed on another MIG at the 4 o'clock position and fired from a range of 2,500 ft in to 100 ft without scoring a hit. As BLUE 3 climbed for separation, he saw BLUE 4 at his 3 o'clock position, slightly high. This is the last time BLUE 4 was observed by any member of BLUE Flight. Before BLUE 3 completed another firing run, BLUE 1 called BINGO for the flight. The F-4s disengaged from the MIGs and departed.

## 8. ORDNANCE

| | (No. fired/No. hits) SPARROW AIM-7E | SIDEWINDER AIM-9B | SUU-16 20mm | Remarks |
|---|---|---|---|---|
| BLUE 1 | 0/0 | 0/0 | 900/0 | Unable to position for a missile shot. |
| BLUE 3 | 0/0 | 0/0 | 300/0 | |

[redacted]

## 9. EQUIPMENT PROBLEMS

BLUE 4 missed a call from BLUE 1 to changed radio frequency and therefore was unable to communicate with the flight.

## 10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-4 Hours | Combat Missions |
|---|---|---|---|
| BLUE 3 | 3500 | 200 | 50 |

Comments on this Encounter: BLUE 3 - "One thing we learned is that we want to try to keep more guns on the MIGs. Since then we've worked out a procedure where the lead fires and while he's doing it the number three positions himself for a firing pass. When the lead pulls off, number three starts firing. This way they can provide each other top cover and at the same time get more fire power against the enemy."

## 11. DATA SOURCES

Project Interviews: BLUE 3, 22 June 1967

Messages, Reports: 366TFW/OPREP-3/311400Z May 1967
366TFW/OPREP-3/011130Z June 1967

## 12. NARRATIVE DESCRIPTION

BLUE Flight was providing MIGCAP for a strike against target JCS 39.43. As the F-4Cs commenced an attack against the enemy, the MIGs went into a tight, in-trail circle identified as a wagon wheel. BLUE 1 and 2 made four firing passes from approximately the 10 o'clock position from the MIGs. BLUE 3 and 4 made one firing pass from the 4:30 o'clock position from the MIGs. The MIGs continued in a tight circle and increased their turn rate as the F-4Cs fired. BLUE 4 reached BINGO fuel and attempted to notify BLUE 1, but because he had missed a frequency change BLUE 1 never heard the call from BLUE 4. Eventually BLUE 4 broke away from the flight and commenced egress with 3500 lb of fuel which was more than adequate to reach the tankers. After being vectored to tankers equipped only with unusable drogue type refueling, BLUE 4 finally turned toward the aircraft carriers on YANKEE STATION, and with only 200 lb of fuel remaining, made preparations to eject. Both crewmembers ejected safely and were quickly recovered.

During the MIG encounter accurate 85mm AA fire was observed. BLUE 4 also experienced control difficulties just prior to losing sight of BLUE 3. Because of the high fuel consumption and flight control difficulties, battle damage was considered a contributing factor to the loss of BLUE 4.

Aircraft Involved: Four F-4Cs vs one MIG-17

Result: No damage

Vicinity of Encounter: 21°20'N/106°35'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 31 May 1967/1610H

BLUE Flight, four F-4Cs, was providing MIGCAP for JCS target 39.43. At the time of the encounter the flight was outbound from the target area.

## 2. MISSION ROUTE

BLUE Flight departed Danang and proceeded to the TAN ANCHOR aerial refueling area then via direct routes through the following points: 20°07'N/107°43'E; 21°05'N/107°28'E; target 21°22'N/106°16'E. The return route was the reverse track.

## 3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

4 SPARROW (AIM-7E) One F-4C loaded with 3 AIM-7

BLUE 1, 3

2 SIDEWINDER (AIM-9B)
1 SUU-16 gun (1200 rd 20mm)

BLUE 2, 4

4 SIDEWINDER (AIM-9B)

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear sky, visibility greater than 15 miles

| | BLUE 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Altitude: | 10,000-14,000 ft | | | |
| Heading: | 120° | | | |
| Speed: | 500 kt | | | |

Flight Formation: Fighting wing

## 5. INITIAL DETECTION

MIG warnings relative to BULLS EYE had been received between 1540H and 1553H. One MIG-17 was sighted at 1710H in the 5 o'clock position to BLUE Flight.

## 6. ACTION INITIATED

BLUE Flight broke to the right and observed the MIG to follow the turn.

## 7. SITUATION DEVELOPMENT

BLUE Flight rolled wings level, zoom climbed for altitude and reversed their turn. The MIG disengaged, descended and was lost from view.

## 11. DATA SOURCE

Messages: 366TFW/OPREP-3/311115Z May 1967

## 12. NARRATIVE DESCRIPTION

While providing MIGCAP for a strike flight, BLUE Flight sighted a single MIG-17 at their 5 o'clock position. From their fighting wing formation BLUE Flight broke right. Observing the MIG to follow the turn, BLUE Flight rolled wings level, zoom climbed and reversed the turn. As BLUE Flight was maneuvering to attack, the MIG turned to the west and disappeared from sight as he descended. BLUE Flight turned outbound and continued egress from the area.

[redacted]

Event III-293

Aircraft Involved: Three F-105s vs two MIG-21s

Results: No damage

Vicinity of Encounter: 21°25'N/106°42'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 31 May 1967/1648H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flak suppression flight on egress observed two silver MIGs in right turn, 3000 ft below Lead and No. 2. Lead broke down to engage but MIGs went into an even tighter right turn and passed head-on below Lead. No ordnance was exchanged.

Event III-294

Aircraft Involved: Four F-105s vs four MIG-17s

Results: Sighting only

Vicinity of Encounter: Kep Airfield

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 31 May 1967/1650H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Pulling off target, strike flight observed two elements of two MIGs each orbiting Kep Airfield. MIGs were in right hand turn at 2000 ft.

Event III-295

Aircraft Involved: Four F-105s vs two MIG-17s

Results: Sighting only

Vicinity of Encounter: Kep Airfield

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 31 May 1967/1650H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

As they were rolling on target, strike flight observed two MIGs on easterly heading and approximately 1 mile east of target at 2-3000 ft. MIGs were probably one of the elements sighted by flight of Event III-294.

[redacted]

[redacted]

Event III-296

Aircraft Involved: Four F-105s vs six MIG-?

Results: Sighting only

Vicinity of Encounter: 21°14'N/107°05'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 31 May 1967/1650H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight on egress noted four unidentified MIGs at 21°20'N/107°16'E and two unidentified MIGs at 21°10'N/106°59'E. The flight was at 12,000 ft and climbing and the MIGs were at 2000 to 3000 ft. Flight was unable to observe markings. MIGs appeared to be camouflaged . The sun angle and clouds precluded positive identification and the MIGs did not maneuver.

Event III-297

Aircraft Involved: Four F-4Cs vs one MIG-17 (possible)

Results: Sighting only

Vicinity of Encounter: 21°18'N/106°15'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 31 May 1967/1700H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Escort flight sighted a possible MIG-17 directly below. The MIG was silver and at 1000 ft. The flight was at 2000 ft. No attempt was made to engage. PIRAZ called on egress that bandit was 5 miles south and trailing, but flight was unable to sight bandit.

Event III-298

Aircraft Involved: Four F-105s vs two MIG-21s

Results: No damage

Vicinity of Encounter: 21°20'N/106°28'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 2 June 1967/0930H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

The strike flight was approached by two silver MIGs from 7 o'clock position. The flight was at 16,000 ft and the MIGs came up from 7-8000 ft. The flight jettisoned all ordnance, turned hard left and then right. The MIGs were not observed again.

[redacted]

[redacted]

Event III-299

Aircraft Involved: Four F-4s vs Eight to Ten MIG-17s

Result: Three MIG kill "probables"

Vicinity of Encounter: 21°20'N/106°22'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 2 June 1967/1528H.

BLUE Flight was one of two flights of F-4 aircraft assigned MIGCAP for the 355 TFW F-105 force. The F-4 flights rendezvoused with the F-105 force after refueling and accompanied the last F-105 flight into the target area. The other F-4 flight accompanied the first F-105 flight.

## 2. MISSION ROUTE

BLUE flight departed Ubon RTAFB, Thailand, direct to the Brown refueling track over the Gulf of Tonkin with drop-off at 19°00'N/107°25'E, then north to 21°05'N/107°28'E, and direct to 21°20'N/106°22'E. The flight then engaged MIGs and subsequently egressed over the reverse route.

## 3. AIRCRAFT CONFIGURATIONS

F-4D BLUE 1

4 - SPARROW (AIM-7E)
4 - FALCON (AIM-4D)
1 - ALQ-71 pod
1 - 370 gallon wingtank
1 - 600 gallon centerline tank

F-4C BLUE 2, 3, 4

4 - SPARROW (AIM-7E)
4 - SIDEWINDER (AIM-9B)
1 - ALQ-71 pod
1 - 370 gallon wingtank
1 - 600 gallon centerline tank

MIG-17 MIG 1-10

Unknown.

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 7/8 broken overcast with base at 14,000 ft. About 7 miles visibility below clouds.

| | BLUE 1 2 3 4 | MIG 1 - 10 |
|---|---|---|
| Altitude: | 8,000 ft | 1,000 ft |
| Heading: | 282° | Left orbit |
| Speed: | 550 KTAS | Unknown |
| Fuel State: | Unknown, probably 10-11,000 lb | Unknown |

Flight Formation

Pod formation.

## 5. INITIAL DETECTION

No MIG warning calls were received. BLUE Flight was escorting the F-105 force inbound to the target area, when five or six MIG-17s passed under BLUE Flight in a hard left turn at about 1000 ft AGL. The MIGs were called out by an F-105 flight and BLUE 3 (Back) at about the same time. Apparently the MIGs were headed north, passing from left to right. Time was approximately 1528H.

## 6. ACTION INITIATED

BLUE Flight pulled up and to the left to gain separation and then dove hard right to achieve firing position.

## 7. SITUATION DEVELOPMENT

The MIGs reversed right and a melee ensued in which BLUE Flight fired three SPARROWs (AIM-7E), three SIDEWINDERs (AIM-9B) and two FALCONs (AIM-4D). At least two MIG-17s fired their cannons at BLUE Flight. Three MIG-17s were possibly destroyed with no damage to BLUE Flight.

[redacted]

8. ORDNANCE

(No. fired/No. hits)

| | SPARROW AIM-7E | FALCON AIM-4D | SIDEWINDER AIM-9B | Remarks |
|---|---|---|---|---|
| BLUE 1 | 3/? | 2/? | | Two AIM-7Es observed guiding. One AIM-7E went high. Both AIM-4Ds appeared to track, one 15 ft miss observed. |
| BLUE 2 | | - | 3/? | Two appeared to track. One not observed. |
| BLUE 3 | 1/? | - | | Observed for 3-5 seconds and was guiding. |
| BLUE 4 | | - | | |

MIG 1-10 Two of the MIG-17s were observed firing their cannons with no hits.

9. EQUIPMENT PROBLEMS

BLUE 1 - Two AIM-4Ds cooled off (ran out of time) and could not be used. UHF radio receiver trouble.

BLUE 4 - Utility hydraulic failure shortly after engagement began.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | 4900 | 268 | 99 | Previous TAC tours in WWII and Korea. Five previous air-to-air engagements, four confirmed MIG kills in SEA. |
| Back | 519 | 260 | 105 | First tour out of pilot training. 1000 hrs previous RO time in ADC (F-101). Seven months in theatre. Two SPARRCWs previously fired in training. |
| BLUE 2 | | | | |
| Front | 850 | 480 | 82 | No previous live firings - many simulator runs. 2.5 yrs rated, no previous MIG encounters. |
| Back | 474 | 187 | 38 | No previous live firings - many simulator runs. Two years rated, no previous MIG encounters. |
| BLUE 3 | | | | |
| Front | 2700 | 250 | 84 | Air Training Command Instructor. No previous MIG encounters. |

Comments from Overall Experience

BLUE 1 - Charging SPARROW-type training is not satisfactory for combat.

11. DATA SOURCES

Project Interviews: Aircrew letter - BLUE 3 (Front), 5 July 1968.

Messages, Reports:

OPREP-3 8TFW 0021330Z June 67, DOI 06018, June 67.

OPREP-3 366TFW P021355Z June 67, DCOI 005 June 67.

Supplement 8TFW P0307052 June 67, DI 06036 June 67.

Aircrew's AIM-7D-E missile performance reports.

[redacted]

12. NARRATIVE DESCRIPTION Event III-299

BLUE Flight was one of two F-4 flights from Ubon RTAFB assigned to fly MIGCAP for an F-105 strike force from Takhli RTAFB. Refueling, strike force rendezvous, and ingress was without incident until the force arrived in the vicinity of 21°20'N/106°22'E. At this time BLUE Flight was at 8000 ft, 550 KTAS, on a heading of 282°, in Pod formation when 5 or 6 MIG-17s were sighted by BLUE 3 (Back) at 10 o'clock low (1000 ft AGL) passing under BLUE Flight in a hard left turn. The OPREPs do not state definitely, but apparently the MIGs were headed toward the north and passing from BLUE Flight's left to right. BLUE 3 (Back) called out the MIGs to BLUE Flight.

BLUE Flight, reacting in elements of two aircraft each, pulled up and left to gain separation and then dove hard right to achieve firing position. Both element leaders (BLUE 1 and BLUE 3) were unable to fire due to the high angle off that the MIGs generated as they reversed turn to the right and into BLUE Flight. Both BLUE elements broke up and hard right. The MIGs did not follow the F-4s as they zoomed, but a MIG-17 was observed firing as he passed between BLUE 1 and 2 at the top of the zoom. The flight thought that this MIG was holding high and "pounced" after their first attack. BLUE lead then saw the MIGs in a left turn near Kep and dove to attack. BLUE 1 closed on one of six MIG-17s, pulled lead and fired one AIM-4D, with 50°-60° angle off. BLUE 1 was at 0.95 Mach (620 KTAS), 1000-1500 ft AGL, about 3 g's, 150 kts overtake, close range (exact range unknown), with a high growl for a tone. The MIG was in a hard left turn. The missile appeared to track but BLUE 1 was forced to break hard left to avoid a head-on collision with four MIGs and to avoid heavy automatic weapon and 37mm antiaircraft fire from Kep Airfield. BLUE 1 separated from the MIGs and as he turned to reengage, he observed an aircraft crash into the ground in a huge fireball about one mile north of Kep.

BLUE 3 and 4 zoomed to 12,000 ft after the first pass and observed the lead element start in on their second pass. BLUE 3 then dived down on a second pass but again could not fire because of "too much angle off, dive angle, airspeed," and pulled off to the right. BLUE 3 ran into a "blanket" of 85mm AAA fire and broke hard left loosing sight of the MIG-17s. As BLUE 3 rolled back to the right he observed three MIG-17s apparently trying to land at Kep Airfield. The MIGs were in trail about 1/2 to 1 mile apart. BLUE 3 rolled into a shallow dive about 2-3 miles south of Kep Airfield and headed for the number two MIG. The MIGs were 1/2 to 1 mile off the end of the southwest runway (northeast of Kep) and BLUE 3 was 1 to 2 miles south of Kep nearly parallel to the Northeast Railroad at about 2000 ft and 500 kts when BLUE 3 (Back) called, "lock-on," and BLUE 3 fired one AIM-7E missile.* BLUE 3 was flying an aircraft modified to provide an automatic switch to full system lock on after a boresight lock on. BLUE 3 observed the SPARROW launch, "roll and guide," for 3-5 seconds. BLUE 3 was getting heavy ground fire and BLUE 4 called that he was experiencing utility hydraulic failure so BLUE 3 broke right without observing the missile results. (Heavy 85mm fire with bursts at 8000 ft was reported in the Kep area.) BLUE 3 and 4 egressed the area for an emergency recovery at Danang.

Meanwhile, BLUE 1 and 2 turned to reengage the MIGs still in a left turn over Kep. BLUE 1 at 1000 ft AGL, 0.95 Mach (620 KTAS) locked on to a MIG-17 at an estimated 5000 ft range, auto-track, inter-locks out, full system, narrow gate and fired three AIM-7E missiles in ripple at 3500 ft range 45° angle off of the MIG's tail while pulling in 2.5 g's. The target was at 1000 ft AGL in a hard left turn, at 0.9 Mach. Again BLUE 1 was forced to break left by additional MIG-17s in a head-on pass and intense antiaircraft fire from the Kep area. He did not observe the missile results but did observe that the first and third missile "tracked beautifully" and the second missile "headed high and for parts unknown."

BLUE 2 went high on this break and saw a single MIG-17 above him in a left turn. BLUE 2 fired three AIM-9B missiles in rapid succession at 20° angle off, 3500 ft range, with a good growl. The target aircraft was in an easy left climbing turn at missiles launch. BLUE 2 was at 0.85 to 0.9 Mach (540 to 570 KTAS), 4000 ft altitude pulling about 2 g's at launch. Two of the missiles appeared to track. The third missile was not observed. BLUE 2 did not see the missiles hit because he broke hard left and down to rejoin BLUE 1.

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*The OPREP-3 reports BLUE 3 fired at 0.9 Mach (500 KTAS), 6000 ft altitude at 1.5 miles range in a dive, 70° head-on to the MIG-17 which was headed 240° at 800 ft AGL and 0.9 Mach.

[redacted]

[redacted]



BLUE 1 saw BLUE 2 in a left turn and called him to break right for rejoin. BLUE 1 then saw a MIG-17 in firing position on BLUE 2 with cannons blazing. BLUE 2 responded to a "break" call and evaded the MIG. BLUE 1 turned to engage the MIG-17, and encountered an additional flight of four MIG-17s near Kep. One MIG-17 made a head-on pass and BLUE 1 fired an AIM-4D. The pipper was on the target. BLUE 1 was at 0.95-1.0 Mach (620-660 KTAS), 1000-1500 ft altitude, pulling about 3 g's with no recollection of tone. The missile passed about 15 feet under the MIG, but since the missile does not have a proximity fuze it did not detonate. BLUE Flight observed a second huge fireball at 21°30'N/106°19'E about this time.

BLUE Flight, at BINGO fuel, egressed and called the other F-4 flight into the area. However, BLUE Flight's MIG encounter is the only one reported on this date. A third huge fireball was observed at 21°22'N/106°38'E at 1640H during egress. Official sources do not list any kills or probables on this date.

[redacted]

[redacted]

Event III-300

Aircraft Involved: Eight F-105s vs two MIG-21s

Results: Sighting only

Vicinity of Encounter: 21°19'N/106°30'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 2 June 1967/1015H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Inbound strike flight of four F-105s observed two MIGs at 10,000 ft. The MIGs came from 10 o'clock and passed behind flight's 6 o'clock position and were not observed further. As the flight came off target, a single MIG-21 was seen to dive through a second strike flight which was just diving on target.

Event III-301

Aircraft Involved: Four F-4Cs vs one MIG-17

Results: Sighting only

Vicinity of Encounter: Kep Airfield

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 2 June 1967/1630H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

MIG CAP flight sighted one MIG, 7-8 miles due east of target, Kep RR yards. Flight also saw F-4s and silver aircraft engaged in aerial battle near 21°27'N/106°30'E between 4000 and 8000 ft (see Event III-302). BLUE lead observed an orange fireball at 0840Z at 21°31'N/106°26'E which appeared to be a large POL explosion or an aircraft striking the ground.

Event III-302

Aircraft Involved: Two F-105s vs four MIG-17s

Results: No damage

Vicinity of Encounter: 21°16'N/106°11'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 2 June 1967/1633H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Kep strike flight was proceeding into target area when Lead and No. 2 noted four silver MIGs at their 6 o'clock position, and the MIGs were 1-1/2 miles from flight on same heading. The flight started climb to target and the MIGs could not keep up.



[redacted]

[redacted]

Event III-303

Aircraft Involved: Four F-4s vs Eight to Ten MIG-17s

Results: No damage

Vicinity of Encounter: 21°20'N/106°22'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 2 June 67/1628H

BLUE flight was one of two flights of F-4 aircraft (see Event III-301) assigned MIGCAP for the 355TFW F-105 force. The F-4 flights rendezvoused with the F-105 force after refueling and accompanied the last F-105 flight into the target area. The other F-4 flight accompanied the first F-105 flight.

## 2. MISSION ROUTE

BLUE flight departed Ubon RTAFB, Thailand, direct to the Brown refueling track over the Gulf of Tonkin with drop-off at 19°20'N/106°22'E. The flight then engaged MIGs and subsequently egressed over the reverse route.

## 3. AIRCRAFT CONFIGURATION

F-4D BLUE 1

- 4 - SPARROW (AIM-7E)
- 4 - FALCON (AIM-4D)
- 1 - ALQ-71 pod
- 1 - 370 gallon wingtank
- 1 - 600 gallon centerline tank

F-4C BLUE 2,3,4

- 4 - SPARROW (AIM-7E)
- 4 - SIDEWINDER (AIM-9B)
- 1 - ALQ-71 pod
- 1 - 370 gallon wingtank
- 1 - 600 gallon centerline tank

MIG-17 MIG 1-10

Unknown.

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: 7/8 broken overcast with base at 14,000 ft. About 7 miles visibility below clouds.

| | BLUE 1 2 3 4 | MIG 1 - 10 |
|---|---|---|
| Altitude: | 8,000 ft | 1,000 ft |
| Heading: | 282° | Left orbit |
| Speed: | 550 KTAS | Unknown |
| Fuel State: | Unknown, probably 10-11,000 lb | Unknown |

Flight Formation

Pod formation.

## 5. INITIAL DETECTION

No MIG warning calls were received. BLUE flight was escorting the F-105 force inbound to the target area, when five or six MIG-17s passed under BLUE flight in a hard left turn at about 1000 ft AGL. The MIGs were called out by an F-105 flight and BLUE 3 (Back) at about the same time. Apparently the MIGs were headed North, passing from left to right. Time was approximately 1528H.

## 6. ACTION INITIATED

BLUE flight pulled up and to the left to gain separation and then dove hard right to achieve firing position.

## 7. SITUATION DEVELOPMENT

The MIGs reversed right and a melee ensued in which BLUE flight fired three SPARROWs (AIM-7E), three SIDEWINDERs (AIM-9B) and two FALCONs (AIM-4D). At least two MIG-17s fired their cannons at BLUE flight.

[redacted]

8. ORDNANCE

| | (No. fired/No. hits) SPARROW AIM-7E | FALCON AIM-4D | SIDEWINDER AIM-9B | Remarks |
|---|---|---|---|---|
| BLUE 1 | 3/? | 2/? | | Two AIM-7Es observed guiding. One AIM-7E went high. Both AIM-4Ds appeared to track, one 15 ft miss observed. |
| BLUE 2 | | - | 3/? | Two appeared to track. One not observed. |
| BLUE 3 | 1/? | - | | Observed for 3-5 seconds and was guiding. |
| BLUE 4 | | | | |

MIG 1-10 Two of the MIG-17s were observed firing their cannons with no hits.

9. EQUIPMENT PROBLEMS

BLUE 1 - Two AIM-4Ds cooled off (ran out of time) and could not be used. UHF radio receiver trouble.

BLUE 4 - Utility hydraulic failure shortly after engagement began.

10. AIRCREW COMMENTS

Experience

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | 4900 | 268 | 99 | Previous TAC tours in WWII and Korea. Five previous air-to-air engagements, four confirmed MIG kills in SEA. |
| Back | 519 | 260 | 105 | First tour out of pilot training. 1000 hrs previous RO time in ADC (F-101). Seven months in theatre. Two SPARROWs previously fired in training. |
| BLUE 2 | | | | |
| Front | 850 | 480 | 82 | No previous live firings - many simulator runs. 2 1/2 years rated, no previous MIG encounters. |
| Back | 474 | 187 | 38 | No previous live firings - many simulator runs. Two years rated, no previous MIG encounters. |
| BLUE 3 | | | | |
| Front | 2700 | 250 | 84 | Air Training Command Instructor. No previous MIG encounters. |

Comments from Overall Experience

BLUE 1 - Charging SPARROW-type training is not satisfactory for combat.

11. DATA SOURCES

Project Interviews: BLUE 1 (Front) 4 June 1967, Aircrew letter - BLUE 3 (Front), 5 July 1968.

Messages, Reports:

OPREP - 3 8TFW 0021330Z June 67, DOI 06018, June 67.

OPREP-3 366TFW P021355Z June 67, DCOI 005 June 67.

Supplement 8TFW P0307052 June 67, DI 06035 June 67.

Aircrew's AIM-7D/E missile performance reports.

12. NARRATIVE DESCRIPTION

BLUE flight was one of two F-4 flights from Ubon RTAFB assigned to fly MIGCAP for an F-105 strike force from Takhli RTAFB. Refueling, strike force rendezvous, and ingress was without incident until the force arrived in the vicinity of 21°20'N/106°22'E. At this time BLUE flight was at 8000 ft, 550 KTAS, on a heading of 282°, in Pod formation when 5 or 6 MIG-17s were sighted by BLUE 3 (Back) at 10 o'clock low (1000 ft AGL) passing under BLUE flight in a hard left turn. The OPREPs do not state definitely, but apparently the MIGs were headed toward the North and passing from BLUE flight's left to right. BLUE 3 (Back) called out the MIGs to BLUE flight.

BLUE flight, reacting in elements of two aircraft each, pulled up and left to gain separation and then dove hard right to achieve firing position. Both element leaders (BLUE 1 and BLUE 3) were unable to fire due to the high angle off that the MIGs generated as they reversed turn to the right and into BLUE flight. Both BLUE elements broke up and hard right. The MIGs did not follow the F-4s as they zoomed, but a MIG-17 was observed firing as he passed between BLUE 1 and 2 at the top of the zoom. The flight thought that this MIG was holding high and "pounced" after their first attack. BLUE lead then saw the MIGs in a left turn near Kep and dove to attack. BLUE closed on one of six MIG-17s, pulled lead and fired one AIM-4D, with 50°-60° angle off. BLUE 1 was at 0.95 Mach (620 KTAS), 1000-1500 ft AGL, about 3 gs 150 kts overtake, close range (exact range unknown), with a high growl for a tone. The MIG was in a hard left turn. The missile appeared to track but BLUE 1 was forced to break hard left to avoid a head-on collision with four MIGs and to avoid heavy automatic weapon and 37mm antiaircraft fire from Kep Airfield. BLUE 1 separated from the MIGs and as he turned to reengage, he observed an aircraft crash into the ground in a hugh fireball about one mile North of Kep.

BLUE 3 and 4 zoomed to 12,000 ft after the first pass and observed the lead element start in on their second pass. BLUE 3 then dived down on a second pass but again could not fire because of "too much angle off, dive angle, airspeed", and pulled off to the right. BLUE 3 ran into a "blanket" of 85mm AAA fire and broke hard left loosing sight of the MIG-17s. As BLUE 3 rolled back to the right he observed three MIG-17s apparently trying to land at Kep Airfield. The MIGs were in trail about 1/2 to 1 mile apart. BLUE 3 rolled into a shallow dive about 2-3 miles south of Kep Airfield and headed for the number two MIG. The MIGs were 1/2 to 1 mile off the end of the Southwest runway (Northeast of Kep) and BLUE 3 was 1 to 2 miles South of Kep nearly parallel to the Northeast Railroad at about 2000 ft and 500 kts when BLUE 3 (Back) called, "lock-on", and BLUE 3 fired one AIM-7E missile.* BLUE 3 was flying an aircraft modified to provide an automatic switch to full system lock on after a boresight lock on. BLUE 3 observed the SPARROW launch, "roll and guide", for 3-5 seconds. BLUE 3 was getting heavy ground fire and BLUE 4 called that he was experiencing utility hydraulic failure so BLUE 3 broke right without observing the missile results. (Heavy 85mm fire with bursts at 8000 ft was reported in the Kep area.) BLUE 3 and 4 egressed the area for an emergency recovery at Danang.

Meanwhile, BLUE 1 and 2 turned to reengage the MIGs still in a left turn over Kep. BLUE 1 at 1000 ft AGL, 0.95 Mach (620 KTAS) locked on to a MIG-17 at an estimated 5000 ft range, auto-track, interlocks out, full system, narrow gate and fired three AIM-7E missiles in ripple at 3500 ft range 45° angle off of the MIG's tail while pulling 2.5 gs. The target was at 1000 ft AGL in a hard left turn, at 0.9 Mach. Again BLUE lead was forced to break left by additional MIG-17s in a head-on pass and intense antiaircraft fire from the Kep area. He did not observe the missile results but did observe that the first and third missile "tracked beautifully" and the second missile "headed high and for parts unknown".

BLUE 2 went high on this break and saw a single MIG-17 above him in a left turn. BLUE 2 fired three AIM-9B missiles in rapid succession at 20° angle off, 3500 ft range, with a good growl. The target aircraft was in an easy left climbing turn at missiles launch. BLUE 2 was at 0.85 to 0.9 Mach (540 to 570 KTAS), 4000 ft altitude pulling about 2 gs at launch. Two of the missiles appeared to track. The third missile was not observed. BLUE 2 did not see the missiles hit because he broke hard left and down to rejoin BLUE lead.

BLUE 1 saw BLUE 2 in a left turn and called him to break right for rejoin. BLUE 1 then saw a MIG-17 in firing position of BLUE 2 with cannons blazing. BLUE 2 responded to a "break" call and evaded the MIG. BLUE 1 turned to engage the MIG-17, and encountered an additional flight of four MIG-17s near Kep. One MIG-17 made a head-on pass and BLUE lead fired an AIM-4D. The pipper was on the target. BLUE 1 was at 0.95-1.0 Mach (620-660 KTAS), 1000-1500 ft altitude, pulling about 3 gs with no recollection of tone. The missile passed about 15 ft under the MIG, but since the missile does not have a proximity fuze it did not detonate. BLUE flight observed a second huge fireball at 21°30'N/106°19'E about this time.

BLUE flight, at BINGO fuel, egressed and called the other F-4 flight into the area. However, BLUE flight's MIG encounter is the only one reported on this date. A third huge fireball was observed at 21°22'N/106°38'E at 1640H during egress. Official sources do not list any kills or probables on this date.

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*The OPREP-3 reports BLUE 3 fired at 0.9 Mach (500 KTAS), 6000 ft altitude at 1.5 miles range in a dive, 70° head-on to the MIG-17 which was headed 240° at 800 ft AGL and 0.9 Mach.

Event III-304

Aircraft Involved: Two F-4Ds, two F-4Cs vs five MIG-17s

Result: No damage

Vicinity of Encounter: 21°15'N/106°20'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time 3 June 1967/1640H

BLUE Flight (two F-4Ds and two F-4Cs) were assigned MIGCAP for a Takhli force of F-105s. They accompanied one part of the force into the target area and then engaged five MIG-17s near Kep airfield. Three AIM-7E missiles and one AIM-9B missile were fired with no results.

## 2. MISSION ROUTE

BLUE Flight departed Ubon RTAFB and proceeded directly to the refueling track over the Gulf of Tonkin. Dropoff was at 19°00'N/107°25'E. The flight then proceeded north to 21°07'N/107°38'E, and 21°12'N/107°33'E for coast in, west along the north side of the ridge to 21°14'N/106°21'E, and then to the target area at 21°16'N/106°08'E. The MIG engagement occurred about 8 miles east of Bac Giang. The flight then egressed east to 21°07'N/107°38'E, direct to poststrike refueling and return to Ubon RTAFB.

## 3. AIRCRAFT CONFIGURATIONS

F-4D BLUE 1, 3

4 SPARROWS (AIM-7E)
4 FALCONS (AIM-4D)
1 ALQ-71
1 370-gal. wing tank
1 600-gal. centerline tank
Camouflaged
Avionics - unknown

F-4C BLUE 2, 4

4 SPARROWS (AIM-7E)
4 SIDEWINDERS (AIM-9B)
1 ALQ-71
1 370-gal. wing tank
1 600-gal. centerline tank
Camouflaged
Avionics - unknown

MIG-17s

Unknown armament
All aircraft silver with red stars on wing and red stabilizer.

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Cumulus clouds with bases at 8,000-10,000 ft and tops above 25,000 ft over the mountains. The valley or flatland area was clear with a slight haze, about 10 miles visibility.

| | BLUE | MIGs |
|---|---|---|
| Altitude: | 7,000 ft | 1,000 ft |
| Heading: | 300° | Left turn |

## 5. INITIAL DETECTION

MIG warnings were not received prior to the encounter. As BLUE Flight turned away from the target area at 7,000 ft altitude, BLUE 1 saw five MIG-17s and one MIG-21 in a flat left turn at 1,000 ft AGL flying in trail formation about 5 miles south of Kep airfield. The MIG-21 was not part of the formation and was not seen again. Time of the sighting was about 1640 local (Hanoi).

## 6. ACTION INITIATED

BLUE 1 and 2 broke into the MIGs setting up a moderately tight left hand turn around the MIGs. BLUE 3 and 4 climbed above BLUE 1 and 2 and waited for an opportunity to engage. It appeared that the MIG strategy was to continue their turn, but always working closer to Kep airfield where BLUE Flight would be vulnerable to the heavy enemy ground fire in that area.

## 7. SITUATION DEVELOPMENT

The MIGs maintained their left orbit near Kep. BLUE Flight remained above them and started a yo-yo action in a vertical plane pulling up on one side of the circle to attack a MIG on the other side of the circle. BLUE Flight stayed below 6,000-7,000 ft in their vertical maneuvering.

8. ORDNANCE

| | (No. fired/No. hits) SPARROW AIM-7E | SIDEWINDER AIM-9B | FALCON AIM-4D |
|---|---|---|---|
| BLUE 1 | 2/0 | | 0/0 |
| BLUE 2 | 1/0 | 1/0 | |

10. AIRCREW COMMENTS

Experience:

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 (front) | 2892 | 210 | 79 | No previous MIG encounters |
| (back) | 472 | 175 | 86 | No previous MIG encounters |
| BLUE 2 (front) | 2476 | 190 | 77 | No previous MIG encounters |
| (back) | 431 | 175 | 80 | No previous MIG encounters |

11. DATA SOURCES

Messages: OPREP-3, 0031105Z, June 1967
8TFW DOL 06041, June 1967
DO40100, 2 June 1967
8TFW, D106046, June 1967
Aircrew's AIM-7D/E Missile Performance Reports

12. NARRATIVE DESCRIPTION

BLUE Flight (two F-4Ds and two F-4Cs) was assigned to fly MIGCAP for a force of F-105 aircraft from Takhli RTAFB. BLUE Flight departed Ubon RTAFB, refueled over the Gulf of Tonkin and accompanied one of the F-105 flights into the target area. The current Takhli tactics included attacking Route Package IVA targets by individual flights with TOTs separated 2 to 5 minutes.

The flight flew north after refueling and coasted in about 10 miles northeast of Cam Pha. The route, selected to minimize flight time in areas defended by surface-to-air missiles, then continued west to Northeast Railroad in the vicinity of Kep airfield.

No MIGs were sighted inbound to the target. But, as BLUE Flight started turning away from the target to CAP the IRON HAND flight, BLUE 1 saw five MIG-17s flying in trail formation, at about 1000 ft AGL, in a flat left hand turn 5 miles south of Kep airfield. One MIG-21, also seen with the MIG-17s but not in formation with them, was not seen again during the encounter. BLUE Flight was turning through 300° (the direction of turn was not stated, but probably to the right or toward the north) at 7000 ft altitude in the vicinity of 21°15'N/106°20'E at 1640H at the time of the sighting. This would place the MIGs at 12 o'clock low about 5 miles range. All of the MIGs were silver with red stars on the wings and a red vertical stabilizer.

BLUE 1 and 2 "broke into the MIGs setting up a moderately tight left hand turn around the MIGs." BLUE 3 and 4 went high above BLUE 1 and 2 and waited for an opportunity to engage. The MIGs appeared to continue their turn drawing closer to Kep airfield where there was heavy ground fire.

At the completion of the first shallow diving turn, BLUE Lead obtained a lock-on (at about 3 miles) on the lead MIG, turning through north-northwest at 1000 ft AGL, 0.7 Mach (460 KTAS). BLUE 1 fired one AIM-7E missile at 5000-6000 ft range from the MIG's 9 o'clock position. BLUE Lead's report indicates he was at 500 KTAS, 3000 ft altitude, in a 1.5 g diving turn with 2000 kts overtake, full system launch with clutter in override and system in auto track. The missile came off, turned left, "then direct", but passed about 500 ft behind the MIG as the MIG pulled into a hard left turn. The missile was fired at near minimum parameters and the "dot in the circle broke X before the missiled passed the MIG."

A second AIM-7E missile was fired at the same MIG, when BLUE Lead was at 2500 ft about 550 KTAS, still in the 1.5 g descending turn at 5000-6000 ft range. BLUE Lead was at the MIG's 8 o'clock position. This missile also turned left, "then direct", but passed an estimated 800 ft behind the MIG. No detonation was observed on either missile. Apparently, both missiles were fired before the "break X" occurred.

BLUE 2, still in the original orbit, moved laterally in a left turning dive and fired one AIM-7E and one AIM-9B at a group of four MIG-17s attempting to evade BLUE Lead's missiles. The MIGs were at 3000-4000 ft, 500 KTAS, pulling about 1.5 g. BLUE 2 was 40° off of the MIG's tail at the time of launch. The firing range is unknown. The pilot's report states "The missile (AIM-7E) was fired in a bad condition for a SPARROW, it failed to guide, but conditions were not right in the cockpit, no lock-on and a bad

look angle." The report also states "there was not enough lead when the missile was fired with interlocks out." The SPARROW missed.

BLUE 2 then fired a SIDEWINDER (AIM-9B) at 40° angle-off with the same parameters. The SIDEWINDER did not guide but it was heading toward the MIGs as BLUE 2 pulled up to rejoin with BLUE Lead.

BINGO fuel was called and BLUE Flight departed the area, returning to Ubon.

[redacted]

Event III-305

Aircraft Involved: Two F-4Cs vs two MIG-17s
Two F-4Ds vs one MIG-21

Results: Sighting only

Vicinity of Encounter: 21°15'N/106°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 3 June 1967/1640H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

CAP flight sighted two MIG-17s and one MIG-21 orbiting 5 miles south of Kep Airfield.

Event III-306

Aircraft Involved: Two F-105s vs two MIG-17s

Results: Sighting only

Vicinity of Encounter: 17°49'N/106°12'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 3 June 1967/1651H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Armed reconnaissance flight in NVN panhandle delivered ordnance on Lo Cang truck park. Coming off target, No. 2 observed two MIGs approximately 7 miles NE of target. One MIG was heading south, turning toward southeast and the other was heading south. The MIGs' altitude was 2-3000 ft.

Event III-307

Aircraft Involved: Four F-105s vs two MIG-21s
and 1 MIG-17

Results: Sighting only

Vicinity of Encounter: 21°19'N/106°16'E and
21°19'N/106°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 3 June 1967/1653H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight at 10,000 ft observed two MIG-21s at 9 o'clock; 5000 ft altitude MIGs were in pursuit of an F-105; two minutes later at second position, same strike flight observed one MIG-17 at 7 o'clock, approximately 2-3 miles away.

[redacted]

[redacted]

Event III-308

Aircraft Involved: Three F-105s vs three MIG-17s
Results: Two MIG-17s destroyed
Vicinity of Encounter: 21°17'N/106°22'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 3 June 1967/1652H.

BLUE Flight was the lead flight of the Korat F-105 force attacking JCS 18.23 (the Bac Giang RR/Highway bridge) at 21°16'N/106°11'E and the adjacent RR yard to the south. The force consisted of 16 F-105Ds in ECM pod formation and four IRON HAND aircraft. Eight F-4s from Da Nang Airbase accompanied the force into the target area.

## 2. MISSION ROUTE

BLUE Flight departed Korat RTAFB in Thailand, flew directly to the Tan Track refueling over the Gulf of Tonkin for rendezvous with the tankers and F-4Cs from Da Nang, then proceeded north to 20°08'N/107°43'E, north to 21°05'N/107°28'E; each to 21°13'N/106°46'E; and then direct to the roll in point at 21°13'N/106°12'E (with the target at 21°16'N/106°13'E). Roll in for attack was to the right with a right pullout and planned egress by individual flights over the reverse course.

## 3. AIRCRAFT CONFIGURATIONS

F-105D BLUE 1, 3

2 - M118, 3000-lb bombs
1 - 650-gal centerline fuel tank
1 - ALQ-71 ECM pod
1 - AIM-9B SIDEWINDER missile
1029 rds HEI 20mm ammunition.

F-105D BLUE 2, 4

2 - M118, 3000-lb bombs
1 - 650-gal centerline fuel tank
2 - ALQ-71 ECM pods (1 on each outboard station)
1029 rds HEI 20mm ammunition.
All F-105s were camouflaged.

MIG-17 MIG 1

Armament unknown - 2 underwing fuel tanks.

MIG-17 MIG 2, 3

Unknown.

All MIGs were silver with red stars.

## 4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear over the flatlands with about ten miles visibility. Cumulous clouds over the mountains between the NE Railroad and the Gulf.

| | BLUE 1 2 3 4 | MIG 1 2 3 |
|---|---|---|
| Altitude: | 5000-6000 ft | 500-1000 ft |
| Heading: | 095° | Approx. 300° |
| Airspeed: | 600 KTAS | Unknown |
| Fuel State: | 7000-8000 lbs | Unknown |

Flight Formation

In trail attempting to rejoin. BLUE 2 was about 1000 ft behind BLUE 1. BLUE 3 was about 5000 ft behind lead and BLUE 4 was in trail with BLUE 3.

## 5. INITIAL DETECTION

MIG warnings were called on guard channel as BLUE Flight was pulling off the target. The call was "BULLSEYE-northeast-30-low-330" which placed the MIGs almost under BLUE Flight flying 330°. BLUE lead was at 6000 ft headed 095°, 600 KTAS, about seven miles away at 10 o'clock about 500 ft AGL. The MIGs were going from a climb to a descent in a shallow left turn through 300°. They were in trail formation with about 3000 ft spacing. The last MIG in trail was almost at BLUE Flight's 12 o'clock position.

## 6. ACTION INITIATED

BLUE Lead called the MIGs and said he was reversing 180° left. He then entered a hard left 10° nose down turn (still in afterburner) followed by BLUE 2 and 3. BLUE 4 was looking away from BLUE 3 at the break and could not relocate the flight. He egressed with the second flight off of the target.



[redacted]

7. SITUATION DEVELOPMENT

BLUE Flight rolled out behind the MIG-17s. The MIG-17s went into a tight left hand orbit at about 500 ft AGL. The flights completed one and a half circles when BLUE 3 fired a SIDEWINDER (AIM-9B) at MIG 3. The MIG attempted unsuccessfully to evade the SIDEWINDER. After the SIDEWINDER damaged the MIG, BLUE 3 closed in firing 20mm HEI. The MIG was trailing smoke from the SIDEWINDER but exploded in flame apparently from the 20mm hits. BLUE Lead then cleared BLUE 2 to go after MIG 1. In the ensuing twisting, scissoring engagement, BLUE 2 fired three bursts before MIG 1 was hit. MIG 1's left wing blew up and MIG 1 crashed in flames with no chute observed. BLUE Lead obtained lead on MIG 2 and fired a SIDEWINDER (AIM-9B) which flew into the ground. BLUE Lead made one more 360° turn and fired a high angle off burst of 20mm at MIG 2, and apparently missed. BLUE 2 and 3 exited the area ahead of BLUE lead, but the three aircraft rejoined after refueling and returned to Korat. The only damage to the U.S. aircraft was a small hole in BLUE 2's left intake duct possibly caused by a particle from MIG 1.

8. ORDNANCE

(No. fired/No. hits)

| | SIDEWINDER AIM-9B | 20mm | Remarks |
|---|---|---|---|
| BLUE 1 | 1/0 | Short burst/0 | |
| BLUE 2 | - | 450/1 | MIG 1 left wing blown up. |
| BLUE 3 | 1/1 | 376/1 | AIM-9B hit first, follow-up gun attack blew up MIG 3. |
| MIGs | -----No known ordnance expended------ | | |

9. EQUIPMENT PROBLEMS

BLUE 1 - No reticle (no sight) on combining glass.

BLUE 2 - Radar would not lock on in air-to-air mode.

BLUE 3 - None.

10. AIRCREW COMMENTS

BLUE 2 and 3

Jettison speed for the 650 gal centerline tank is not compatible with combat speed and maneuvering, "it is dangerous to drop the 650 (centerline fuel tank) unless you unload the aircraft (aerodynamically) first".

BLUE 2

Cockpit fog and canopy vapor restricted visibility. I could only see through the forward windshield.

For air-to-ground attack, we need an auto bomb release system with a positive indication to the pilot that the computer has a solution and will release the bombs.

For air-to-air, suggest a series of fixed ranges on the combining glass, i.e., 500, 1000, 1500, 3000, and about 6000 ft (for hi-alt strafing). These ranges would of course be lead or g computing constantly.

Need an additional radio for communication between flight members. The primary strike channel is saturated during periods of action when it is needed most. A direction finding vector strobe coupled to the flight frequency would aid flight members in maintaining mutual support position.

The ease with which the F-105 will go supersonic and maintain near supersonic speed in military power has been a terrific asset against MIGs and reduces time in the hostile environment.

BLUE 3

Would like to have a simpler method of switching from bomb ordnance to missile and gun firing capability with a computing sight. Five switches are currently required.

The capability of firing the IR missile by placing the pipper on the enemy aircraft should be retained.

11. DATA SOURCES

Project Interviews:

BLUE 2[1] - 6 June 1967
BLUE 3 - 7 June 1967

Messages, Reports:

388 TFW OPREP-3 JPCCO FACTEL DOI 2024 June 67 0314202.

[1]This event was reconstructed by BLUE 2.

[redacted]



## 12. NARRATIVE DESCRIPTION

BLUE Flight was the lead flight of a force of four strike and one IRON HAND flights of F-105s launched from Korat RTAFB, Thailand. The mission was to destroy JCS 18.23, the Bac Giang RR/Highway Bridge at 21°16'N/106°11'E and the adjacent railroad yard on the south side of the bridge. The four strike flights penetrated the SAM defenses while inbound to the target in a standard "pod" formation, i.e., a diamond of four flights with four aircraft per flight.

The force departed Korat and flew directly to the Gulf of Tonkin for rendezvous with the tankers and F-4 MIGCAP. The force then flew north to 20°08'N/107°43'E and coasted in at 21°08'N/107°33'E. The force then flew about 270° to the roll-in point selected about three miles south of the target, made a right roll-in to bomb release and subsequent right recovery to a heading of 095°. BLUE Flight was the first flight on and off target.

The 85 and 100mm antiaircraft guns opened fire when the F-105 force was about fifteen miles short of the roll-in point. The force was staggered between 16,000 and 18,000 ft at that time. During the dive bomb run, BLUE 2 fired a short burst for flak suppression and in an effort to obtain photography of the active AAA gun emplacements adjacent to the target the overrun on the gun camera film was set at three seconds.

BLUE Flight recovered from the dive bomb pass with BLUE 2 about 1500 ft behind BLUE Lead and BLUE 3 about a mile behind BLUE Lead. All BLUE Flight members were attempting to close to pod formation in afterburner for egress with BLUE 2 reporting a speed of Mach 1.01 at 5000-6000 ft heading 095°.

Roughly six miles from the target, BLUE Lead saw three MIG-17s at 10 o'clock low (less than 1000 ft altitude) about two miles range. The MIGs were in a shallow left climbing turn through 315° and the lead MIG was reversing from a climb to a dive. The MIGs were spaced about 3000 ft in trail so that the third MIG was almost at BLUE Lead's 12 o'clock position.

BLUE Lead called the MIG's position and began making a 180° left turn. BLUE 2 and 3 saw the MIGs immediately after Lead's call and followed BLUE Lead through a 10° nose-down, 5 to 6 g turn. BLUE 4 almost collided with the second flight off the target and lost the rest of BLUE Flight in the turn. He then elected to stay with the second flight and egressed with them.

The MIGs entered a tight left orbit at less than 1000 ft altitude and BLUE Flight was not able to obtain a firing position on the first turn. As BLUE Lead overshot the MIGs and pulled high, BLUE 3 attempted to achieve a firing pass and as BLUE 3 overshot, BLUE Lead turned back into the MIGs attempting to fire. BLUE 2 remained about 500 to 600 ft behind BLUE Lead looking for other MIGs attacking from the rear. During the high g turns at low altitude, the BLUE Flight members had considerable trouble with cockpit fog and canopy vapor interfering with their vision.

BLUE Lead and BLUE 2 jettisoned the 650 gal external fuel tank after the first 360° of turn. This was accomplished at 550 kts CAS, by obtaining almost zero g prior to pickling the tanks. BLUE 3 did not jettison the 650 gal centerline until he was outbound after the air battle because "It is dangerous to drop the 650 unless you unload the aircraft." BLUE 3 felt that he had more speed than the MIG-17s even with the centerline tank.

After the first 360° turn, the MIGs loosened their orbit with MIG 1 in front, MIG 2 to left (inside the turn) and MIG 3 drifting to the outside of the turn (down very low and falling back). As a result of reducing g to jettison the centerline fuel tank, BLUE 1 and 2 were outside the radius of all of the MIGs but with considerably more airspeed. BLUE Flight was about 2000 ft altitude with 600 KCAS between minimum-to-full afterburner power. BLUE 2 was able to solve the cockpit fog problem at this time by turning the cockpit ventilation system completely off. BLUE 2 cleared the area to the rear noting BLUE 3's position and no MIGs at 6 o'clock.

Halfway around the second orbit (headed 270°) BLUE Lead with BLUE 2 in fighting wing position, turned into the MIGs and again attempted to obtain firing position. But the MIGs were now spread in a wide V and MIG 3 had crossed from the outside of the turn to the inside of the turn at very low altitude (about 200 ft) and at a slower airspeed than the other MIGs. Thus as BLUE 1 came through a southwest heading, MIG 3 was at BLUE 2's 10 o'clock low position about 300 ft out slowly rocking his wings. MIG 1 was at BLUE 1's 12 o'clock low and MIG 2 was in the process of crossing from left to right, very low between MIG 1 and BLUE 1. BLUE 2 was at BLUE 1's 7 o'clock position about 500 ft back.

During the same period of time (from a heading of 270° to about 200°) BLUE 3, who was flying the element position unaware that BLUE 4 was not with him, observed MIG 3 cross to the inside and waver momentarily. BLUE 3 had set switches to fire his single AIM-9B during the previous 360° orbit and now decided to fire at MIG 3 during MIG 3's moment of hesitancy. BLUE 3 dived down on MIG 3, put the pipper on the MIG's tailpipe and as MIG 3 "graciously lit his afterburner", fired the SIDEWINDER. BLUE 3 assumed that the AIM-9B IR seeker was aligned with the pipper and did not attempt to obtain a missile tone prior to firing. BLUE 3 estimated 2500 ft range, closure speed of 100 kts at an altitude of 1 00 ft in a 15° 59 20° dive, in full afterburner and with the 650 gal centerline tank still on the centerline position.

[redacted]

The missile went straight for the MIG-17, which entered a shallow left turn. When the missile was about 400 ft from MIG 3, MIG 3 broke into a hard left climbing wingover maneuver as though he suddenly became aware that the missile was tracking him. The MIG turned almost 90° to a heading of east, and had 90° of bank with his nose about 20° above the horizon when the SIDEWINDER exploded. Examination of BLUE 3's film indicates the missile went alongside of the tailpipe and from BLUE 2's description "exploded about a foot or two away from the tailpipe at the 4 o'clock positon (from the rear) and about 2-3 ft forward from the end of the tailpipe." The MIG immediately started to trail a heavy white "vapor" looking smoke that appeared to come from the bottom of the tailpipe. BLUE 3 continued closing on the MIG as the MIG rolled over and started down, and with the sight set on missiles air (g computing for a fixed range of 1100-1500 ft) put the pipper "up and right in front of him and worked it right down through him", firing 376 rounds at a high angle off.

BLUE 3 did not observe any cannon hits and last saw the MIG as he rapidly overshot him and turned to 090° calling "BLUE 3, I got one.". However, both BLUE 1 and 2 observed the missile hit, the trailing smoke and the MIG blow up in a ball of fire. BLUE 1 observed the MIG impact at 21°18'N/106°21'E at 1653H.

Meanwhile, MIG 1 was at BLUE Lead's 11 o'clock position about a mile range and MIG 2 had crossed to BLUE Lead's 1:30 o'clock position at about 1/2 mile range. MIG 2 appeared to have slowed down and was at a very low altitude BLUE 2 called both MIGs to BLUE Lead and BLUE Lead replied, "If you can get one, go get him"." BLUE 2 was in position to attack MIG 1 and as he tightened up the left turn to attack MIG 1, MIG 2 turned left toward BLUE 2. BLUE Lead subsequently attacked MIG 2.

BLUE 2 immediately obtained a 45° angle off shot at MIG 1 and at about 2000 ft range, while pulling 5 to 6 g's, placed the pipper in front of MIG 1 and fired a short burst. BLUE 2's air-to-air radar mode was inoperative (previously checked while inbound to the target) and he had selected 18 mils fixed bombing depression as a compromise for air-to-air. However, BLUE 2 did not have enough lead and was unable to track the MIG through the turn. As BLUE 2 started a hi-speed yo-yo to reduce his overshoot, MIG 1 reversed into a hard right turn partially solving BLUE 2's tracking problem.

After a few maneuvers, BLUE 2 and MIG 1 were on parallel flight paths several hundred feet apart with BLUE 2 about 500 ft behind MIG 1's orthogonal position. As the flight paths started to converge, MIG 1 again reversed into a left 60° banked turn with his nose about 20° above the horizon. This allowed BLUE 2 (still in a high g left turn) to momentarily pull lead and again run the pipper through MIG 1. BLUE 2 fired a fairly long burst at about 1200 ft range, 5 to 6 g's, and 590 KCAS with no observed hits. It now became apparent to BLUE 2 that 18 mils was not enough lead under these g conditions.

MIG 1 rolled further left and entered a 120° banked dive with his nose about 20° below the horizon. BLUE 2 was now closing rapidly at about 200 kts overtake speed when MIG 1 established a smooth tight descending turn to the left possibly reducing power to force an overshoot. BLUE 2, pulling maximum g (just short of complete loss of vision) was able to align the F-105 fuselage with the MIG but unable to pull lead. As a last resort BLUE 2, by rapid aft stick movement, was able to rotate the F-105 fuselage enough to put the sight well in front of the MIG and opened fire at a little over 200 ft range forcing the MIG to fly through the stream of 20mm cannon fire. The underside of the MIG's left wing exploded at a point two thirds of the way between the fuselage and the external underslung fuel tank. BLUE 2 relaxed back stick pressure as the fire and debris from the MIG engulfed the F-105, and passed about 25 ft below the MIG as the MIG rolled inverted and crashed. The MIG was hit at a range of 210 ft with 55 mils lead at about 400-700 ft of altitude. Time from hit to impact was 4 to 5 seconds during which no chute was observed and the MIG did not roll from the inverted position with impact at 21°16'N/106°25'E.

Meanwhile, after BLUE 2 passed BLUE Lead, MIG 2 (at BLUE Lead's 2 o'clock) crossed back from right to left under BLUE Lead and behind BLUE 2. BLUE Lead pulled lead on MIG 2, and as MIG 2 crossed the "field of view" of BLUE Lead's SIDEWINDER (AIM-9B), BLUE Lead observed good tone and fired. The missile launched out ahead of BLUE Lead and then turned and headed straight for the ground. BLUE Lead overshot MIG 2 and turned wide. After about 360° of turn, BLUE Lead was again able to cut off MIG 2 and fired a short burst from a high angle off with no sight display and no apparent damage to the MIG.

BLUE 2 experienced a surging engine and rapid deceleration as a result of passing through the fire from MIG 1. BLUE 3 joined up with BLUE and accompanied him toward the coast but about 30 miles from the coast, BLUE 2's engine began to function normally. BLUE Lead egressed alone and rejoined 2 and 3 after refueling on separate tankers. The BLUE Flight aircraft broke off the engagement with about 4000 lbs of fuel, bingo fuel for unrefueled recovery at Da Nang AB, South Vietnam. The only damage to the F-105s was that absorbed by BLUE 2, a windshield partly coated with molten aluminum, some grease blobs on the fuselage and a one-inch hole inside the left intake duct.

[redacted]

Event III-309

Aircraft Involved: Four F-105s vs five MIG-17s and two MIG-21s

Results: No damage

Vicinity of Encounter: 21°25'N/105°47'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 June 1967/1638H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

IRON HAND flight (BLUE Flight) between 8-9000 ft had just fired SHRIKEs at target and made a left turn when they observed two MIG-17s at 5:30 o'clock high (10,000 ft). MIGs were in trail with Lead MIG approximately 2000 ft behind IRON HAND flight and second MIG 1000 ft behind Lead MIG. The flight lit burner and completed turn and left MIGs. The flight then observed an F-4C flight (probably those of Event III-308) engaging three MIG-17s and two MIG-21s. BLUE 4 observed a smoke streak go up toward a MIG-17 and the MIG exploded.

Event III-310

Aircraft Involved: Four F-105s vs six MIG-21s

Results: Sighting only

Vicinity of Encounter: 21°40'N/105°52'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 June 1967/1643H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Ingressing strike flight observed one MIG followed shortly by the sighting og five additional MIGs. The MIGs were at approximately 1000 ft and heading west.

Event III-311

Aircraft Involved: Four F-105s vs three MIG-21 and six MIG-17s

Results: Sighting only

Vicinity of Encounter: 21°52'N/105°14'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 June 1967/1646H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

During ingress dive down Thud Ridge, strike flight observed three MIG-21s and six MIG-17s. First sighting was two silver MIG-21s at 9 o'clock and the MIG altitude was approximately 14,000 ft when first sighted. Three minutes later, a single MIG-21 was observed at 7 o'clock at 2-3000 ft in a gentle left turn. Sighting was quickly followed by sighting of two flights of two camouflaged MIG-17s. These last MIGs were at approximately 2-3000 ft.



[redacted]

[redacted]

Event III-312

Aircraft Involved: Two F-4Cs and two F-4Ds vs seven or eight MIG-17s

Result: One MIG destroyed

Vicinity of Encounter: 21°27'N/105°49'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 June 1967/1742H

BLUE Flight, four F-4s, were providing MIGCAP for a strike against JCS target 21.11. The encounter occurred during the egress of the strike force.

2. MISSION ROUTE

Departed Ubon RTAFB and air refueled at ORANGE ANCHOR before proceeding to TACAN Channel 97. Route to the target and back to Channel 97 was via the following points: 21°55'N/104°38'E; 21°53'N/105°47'E/target JCS 21.11; 21°54'N/105°12'E; 21°55'N/104°38'E; Channel 97, and return to base.

3. AIRCRAFT CONFIGURATIONS

F-4D BLUE 1 and 3

4 FALCON (AIM-4)
4 SPARROW (AIM-7E)

F-4C BLUE 2 and 4

4 SIDEWINDER (AIM-9B)
4 SPARROW (AIM-7E)

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clear in the area of the encounter. BLUE Flight split into two elements, as prebriefed, just prior to attacking the MIGs.

5. INITIAL DETECTION

While covering the egress of the strike force, BLUE Flight heard a following flight engage MIGs and reversed course to join the flight. As the flight was proceeding south along Thud Ridge, four MIG-17s were observed engaged with two F-4Cs. Single MIG-17s were observed high at 9 o'clock and at 3 o'clock.

6. ACTION INITIATED

BLUE 1 (Lead) and 2 went after the MIG at 9 o'clock and BLUE 3 and 4 attacked the MIG at 3 o'clock.

7. SITUATION DEVELOPMENT

BLUE 1 and 2 gained a firing position on the MIG and launched two AIM-4 missiles. The first missile did not guide and the second was not observed. After repositioning, BLUE 1 launched four AIM-7E missiles at an altitude of 500 ft AGC, none of which was observed to guide. Again the element maneuvered for separation and the lead was passed to BLUE 2. BLUE 2 acquired a firing position on a single MIG-17 which was about 900 ft AGL and launched two AIM-9B missiles with approximately 15 degrees angle off with the MIG in a left turn. Both SIDEWINDERs guided and impacted in tail section of the MIG. The MIG continued in a steep left turn until impact with the ground. Just prior to impact the canopy separated from the airplane and the pilot ejected. BLUE 1 and 2 departed the area and returned to base.

In attacking the MIG at 3 o'clock BLUE 3 and 4 maneuvered into a firing position at approximately 5000 ft in a level left turn. At approximately 3500 ft range with 35° angle off BLUE 3 launched one AIM-4 which was observed to guide to a 20 ft miss behind the MIG. As BLUE 3 and 4 maneuvered for separation, two more MIGs were sighted at 9 o'clock low in a shallow left turn. BLUE 3 maneuvered to a position 3000 ft at the MIG 6 o'clock with less than 15° angle off and launched an AIM-4. The missile was observed to pass within 10 ft behind the MIG. A second AIM-4 was cooled and with a high pitched tone BLUE 3 fired the missile which aborted on the launcher. At this time BLUE 3 overran the MIG and pulled up to gain separation and altitude. A lone MIG was sighted very low (500 ft) and appeared to be returning to base. BLUE 3 and 5 moved below the MIG at his 6 o'clock and when the MIG pulled up to clear a hill, he was silhouetted against the sky. With a high pitched tone from an AIM-4, BLUE 3 launched the missile which was observed to guide to within 10 ft of the MIG's tail pipe.

BLUE 3 and 4 were at BINGO fuel so departed the area and returned to base.

[redacted]

[redacted]



8. ORDNANCE

(No. fired/No. hits)

| | SPARROW AIM-7E | FALCON AIM-4 | SIDEWINDER AIM-9B | Remarks |
|---|---|---|---|---|
| BLUE 1 | 4/0 | 2/0 | | Launched all AIM-7Es in boresight mode with range lock, narrow gate. |
| BLUE 2 | | | 2/2 | One MIG-17 kill. |
| BLUE 3 | | 4/0 | | Near misses. |

11. DATA SOURCES

Messages, Reports: 8TFW/OPREP-3/051322 June 1967, Raytheon Missile Firing Memo of 6 June 1967.

[redacted]

[redacted]

Event III-313

Aircraft Involved: Four F-4Cs vs four MIG-17s

Results: One MIG-17 destroyed

Vicinity of Encounter: 21°17'N/105°50'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 June 1967/1545H

Four F-4Cs, BLUE Flight, were on a MIGCAP mission. Numerous MIG alerts had been broadcast by ETHAN ALPHA. No SAMs were sighted.

2. MISSION ROUTE

Departed Danang and flight refueled in area WHITE ANCHOR before proceeding to TACAN Channel 97. Route to the target was via the following points: 21°55'N/104°83'E, 21°54'N/105°12'E/TAR ART 1759/5161. Egress was the reverse of the inbound route.

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1 and 3

4 SPARROW (AIM-7E)
2 SIDEWINDER (AIM-9B)
1 SUU-16, 20mm gun (1200 rd)

BLUE 2 and 4

4 SPARROW (AIM-7E) BLUE 2 only three AIM-7E
4 SIDEWINDER (AIM-9B)

MIG-17 MIG 1, 2, 3

Silver color with no markings observed

MIG 4

Painted red around the edge of the air intake, on the wing tips and the rear half of the vertical stabilizer.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Scattered clouds (1/7) with visibility greater than 15 miles.

| | BLUE | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Altitude: | 17,000 ft | | | |
| Heading: | 135° | | | |

5. INITIAL DETECTION

While on a southeasterly heading BLUE Flight sighted four MIGs heading north at an altitude of 8,000 ft. MIG warnings had been received.

6. ACTION INITIATED

BLUE 1 (Lead) rolled in for a diving SPARROW attack from the MIG's 12 o'clock position. With the radar in boresight mode, no range lock-on and interlocks out, BLUE 1 launched a SPARROW which was observed not to guide.

7. SITUATION DEVELOPMENT

BLUE 1 immediately pulled up sharply and executed a turn reversal that placed him at the 6 o'clock position of the MIG. After firing 202 rounds from the SUU-16 gun, BLUE 1 observed two explosions which immediately gutted the aft end of the fuselage of the MIG. The MIG was observed to crash by all members of BLUE Flight. Before BLUE Flight could effectively pursue them, the other three MIGs departed the area.

8. ORDNANCE

| | (No. fired/No. hits) SPARROW AIM-7E | SUU-16 20mm | Remarks |
|---|---|---|---|
| BLUE 1 | 1/0 | | "Missile was fired out of parameters and functioned properly. Guidance was hopeless." |
| | | 202 rd | MIG-17 destroyed. |

[redacted]

[redacted]



## 10. AIRCREW COMMENTS

**Experience:**

| | Total Hours | F-4 Hours | Combat Missions | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | |
| Front | 3405 | 247 | 105 | Previous combat firing on 14 May 1967, two AIM-7E and one AIM-9B. No hits. In previous training in RTU and charging SPARROW fired two AIM-7, 9 AIM-9 and 20 simulator firings. |
| Back | 618 | 397 | 103 | Training firings of one AIM-7 and 4D simulator firings. |

## 11. DATA SOURCES

**Messages:** 366TFW/OPREP-3/051530Z June 1967
365TFW/supplement OPREP-3/080800Z June 1967/DOCO 00186

## 12. NARRATIVE DESCRIPTION

Upon sighting the MIGs, BLUE 1 (Lead) rolled into his attack from the 12 o'clock high position on the MIGs. When the MIGs sighted the attacking F-4s they turned hard to the right and then executed a vertical turn reversal to the left. BLUE 1, after launching a SPARROW missile, maneuvered with the MIG and attained a 6 o'clock position from which fatal hits were scored with the SUU-16 gun. The following data were reported for the conditions at the time of launching the missile. At missile launch BLUE 1 was in a 60° dive at 6500 ft AGL in a four-g right turn with 475 KCAS and a range of 4500 ft from the target. Track crossing angle (TCA) at launch was 80° with an overtake of 150 kt. The missile passed 2500 ft at 6 o'clock to the MIG and was observed to self-destruct. The weapon system launch mode was boresight, interlocks out and no range lock-on. Evaluation of the results stated "the missile was launched out of envelope and although the system functioned properly guidance was hopeless." (Ref. 080800Z)

[redacted]

[redacted]

Event III-314

Aircraft Involved: Two F-4Ds and two F-4Cs vs eight to twelve MIG-17s

Result: One MIG-17 destroyed

Vicinity of Encounter: 21°30'N/105°45'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 5 June 1967/1535H

BLUE Flight (four F-4s) was providing MIGCAP for an IRON HAND flight in the vicinity of Thud Ridge.

2. MISSION ROUTE

BLUE Flight departed Ubon and proceeded to ORANGE ANCHOR for refueling. The route to the target was via the following points: TACAN 97; 21°55'N/104°38'E; 25°14'N/105°12'E; 21°45'N/105°42'E; 21°26'N/105°52'E, ALFA day frag NR 125.

3. AIRCRAFT CONFIGURATIONS

F-4D BLUE 1, 3

4 SPARROW (AIM-7E)
4 FALCON (AIM-4)

F-4C BLUE 2, 4

4 SPARROW (AIM-7E)
4 SIDEWINDER (AIM-9B)

MIG-17

Silver with red stars on the wings

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Clouds, scattered to clear with visibility greater than seven miles.

BLUE

1 2 3 4

Heading: 330°

5. INITIAL DETECTION

BLUE 3 and 4 first sighted the MIGs in their 5 o'clock position making a firing pass.

6. ACTION INITIATED

During the maneuvering of BLUE 3 and 4 to defend against the attacking MIGs, BLUE 3 and 4 became separated. BLUE 1 (Lead) and 2 attacked several MIGs that were in a wagon wheel formation.

7. SITUATION DEVELOPMENT

While maneuvering independently, BLUE 4 launched one SPARROW as BLUE 3 fired one FALCON and one SPARROW. No results were observed. In other engagements BLUE 1 fired a FALCON, which did not guide, and two SPARROW missiles. The first SPARROW was launched inside minimum range whereas the second SPARROW, launched with full system lock-on against a third MIG, was credited with a kill.

8. ORDNANCE

| | (No. fired/No. hits) SPARROW AIM-7E | FALCON AIM-4 | Remarks |
|---|---|---|---|
| BLUE 1 | 2/1 | 1/0 | One MIG-17 kill. |
| BLUE 3 | 1/0 | 1/0 | |
| BLUE 4 | 1/0 | | |
| MIGs | | | Fired guns at BLUE Flight. No hits. |

11. DATA SOURCES

Messages, Reports: 8TFW/OPREP-3/051430Z June 1967
Raytheon Missile Performance Report AIM-7D/E

12. NARRATIVE DESCRIPTION

After completing a second troll along Thud Ridge, BLUE 3 and 4 were jumped by MIG-17s as the flight rolled out on a northwesterly heading. The MIGs were visually detected while making a gun-firing pass from the 5 o'clock position of BLUE 3 and 4. BLUE 4 had moved to

[redacted]

the outside of BLUE 3 and had started to pull back to the inside when the firing pass was made by the MIGs. BLUE 1 called a break and after considerable maneuvering BLUE 3 and 4 became separated. BLUE 4 launched a SPARROW in the boresight mode with interlocks in and range track. At time of missile launch the MIG was moving from the 10 to 12 o'clock position, TCA 30°, range 3 miles, altitude 7,000 ft, speed approximately 0.9 Mach. BLUE 4 also was at 7,000 ft, speed 0.9 Mach. Immediately after launching the missile BLUE 4 broke right as another MIG was making a firing pass from his 5 o'clock position. Upon reaching BINGO fuel state, BLUE 4 egressed the area.

In the meantime, BLUE 3 rolled in on a single MIG-17 that was in a level right turn. From a 30° dive and 15° right bank BLUE 3 fired a FALCON. At launch, angle-off was good but the MIG increased his rate of turn and BLUE 3 passed over the MIG without observing the performance of the missile. After climbing to gain separation, BLUE 3 rolled in behind a single MIG at a range of 5 miles but due to the dive angle and sun, the identification was delayed. A SPARROW was launched at a range of 2 miles at which time the MIG broke right. Both airplanes were at 2000 ft with the F-4 indicating 0.9 Mach and the MIG estimated at 0.8 Mach. TCA was 60°. The flight of the missile was not observed as both the MIG and the SPARROW were lost from view. BLUE 3 then egressed the area and rejoined BLUE 4 on the way out.

BLUE 1 and 2 sighted seven or eight MIG-17s in a wagon wheel pattern and attempted to break up the formation. During the air battle BLUE 1 fired a FALCON which did not guide. Angle off was 10° with the target head-on and level. On a second pass a SPARROW was launched with angle off and target aspect almost identical to the first pass but was inside minimum range. BLUE 1 observed one MIG high and two others slightly to his left and acquired a full system lock-on on one of the MIGs. With the steering dot centered BLUE 1 launched a SPARROW head-on. Target altitude was 6000 ft. Detection range was 2-1/2 miles, lock-on at 2 miles, launch at 2 miles, fighter altitude 6000 ft, speed 0.9 Mach. BLUE 1 heard a call to break right and did not observe the flight of the missile. However, BLUE 2 observed the missile guiding down toward the MIG. BLUE 2 was at 500-1000 ft. Within seconds BLUE 2 observed a large fireball on the northeast side of Thud Ridge in the vicinity of 21°30'N/105°45'E. The fireball extended along the flight path of the missile that BLUE 1 had launched and was identified as the fireball of an aircraft that had impacted with the ground. The engagement continued until broken off by the MIGs. BLUE 1 and 2 then egressed the area and while outbound the backseater in BLUE 2 saw a smoking MIG-17 heading southeast with another MIG flying escort.

[redacted]

Event III-315

Aircraft Involved: One RF-4C vs Possible MIG

Result: Radar Contact

Vicinity of Encounter: 21°55'N/104°28'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time 6 June 1967/0412H

II. DATA SOURCES

432 TRW 052225Z June 67 OPREP-3 TUOC 04954

12. NARRATIVE

One RF-4C (BLUE Flight) on a weather reconnaissance mission left Udorn and proceeded direct to 20°27'N/103°42'E at 20,000 feet altitude. From there, BLUE Flight proceeded to 22°00'N/104°32'E dropping from 20,000 feet to 12,000 feet. From this point BLUE Flight proceeded to 22°10'N/105°00'E descending from 6000 feet to 500 feet altitude. From there BLUE Flight proceeded to weather point Alfa at 21°42'N/105°40'E at 500 feet altitude.

After leaving the weather reconnaissance point, and on egress, BLUE Flight was at 21°55'N/105°28'E, heading 219 degrees, at 19,000 feet altitude and a speed of 525 knots. At this point he received a one ring x-band TWS rapidly increasing to 3-1/2 rings and traveling from 8 o'clock to 6 o'clock position. This swing took one minute to complete.

BLUE Flight went to 500 feet AGL in less than one minute, and dropped 3 bursts of 4 chaff bundles. Burst one broke the lock but it came back on 4 seconds later. After bursts 2 and 3, lock-on was never reestablished.

BLUE Flight accelerated to 660 knots on the deck and continued on until he reached 20°27'N/103°42'E.

As BLUE Flight was ingressing to the weather point indications were received of a GCI paint.

The weather was a solid undercast with tops at 10,000 feet, with visibility 10 miles. No MIG warnings were received.

[redacted]

[redacted]

Event III-316

Aircraft Involved: Four F-105s vs one MIG-17

Results: Sighting only
Vicinity of Encounter: Bac Giang

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 6 June 1967/1540H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Part of the force which hit the Bac Giang RR and highway bridge sighted one silver MIG heading west away from the target but the MIG posed no threat to the mission.

Event III-317

Aircraft Involved: One F-105F vs Unidentified

Results: No damage
Vicinity of Encounter: 20°10'N/105°20'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 7 June 1967/2137H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Member of IRON HAND flight saw a red flowing light which appeared to be a MIG afterburner at 8 o'clock low, approaching and skimming in and out of the tops of a cloud layer. The light came within 5 miles of the F-105 who turned left toward lihgt and it appeared to pitch up and disappear. Thirty seconds later a strange ELINT signal with the characteristics of a SCAN FIX was intercepted for 3 to 4 seconds. No MIG calls were received.

Event III-318

Aircraft Involved: Four F-105s vs one MIG-21

Results: No damage
Vicinity of Encounter: 20°50'N/105°10'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 11 June 1967/0900H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight was approached by one silver MIG from 12 o'clock high. MIG turned and tried closing in on flight from 4 o'clock position and the flight executed scissors maneuver. Before Lead and No. 2 could get into firing position, MIG fled to north. No fire was exchanged.



[redacted]

[redacted]

Event III-319

Aircraft Involved: Two RF-4Cs vs one MIG-21
Result: No damage
Vicinity of Encounter: 21°22'N/105°10'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 10 June 1967/1312H

Two RF-4Cs (BLUE Flight) were on a mission to Phu Tho railroad yard.

2. MISSION ROUTE

BLUE Flight departed Udorn and proceeded to 18°15'N/103°15'E at 25,000 feet altitude; then direct to Channel 97 (20°28'N/103°43'E) at 30,000 feet; direct to target at 21°24'N/105°15'E descending to 500 feet AGL.

8. ORDNANCE

| | No. fired/No. hits |
|---|---|
| | AAM |
| MIG-21 | 1/0 |

11. DATA SOURCE

Messages, Reports: 432TRW 100950Z June 67 OPREP-3 TUOC 05162

12. NARRATIVE DESCRIPTION

As BLUE Flight was enroute to the target at 21°00'N/105°25'E, at 1304H, a MIG warning was issued by Red Crown "Bandits, bandits BULLSEYE orbiting north."

DEEP SEA 22 (AEW aircraft) issued a warning to BLUE Flight call sign when the flight was at 21°13'N/104°57'E at 1308H "Bandits at BULLSEYE plus 20 miles west, medium altitude."

At 1309.5H when BLUE Flight was at 21°20'N/105°08'E, DEEP SEA 22 again warned BLUE Flight by call sign that bandits were 5 miles south of their position and closing.

When at 21°22'N/105°10'E, and 1312H BLUE Flight observed a MIG-21 approximately 4 miles distant at their 3-3:30 o'clock position. An air-to-air missile of unknown type was fired at BLUE 1 and at that point X-band strobing was received of three plus rings covering a 30 degree sector of the scope with an uncharacteristic dotted line video pattern of multiple strobes. The missile left a visible black trail and appeared to guide accurately toward BLUE 1.

BLUE 1 called a hard left break and descended. What appeared to be the missile detonation was observed below BLUE 1 (the flight was at 21°18'N/105°10'E). BLUE Flight pulled out at 1000 feet AGL heading 230 degrees, and muzzle flashes were seen at 21°20'N/105°05'E but no air bursts or tracers were seen.

The MIG was not observed again nor were X-band strobing received again, but warning calls continued from DEEP SEA 22, "Bandits, bandits 20 miles west." The last call heard was "Bandits, bandits BULLSEYE plus 50 miles west."

The flight continued outbound at 1000 feet AGL until reaching 21°05'N/104°10'E when a climb to 30,000 feet altitude was initiated.

The weather was clear with visibility unlimited.

[redacted]

[redacted]

[redacted]

Event III-320

Aircraft Involved: One F-105 vs two MIGs

Results: Sighting only

Vicinity of Encounter: 21°31'N/105°30'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 11 June 1967/0909H

II. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight was at 17,000 ft when two MIG contrails were observed at 25,000 ft by No. 2 due east of Phuc Yen. MIGs headed toward flight but then turned away.

Event III-321

Aircraft Involved: Four F-105s vs two MIG-17s and two MIG-21s

Results: Sighting only

Vicinity of Encounter: 21°40'N/105°30'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 11 June 1967/0915H

II. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Inbound strike flight observed two silver MIG-17s proceeding NNW along Thud Ridge at 1000 ft. The flight also observed two shiny MIGs, probably MIG-21s, at 21°30'N/105°35'E.

Event III-322

Aircraft Involved: One RF-101 vs one MIG-21

Results: No damage

Vicinity of Encounter: 21°05'N/104°06'E

I. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 11 June 1967/0930H

II. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

BLUE TREE aircraft at 25,000 ft sighted a MIG with contrails at 30,000 ft approximately 5 miles distant. The MIG executed a right descending turn toward the reconnaissance aircraft. The reconnaissance aircraft jettisoned external fuel tanks, executed a left diving turn to 100 ft, went afterburner and exited the area at 620 knots. X-band strobing was received. The MIG appeared to parallel the photo aircraft course in descent but was not observed again after 20°45'N/103°50'E. Numerous MIG warnings were being received for 60 miles west to 80 miles northwest of Hanoi.



[redacted]

[redacted]

[redacted]

Event III-323

Aircraft Involved: Four F-105s vs three unidentified

Results: No damage

Vicinity of Encounter: 21°15'N/107°00'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 11 June 1967/1645H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight at 18,000 ft observed three silver aircraft in an element of two with third aircraft following in trail; aircraft approached flight at 7 o'clock low; aircraft overshot and flight continued on to target area.

Event III-324

Aircraft Involved: Three F-105s vs two MIG-17s

Results: Sighting only

Vicinity of Encounter: 21°10'N/106°50'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 11 June 1967/1634H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight observed two MIGs. The MIGs were low at 1-2000 ft and performing S-turns.

Event III-325

Aircraft Involved: Two F-105s vs two unidentified

Results: Sighting only

Vicinity of Encounter: 21°10'N/107°28'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 11 June 1967/1658H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Two shiny aircraft were sighted by egressing IRON HAND flight. The bogeys appeared to be at 1000 ft and to be doing victory rolls. The aircraft could have been rocking and the reflection of the sun could have given rolling effect. The type of aircraft was unknown due to distance.

[redacted]

[redacted]

Event III-326

Aircraft Involved: Four F-105s vs one MIG-21

Results: Sighting only

Vicinity of Encounter: 21°00'N/104°50'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 12 June 1967/1604H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight sighted silver MIG; MIG was heading NW and made a left turn into clouds and was not further observed.

Event III-327

Aircraft Involved: Four F-105s vs seven MIGs

Results: Sighting only

Vicinity of Encounter: 21°05'N/106°45'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 13 June 1967/1636H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight sighted seven possible MIGs heading west at approximately 8000 ft.

Event III-328

Aircraft Involved: Eight F-105s vs ten-eleven MIG-21s

Results: Sighting only

Vicinity of Encounter: 21°10'N/106°50'E
21°12'N/106°40'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 13 June 1967/1639H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Strike flight sighted two silver MIGs at an altitude of 2000 ft; flight also observed flight of five-six silver MIGs at an estimated altitude of 2-3000 ft; this MIG flight was trailed by another flight of three MIGs at the same altitude and on the same heading, approximately 1 mile behind the first; second F-105 flight also saw second group of MIGs.



[redacted]

Event III-329

Aircraft Involved: Two RF-4Cs vs one MIG-17

Results: Sighting only

Vicinity of Encounter: 20°00'N/106°05'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 16 June 1967/1615H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Photo flight observed MIG heading 330°; no engagement.

Event III-330

Aircraft Involved: Four F-105s vs one MIG-21

Results: Sighting only

Vicinity of Encounter: 21°50'N/104°45'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 18 June 1967/0902H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Ingressing strike flight at 11,000 ft noted MIG circling underneath; MIG was observed at a slant range of 5 to 6 miles; MIG was silver and appeared to be flying at tree-top level; MIG turned and headed northwest.

[redacted]

Event III-331

Aircraft Involved: Four F-105s vs two MIG-21s

Results: Sighting only

Vicinity of Encounter: 21°34'N/105°36'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 June 1967/0931H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

No. 2 of strike flight at 9000 ft observed two silver MIGs parallel to flight flying down Thud Ridge; MIGs were 5 miles south at an estimated altitude of 500 ft; MIGs did not engage and flight lost sight.

Event III-332

Aircraft Involved: Four F-4Cs vs two unident (possible EB-66)

Results: Sighting only

Vicinity of Encounter: Gulf of Tonkin

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 June 1967/1635H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Flak suppression flight ingressing when No. 2 observed two silver strangers approximately 8 miles distant at 3 o'clock; strangers were at altitude 25,000 ft; initial heading 210°, then turned north; possibly EB-66s.

Event III-333

Aircraft Involved: Four F-105s vs two MIG-?

Results: Sighting only

Vicinity of Encounter: 21°25'N/104°10'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 June 1967/0900H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

6000 ft flak suppression flight saw MIGs at 2-3 o'clock; MIGs of unknown type heading down the Song Choy river valley at no closer than 10 miles; flight then lost sight of MIGs.



[redacted]

[redacted]

[redacted]

Event III-334

**Aircraft Involved:** One F-105 vs one MIG-?

**Results:** Sighting only

**Vicinity of Encounter:** 21°25'N/104°10'E

**1. PRIMARY MISSION AND TACTICAL SITUATION**

**Date/Time:** 23 June 1967/0050H

**11. DATA SOURCE**

CINCPACFLT Staff Study 6-68.

**12. NARRATIVE DESCRIPTION**

Member of strike flight at 3000 ft when aircraft believed to be MIG was sighted heading southwest at altitude 12-13,000 ft; suspected MIG lit afterburner and F-105 lost sight of aircraft.

Event III-335

**Aircraft Involved:** Four F-105s vs one unident

**Results:** No Damage

**Vicinity of Encounter:** 21°05'N/104°50'E

**1. PRIMARY MISSION AND TACTICAL SITUATION**

**Date/Time:** 23 June 1967/0050H

**11. DATA SOURCE**

CINCPACFLT Staff Study 6-68.

**12. NARRATIVE DESCRIPTION**

IRON HAND flight received momentary x-band signal; F-105s broke left and signal went off; at 1650Z, (22 June), 45 miles south of Yen Bay, flight saw an afterburner light at their 12 o'clock position, approximately 2 miles ahead in a slight climb; light went off and then came back on, enabling pursuing F-105s to identify swept-back wing features and to see that the fuselage was silver-grey in the moonlight; suspect MIG was now heading NW in slight climb approximately 1 mile in front of flight, which turned into suspect MIG and his afterburner light went out; shortly thereafter the afterburner was relit, showing unidentified to be in slight right dive; once again afterburner light went out and flight lost track of the unidentified.

Event III-336

**Aircraft Involved:** Three F-4Cs vs one MIG-21, one unidentified

**Results:** Sighting only

**Vicinity of Encounter:** 21°40'N/104°15'E

**1. PRIMARY MISSION AND TACTICAL SITUATION**

**Date/Time:** 27 June 1967/0915H

**11. DATA SOURCE**

CINCPACFLT Staff Study 6-68.

**12. NARRATIVE DESCRIPTION**

Escort flight heard continuous MIG calls from 0056Z until 0133Z; ECM aircraft was at 30,000 ft when MIG was sighted at 7 o'clock position by escorts; MIG was at 30,000 ft approximately 1 mile distant; MIG made no attempt to engage and was not further observed; at approximately 0117Z, flight starting a left turn observed an unidentified silver, fighter type aircraft at flight's 12 o'clock position; bogey was heading NW up the Red River; bogey appeared to be in a gentle climb and [redacted]er, was approximately 7-8 miles distant and posed no threat to flight.

[redacted]

[redacted]

Event III-337

[redacted]

Aircraft Involved: One F-4C vs two MIG-17s

Result: One F-4C destroyed

Vicinity of Encounter: Hainan Island

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 26 June 1967/1732H

One F-4C Ferry Flight from Clark AFB to Da Nang

2. MISSION ROUTE

Unknown

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1

600-gal centerline tank
MERS outboard
TERS inboard
BLU/1B baggage rack on left inboard TER.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Winds aloft forecast 25 kts from 100° at 39,000 MSL.

| | BLUE 1 |
|---|---|
| Altitude: | 26,000 ft |
| Heading: | 210° |
| Speed: | Unknown |
| Fuel State: | Low on fuel |

Flight Formation:

N/A

5. INITIAL DETECTION

BLUE 1 was subjected to surprise attack by two MIG-17s from his 6 o'clock position.

6. ACTION INITIATED

See Item 12

7. SITUATION DEVELOPMENT

See Item 12

8. ORDNANCE

BLUE 1 - None

MIG-17s - Unknown

9. EQUIPMENT PROBLEMS

Heading Indicators, Primary and Standby in both cockpits were in error and had BLUE 1 north of course.

10. AIRCREW COMMENTS

None

11. DATA SOURCES

Messages, Reports:

366 TFW OPREP-3 DNG AB RVN DC01 809 June 67 261620Z
366 TFW OPREP-3 DNG AB RVN DC01 812 June 67 261845Z
CTF-77 SITREP-1 June 67 270902Z

12. NARRATIVE

BLUE 1, a ferry flight, departed Clark AB and planned to arrive at Da Nang with 3200 lb fuel reserve. Winds enroute at planned altitude of 39,000 ft MSL were forecast to be approximately 100° at 25 kts. The heading indicators (both Primary and Standby) in both cockpits were in error which caused the pilot to proceed north of course. BLUE 1 was in or above weather from the Philippine ADIZ[1] until letdown into what was thought to be the Da Nang area. Radar breakout of this area is very similar to Da Nang. Radio frequencies were very cluttered, emergency squawk initiated at this time, 0900Z. Pilot requested position from Panama radar who twice confirmed it as 25 n mi from Da Nang. Pilot still did not see familiar terrain or surroundings, so he turned to 180° and climbed to 26,000 ft.

[1]Air Defense Identification Zone



[redacted]

[redacted]

[redacted]

Event III-337

GREEN Flight, returning from RP VI strike, got ADF tearing on BLUE 1 transmissions and gave pilot a steer of 210° for 140 n mi, which proved to be correct. BLUE 1 followed this steer at 26,000 ft MSL until subjected to a surprise attack by two MIG-17s from his 6 o'clock position. Aircraft was hit, fire warning lights were illuminated, pilot pulled throttles to idle and both engines failed. Pilot extended RAT[1], jettisoned external stores, and continued on course by controlling aircraft with rudder through a series of dives and zooms. At 8000 ft both pilots ejected and were picked up 1 1/2 hours later by a navy helicopter. Position of tailout approximately 10 n mi south of Hainan Island. Pilots did not sustain any injuries.

[1]Ram Air Turbine

[redacted]

[redacted]

Event III-338

Aircraft Involved: ? F-105 vs two MIG-17s
? F-4C/D

Results: Sighting only

Vicinity of Encounter: 21°50'N/104°35'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 27 June 1967/0920H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Huong Vi strike aircraft sighted two MIGs; no hostile intent.

Event III-339

Aircraft Involved: Two EA-1F vs two unidentified

Results: No damage

Vicinity of Encounter: 20°40'N/107°15'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 29 June 1967/1710H

11. DATA SOURCE

CINCPACFLT Staff Study 6-68.

12. NARRATIVE DESCRIPTION

Jammer flight spotted two unidentified jet aircraft flying east at 15,000 ft; one aircraft definitely delta wing; no friendly aircraft in area at the time; HIGH FIX radar detected at same time; unidentified jets turned toward the EA-1Fs, which dived for deck and headed for PIRAZ.



[redacted]

Event III-340

Aircraft Involved: Four A-4s vs five MIG-21s
Results: No damage
Vicinity of Encounter: 20°55'N/106°21'E

## 1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 11 July 1967/0838H

Two elements of A-4s part of a strike force from the Consellation were attacking a target in the Hai Duong area. The strike group consisted of A-6s and an F-4 flak suppression flight.

## 8. ORDNANCE

(No. fired/No. hit)

| | AAM or Rocket | Remarks |
|---|---|---|
| MIG-21 | 1/0 | Fired at A-4s |

## 11. DATA SOURCES

Messages, Reports:

CTG 77.4 110100 July 67 OPREP-3 PINN 003
CTG 77.4 110410 July 67 OPREP-3

## 12. NARRATIVE DESCRIPTION

At 0838H, as the Consellation strike group approached the target at position 20°55'35"N/106°20'10"E and an altitude of 12,000 ft on a heading of 358°, the F-4 TARCAP/flak suppression and strike aircraft commenced their attack followed by elements of A-6s and A-4s.

Two elements of A-4s sighted a total of five MIG-21s. The MIGs were on a heading of 090° at 17,000 ft altitude and 3-5 mi from the strike group. The MIGs were called, but at this time the F-4s and the rest of the strike group were committed to their attacks.

The MIGs approached over the strike group at the same time the group entered into the immediate target area. As flak started from the target area, three of the MIG-21s engaged afterburner, gained altitude, and were not observed thereafter. Two of the MIG-21s were observed to commence a shallow dive toward the strike group and one fired a missile or rocket. The exact type was undetermined due to the strike group's concentration on the target. The smoke or vapor trail from the weapon was seen momentarily as the only indication that a weapon had been fired. No strike aircraft were damaged, and the target of the MIG attack was unknown.

Immediately after completion of their ordnance delivery runs the F-4s pulled up, climbing northwest, to engage the MIGs. Although the F-4s remained in the vicinity of the target to cover the egress of the A-4 and A-6 aircraft and continued to search for MIGs, they were unable to make either radar or visual contact with the MIGs.

The weather was scattered clouds at 16,000 ft with visibility unlimited.

The best estimate of the flight crews is that the MIGs approached from the west at about 18,000 ft and flew over the strike group. The ones that attacked the group egressed on a right climbing turn to the west.

[redacted]

Event III-341

Aircraft Involved: Four F-8s/one A-4E vs two MIG-21s
Result: No damage
Vicinity of Encounter: 19°47'N/105°25'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 17 July 1967/0900H

BLUE Flight (four F8s) on a TARCAP mission and GREEN Flight (one A4E) on RESCAP mission were involved in this event.

3. AIRCRAFT CONFIGURATIONS

F-8 BLUE 1, 2, 3, 4

Unknown

A4E GREEN 1

ZUNI rockets and 20 n mi

MIG-21s 1, 2

AAM - quantity unknown

8. ORDNANCE

| | ZUNI Rockets | 20 n mi | Soviet AAM | Remarks |
|---|---|---|---|---|
| BLUE 1, 2, 3, 4 | ---- | ---- | | |
| GREEN 1 | 8/0 | 30/0 | | |
| MIG-21s | | | 1/0 | |

11. DATA SOURCES

Messages, Reports:

CTG 77.8 OPREP-4 July 1967 170820Z

12. NARRATIVE DESCRIPTION

At 0900H, BLUE Flight sighted two MIG-21 aircraft while on a TARCAP mission. MIGs were approaching BLUE Flight and flak suppression aircraft from the south at approximately 6000 ft when BLUE Flight assumed chase. MIGs made a hard left nose low turn to north. BLUE Flight could not close and dropped off MIGs. MIGs then turned back and headed toward strike group. BLUE Flight resumed chase and MIGs again turned north and disappeared. GREEN Flight (one A4E) flying RESCAP flak suppression for SAR effort sighted MIG-21 crossing in front of aircraft vicinity 19°47'N/105°25'E at 170059Z. Saw MIG fire air-to-air type missile at BLUE Flight in front of him. GREEN one maneuvered to the MIG's 6 o'clock position, 8000 ft altitude, 3/4 mile behind and fired 8 ZUNI rockets and 30 rounds of 20mm. MIG-21 pulled away from engagement and departed to the north.



[redacted]

[redacted]

Event III-342

Aircraft Involved: Four A-4Es vs four MIG-21s
Result: No damage
Vicinity of Encounter: 20°30'N/105°55'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 18 July 1967/1402H

The A-4E were part of a force of 14 A-4Es and F-8s attacking the Dien Xa storage area.

8. ORDNANCE

| | No. fired/No. hits |
|---|---|
| | AAM |
| MIG-21 | 1/0 |

11. DATA SOURCES

Messages, Reports: CTG 77.8 181800Z July 67 OPREP-5/005
CTG 77.8 181202Z July 67 OPREP-4

12. NARRATIVE DESCRIPTION

Two elements of the strike force encountered MIGs as follows:

a) Two A-4E flak suppression aircraft, with a TOT of 1403, were at that time in the vicinity of 20°31'10"N/105°55'01"E when one of the pilots saw three MIG-21s 3000 feet above the flight. The MIGs were at 14,000 feet altitude heading 220 degrees. The MIGs were quickly lost from view.

b) Two A-4E IRON HAND aircraft in the vicinity of 20°29'N/105°55'E, heading 041 degrees, at 5000 feet altitude observed one MIG-21 at 1402H. The MIG approached the strike group, low from the northeast, at 8 o'clock and 4000 feet altitude. The MIG started a straight climb and released a rocket or AAM from 10,000 feet altitude, 7000 feet range. The MIG continued to climb to 13,000 feet and heading north.

[redacted]

[redacted]

Event III-343

Aircraft Involved: Four F-4Ds vs eight MIG-17s
Result: No damage
Vicinity of Encounter: 21°19'N/105°53'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 19 July 1967/1650Z

Four F-4Ds (BLUE flight) were on an armed reconnaissance mission against the Ha Gia transhipment point at 29°19'25"N/105°53'00"E in Route Package VIa.

2. MISSION ROUTE

BLUE flight was from Ubon and probably ingressed and egressed overland.

3. AIRCRAFT CONFIGURATION

F-4D BLUE 1, 2, 3, 4

4 - SPARROW AIM-7E
6 - M-117 bombs (probably carried on tank configuration inboard pylons QRC-160 Pod)
(no AIM-4D carried)

MIG-17

Markings unobserved
Cannon

5. INITIAL DETECTION

BLUE flight observed MIGs near Phuc Yen while inbound to target.

6. ACTION INITIATED

BLUE flight continued on to the target arriving at 1645H.

While egressing the target area, the BLUE flight was aggressively attacked by the MIGs. BLUE 1 and 2 broke left to avoid flak. They then went back up the east side of Thud Ridge with two MIG-17s in pursuit. After evading the MIGs, they broke left and then reengaged the MIGs, this time with interlocks out.

BLUE 1 achieved a lock and fired two SPARROWs at a range of 6 to 7 mi lock-on. One missile did not guide, probably due to motor malfunction. The other missile "guided beautifully." Some MIGs turned and started a head-on pass; and BLUE Flight was reentering Phuc Yen flak defenses. For these reasons, the flight broke off.

BLUE 2 fired one AIM-7 after a boresight acquisition with lock-on at a range of 3 n mi. BLUE lead broke left to avoid flak and head-on pass of MIG-17s.

BLUE 1 and 2 egressed up Thud Ridge and out. Action took place between 1650 and 1658. MIG markings not visible.

8. ORDNANCE

(No. fired/No. hits)

| | SPARROW AIM-7E | CANNON | Remarks |
|---|---|---|---|
| BLUE 1 | 2/0 | | One missile failed to guide, probably due to motor malfunction. |
| BLUE 2 | 1/0 | | |
| MIGs | | Yes | Fired unknown number of times |

9. EQUIPMENT PROBLEMS

Motor malfunction on first missile fired. Motor apparently ignited but crew observed that it was burning out of the side rather than out of the back.

10. AIRCREW COMMENTS

BLUE lead commented that MIGs demonstrated a high measure of aggressiveness. If they could have held lock for a few more seconds on the last firing, they would have been credited with two more kills.

11. DATA SOURCES

Messages, Reports:

432 TFW OPREP-4 191200Z, 19 July 67, DUOC 07057

MEMO OLD 0600 - Raytheon - Missile Systems Div., Oxnard, Calif. 24 July 67

OP-OSW BOX SCORE



[redacted]

## 12. NARRATIVE DESCRIPTION

The narrative is contained in items 5, 6, and 7 above. The table below gives the firing parameters for the three AIM-7E attempts.

| | BLUE 2 Left Front | BLUE 1 Right Front | BLUE 1 Left Front |
|---|---|---|---|
| Firing No. | 1 | 2 | 1 |
| Radar Mode | Boresight Then Radar | Radar | Radar |
| Track Mode | Auto | Auto | Auto |
| Polarization | Lin | Cir 1 | Cir 1 |
| Missile Mode | Nar | Nar | Nar |
| Interceptor Altitude Airspeed | 2000' .95 | 50' Mach 1 | 50' Mach 1 |
| TGT Altitude Airspeed | 5000' | 3000' | 3000' |
| Aspect | 90 Dog and turning | 10 degrees off tail | |
| Detection Range | 4 n mi | 18 n mi | 18 n mi |
| Lock-on Range | 4 n mi | 18 n mi | 18 n mi |
| Judy | | | |
| Fox | | | |
| Firing Range | 3 n mi | 6 n mi | 6 n mi |
| Miss Distance | Miss | Miss | Miss |
| Fuze | | | |
| Comments | Had to break off due to other MIGs | Had to break off due to other MIGs | Motor Malfunction |

Aircraft Involved: Four F-4Cs vs one MIG-21
Result: No damage
Vicinity of Encounter 21°12'N/107°17'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 20 July 1967/1652H

Four F-4Cs on an armed reconnaissance mission against the Hung railroad yard at 21°33'20"N/106°29'40"E.

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 1, 2, 3, 4

SPARROW AIM-7 - quantity for flight unknown
BLUE flight had a total of 13 M-117 bombs at 8 CBU-24s.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Unknown

| | BLUE 1 2 3 4 |
|---|---|
| Altitude: | 15,000 ft |
| Heading: | 120° |
| Speed: | Unknown |
| Fuel State: | Unknown |
| Flight Formation: | Strike formation |

5. INITIAL DETECTION

After hitting the target, and while egressing, received warnings from HOTEL[1] about MIGs in the area. BLUE flight sighted a single long-nosed, delta wing, silver aircraft at altitude 2000 ft, heading 050°, 500 kts, approximately 1652 local time.

6. ACTION INITIATED

BLUE flight pursued the MIG to 21°21'N/107°48'E

7. SITUATION DEVELOPMENT

BLUE 1 (lead) fired an AIM-7 at the MIG from 2 n mi out, 10° dive, altitude 8000 ft, heading 05°, lock-on indicated (full system) at time of firing, but missile did not appear to guide. BLUE flight broke off attack due to proximity to CHICOM border. MIG believed to have proceeded across into CHICOM airspace. BLUE lead carried a blister camera on board and expended 200 feet of film.

8. ORDNANCE

(No. fired/No. hits)

| | SPARROW AIM-7 | Remarks |
|---|---|---|
| BLUE 1 | 1/0 | Missile failed to guide |
| MIG[2] | | |

9. EQUIPMENT PROBLEMS

BLUE 1 - SPARROW missile failed to guide.

10. AIRCREW COMMENTS

None

11. DATA SOURCES

Messages, Reports: OPREP 201150Z Jul 67 from 366 TFW Danang AB RVN

[1]See item 12.

[2]DIA intelligence summary lists the MIG as firing one AAM. No other source indicates this firing.

12. NARRATIVE DESCRIPTION

See items 5, 6, 7.

FLIGHT reports the following calls from HOTEL.

Red for CG4 at 0840Z (flt PSN at 21°16'N/107°01'E)
Yellow for CG4 at 0849Z (flt PSN at 21°17'N/107°04'E)
Bandits NW at 0825Z
SW 25 Med at 0833Z
NW 25 at 0835Z
South at 0837s
S 40 heading 090° at 0838Z
HOTEL radio sounded garbled

[redacted]

Event III-345

Aircraft Involved: One A-4C and four F-8Cs vs eight MIG-17Ds

Result: Three MIGs destroyed, two MIGs damaged and one probable kill. Two F-8Cs damaged.

Vicinity of Encounter: 20 miles northwest of Hanoi

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 21 July 1967/1519H to 1646H

Strike mission on the Ta Xa fuel storage depot 30 miles northwest of Hanoi. Four F-8Cs were on TARCAP and one F-8E was escorting the A-4C IRON HAND mission.

8. ORDNANCE

| | (No. fired/No. hits) AIM-9D | 20mm | ZUNI | Remarks |
|---|---|---|---|---|
| BLUE 1 | | | | Carried AIM-9D. No data. Unobserved. |
| BLUE 2 | Unk/1 | | | Hit. Probable kill. |
| BLUE 3 | Unk/1 | | | Kill. |
| BLUE 4 | | Unk/1 | | Kill. |
| F-8E | Unk/0 | Unk/3 | 6/unk | Three hits. One kill. |

11. DATA SOURCES

Messages: OPREP-5/021 211647Z, July 1967 from CTG

12. NARRATIVE DESCRIPTION

While en route to the target, a force of at least eight, possibly ten, MIG-17s attacked the TARCAP and IRON HAND by popping up out of the clouds. BLUE Flight engaged the MIG-17s in a dog fight and shot down three. One MIG-17 was destroyed with a direct hit from a SIDEWINDER missile. One MIG-17 was downed by 20mm cannon fire and another was destroyed by ZUNI rockets and 20mm fire. One other MIG was attacked with a SIDEWINDER. The missile appeared to guide but was not seen to detonate. Later a parachute was sighted. The MIG was listed as a probable kill. Two other MIGs were damaged in the aerial engagement.

Two F-8Cs or TARCAP were damaged by cannon fire. One F-8 was hit in the right aileron and the other was damaged heavily in the tail section. It was reported that the F-8 was able to outturn the MIG-17 in this engagement. The MIGs fired rockets and cannon.



[redacted]

[redacted]

Event III-346

Aircraft [redacted]: Two F-4Cs vs two MIG-21s
Result: One MIG killed (probable)
Vicinity of Encounter: 21°07'N/105°17'E

1. PRIMARY MISSION AND TACTICAL SITUATION

Date/Time: 27 July 1967/1600H

Two F-4C aircraft (BLUE Flight) on an escort mission approximately 35 miles west of Hanoi. BLUE 1 and 2 had air aborts. BLUE 3 and 4 were involved in this encounter.

3. AIRCRAFT CONFIGURATIONS

F-4C BLUE 3, 4

AIM-7
AIM-9

MIG-21s

Dark silver color with no visible markings.

4. FLIGHT CONDITIONS PRIOR TO ENCOUNTER

Weather: Unknown

| | BLUE 3, 4 |
|---|---|
| Altitude: | 17,000 ft |
| Heading: | 325° |
| Speed: | 460 KTAS |
| Fuel State: | Unknown |

5. INITIAL DETECTION

The two MIG-21s were first called as bogeys at 10 o'clock by the flight that was being escorted.

6. ACTION INITIATED

BLUE Flight engaged the two MIG-21s almost immediately.

7. SITUATION DEVELOPMENT

BLUE Flight first sighted the two MIG-21s (dark silver with no visible markings) pass from left to right across nose of BLUE Flight approximately 3/4 miles distant in a descending right turn. BLUE Flight followed in pursuit. BLUE 3 had one MIG centered at 3000 ft distance. The MIG lit afterburner just prior to missile launch. The SIDEWINDER tracked straight ahead until motor burnout, then turned right directly after the MIG-21. The SIDEWINDER was last seen in full guided flight approximately 200 ft directly aft of the MIG-21, but no detonation was observed. One MIG-21 started into a left descending turn. (At this time the second MIG continued straight ahead and was not pursued.) BLUE 3 and 4 continued a left turn in pursuit of first MIG, and at altitude 9000 ft, heading 090°, 25 degree dive, 150 kts overtake with interlocks in and full systems lock-on, BLUE 3 fired one AIM-7 from 1-1/4 mi out, 10 degree aspect angle 20 degree angle-off. The missile left the launcher with bias, and appeared to track immediately. The MIG-21 was in a moderate descending left turn, headed for the undercast at altitude 6000 ft. The missile was last seen tracking 2000 ft behind the MIG-21 in a lazy pursuit curve. This was classed as a probable kill.

BLUE 3 initially tried to fire but the dot was out of the ASE circle; when the dot was brought into the circle the missile launched.

8. ORDNANCE

| | (No. fired/No. hits) SPARROW AIM-7 | SIDEWINDER AIM-9 | Remarks |
|---|---|---|---|
| BLUE 3 | 1/1(prob) | 1/0 | Probable kill with SPARROW |
| BLUE 4 | 0/0 | 0/0 | |

9. EQUIPMENT PROBLEMS

None stated for BLUE 3 and 4.
BLUE 1 and 2 aborted early in mission.

11. DATA SOURCES

Messages, Reports: OPREP-4368
271250Z from 366TFW Danang AB RVN

[redacted]



[redacted]

12. NARRATIVE DESCRIPTION

See Items 5, 6 and 7.

END

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# WSEG REPORT 116

# AIR-TO-AIR ENCOUNTERS IN SOUTHEAST ASIA (U)

## Volume IV: analyses

April 1968

Including
IDA REPORT R-153

John S. Armstrong, *Project Leader*

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21 May 1968

MEMORANDUM FOR THE CHAIRMAN, JOINT CHIEFS OF STAFF

SUBJECT: Air-to-Air Encounters in Southeast Asia (U)

(U) The abstract of WSEG Report No. 116, "Air-to-Air Encounters in Southeast Asia - Volume IV: Analyses," is contained in Section I below. Additional comments on the study are contained in Section II.

## I. ABSTRACT

(U) Title and Date of Report: "Air-to-Air Encounters in Southeast Asia - Volume IV: Analyses," WSEG Report No. 116, April 1968.

(U) Conducted by: WSEG For: DDR&E

(U) Related to: Identification of research and development problems from analyses of air-to-air combat in Southeast Asia.

(C) Summary of Methodology and Discussion: Extensive detailed information was gathered from SEA combat aircrew debriefings by specially trained military and civilian teams to supplement the information contained in the combat reporting systems. The collected data, covering the period April 1965 to August 1967, were organized in outline and narrative format and also encoded for computer use. Two independent analyses of the data were performed: a quantitative analysis of the various phases of each engagement and a qualitative analysis of each event as a whole. The quantitative analysis examined the separate phases of combat, first by quantifying the parameters and then by analyzing each of the separate phases, both individually and collectively, in all of the documented events. Results of the qualitative analysis identified the factors affecting the outcome of the air battles and from these factors areas requiring research and development effort were identified.

(C) Principal Findings: The study indicates that concerted research and development effort toward effecting improvement in the following areas would enhance the effectiveness of U.S. operation in air-to-air combat:

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Enemy position and direction information.

Long-range positive identification.

Weapon versatility and reliability.

Target discrimination against ground return.

Aircraft rearward visibility.

Man/machine compatibility.

## II. COMMENTS

(U) This study is responsive to a request from the Office of Director of Defense Research and Engineering (ODDR&E) for an analysis of air-to-air engagements directed toward identifying those areas pertinent to research and development for aircraft weapons systems of the 1970-1975 time period. Basic authority for the study is contained in SM-505-65, 28 May 1965 and DJSM-1602-66, 6 December 1966. JCS concurrence in this DDR&E study is recognized in J3M-1929-66, 2 December 1966.

(U) This study should prove useful in:

- Providing data on SEA air-to-air combat events which heretofore have not been available from other sources.
- The identification of research and development goals for improving current weapons systems as well as the design of future aircraft weapons systems.
- Other studies or follow-on efforts in suggesting data collection and analytical methodology for similar operational analyses.
- Providing commanders and aircrew personnel a source of information on the achievements and the mistakes of U.S. pilots in air-to-air combat in SEA.
- The development of tactics as a consolidation of experiences in air-to-air combat.

(U) It should be noted that the data collected for this study, although well tabulated and presented, are primarily based on observations and estimates made by individuals under the stress of combat and thus subject to the frailties of human memory. The interviews from which the data were gleaned were conducted at varying times following the actual combat; some immediately following the action and others as much as one year later.

(S) In addition to those areas identified in the study



[redacted]

for research and development investigation, another area - countermeasures to defeat or degrade enemy weapons and weapon systems - appears to be indicated by the increased employment effectiveness of enemy air-to-air weapons subsequent to the data cut-off date of 1 August 1967. In the short five-month period from 1 August 1967 to 3 January 1968, the U.S. lost two aircraft to enemy air-to-air gunfire and 12 aircraft to enemy air-to-air missiles. During this period neither side introduced new aircraft and/or weapons or appreciably changed its sortie rates. These recent losses to air-to-air missiles alone account for 40 percent of the total U.S. SEA air-to-air losses and 70 percent of the total losses to air-to-air missiles.

(S) Two other research and development problem areas, while identified in the report, were not stressed. These are voice communications and aircraft performance, which also appear to warrant serious investigation for future weapons systems.

(U) It should be noted that the conclusions reached in this study were based solely on data gathered during a specific time period and from the limited environment of SEA. Therefore, the indicated areas for research and development effort which have been identified are not necessarily all-inclusive for all environments.

(U) The effort in this project was directed toward the identification of problem areas with research and development implications. This objective appears to have been met; however, a continuation of the data collection effort is desirable in order for there to be a data base for such further analyses as may be desired. It is recommended that this function be accomplished by the Services, with channels provided for the exchange of information. The follow-on data collection effort would, hopefully, be consistent with data collected for this study both in content and quality in order to assure common data for the total period. WSEG is prepared to cooperate fully with the Services in passing on the skills, techniques, data formats and instructions developed in acquiring the data used in this study.

(U) Volume I of this report, "Account of F-4 and F-8 Events Prior to 1 March 1967 (U)," was distributed in October 1967. Volumes II and III, covering air-to-air engagements through 1 August 1967, will be forwarded upon completion, on or about 15 August 1968.

K. S. MASTERSON
Vice Admiral, USN
Director

[redacted]

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REPORT R-123-Vol-4

# AIR-TO-AIR ENCOUNTERS IN SOUTHEAST ASIA. (U)

## Volume IV. Analyses (U). (6)

April 1968 (12) 194p.

This report has been prepared by the Systems Evaluation Division of the Institute for Defense Analyses in response to the Weapons Systems Evaluation Group Task Order SD-DAHC15 67 C 0012-T-104A dated 6 December 1966. (15) DAHC15-67-C-0012

In the work under this Task Order, the Institute has been assisted by military personnel assigned by WSEG.

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## FOREWORD

(C) At the request of the Director of Defense Research and Engineering, the Systems Evaluation Division of the Institute for Defense Analyses in conjunction with the Weapons Systems Evaluation Group has undertaken a study of air-to-air encounters in Southeast Asia. The effort, called Project RED BARON, sought to obtain and analyze data, primarily to assist in the selection of suitable research and development programs for future high-performance fighter aircraft, and also to provide a much-needed source of basic data for use by the military services and the scientific community.

(C) Project RED BARON is reporting its findings in four volumes. Volume I (IDA Report R-123; WSEG Report 116) documents air-to-air encounters in SEA involving F-4 and F-8 aircraft prior to 1 March 1967. Volume II will document those encounters involving F-105 aircraft for the same period. Volume III will give the data for all air-to-air events in the period from 1 March 1967 to 1 August 1967. These three volumes constitute the collection of basic data.

(C) Volume IV presents the results of the analyses which were performed on the data base. The extensive effort exerted by the RED BARON Project in obtaining and organizing a detailed and reliable data base involved hundreds of people and many man-years of work. Those people who assisted primarily in the data collection effort are listed in the Foreword of Volume I, and their assistance is here, again, gratefully acknowledged.

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(U) The members of the RED BARON Project are as follows:

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(U) Although Volume IV represents the combined effort of the entire Project staff, and all members contributed in some measure to all sections, there were principal authors for each of the major areas considered. Those authors names are indicated in the Contents with the sections for which they had primary responsibility.

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R.L. Kuster

All headings in this document are UNCLASSIFIED.

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# I. SUMMARY AND CONCLUSIONS

## SUMMARY

(S) The results of the Project RED BARON analyses must be viewed in light of the Southeast Asia environment in which U.S. fighters operated. This enemy environment has evolved into a sophisticated, integrated air defense system consisting of MIGs, surface-to-air missiles, and intensive AAA, employed simultaneously with effective enemy early warning and GCI. One of the significant constraints in employing U.S. fighter weapons systems has been the requirement for positive, visual identification before firing. Air-to-air encounters in this environment are characterized by close-in combat, high-g maneuvering, and visual cues.

(S) The major findings of this report are based on data collected to 1 August 1967 Other findings may reflect more recent data, as noted in the text, but these subsequent data (principally missile firing results) are from sources outside the major data collection effort. The analysis of air-to-air encounters is based on detailed reconstructions by the Project. These reconstructions were made primarily from data which the Project obtained by interviewing air-combat participants. The methodology and procedures devised for these aircrew interviews are discussed in Appendix C.

(S) As a result of mutually supporting, independent analyses undertaken by the Project, R&D problems were identified. The Project carefully avoided suggesting specific solutions, so as not to prejudice the definition of the problem areas. The following problem areas are determined to be most significant and deserving of maximum R&D attention.

GROUP 1
EXCLUDED FROM AUTOMATIC
DOWNGRADING AND DECLASSIFICATION

[redacted]

## LOCATION AND DIRECTION INFORMATION

(S) This problem concerns the need to provide the U.S. fighter aircraft with timely information on the location and flight path of aircraft operating in the vicinity. This information should be supplemented by means for establishing positive identification of these aircraft.

(S) Study of the acquisition and identification process in SEA (Section III-A) revealed that these important initial phases of air battles took place at short ranges (median range of all acquisitions examined was 2 miles), and were distributed among all quadrants around the U.S. aircraft. In approximately 25 percent of the encounters, the enemy was able to position himself in the rear quadrant of the U.S. aircraft before detection. These occurrences put the U.S. aircraft at a disadvantage in that little or no time was available to take evasive action before being fired upon. The frequency of rear-quadrant acquisitions indicated that visual search methods, current AI radars, and MIG warning techniques were inadequate to prevent surprise attacks upon U.S. aircraft.

(S) Study of the attack phase (Section III-B) indicated that the enemy's ability to achieve a position to fire on U.S. aircraft was almost entirely dependent upon the ability to attain the rear-quadrant position before detection. Conversely, whenever the U.S. aircraft acquired the enemy aircraft before the attack maneuver was completed, U.S. aircraft negated the maneuver 95 percent of the time. The requirement for real-time information on the position of the enemy aircraft is apparent from these two results.

(S) Positive identification was required in SEA due to the presence of U.S. and third-country aircraft in the combat area. This requirement makes it important for the fighter to have the capability to identify targets at ranges commensurate with his ability to acquire them.

## WEAPONS RELIABILITY

(S) Weapons reliability was identified as a significant problem by the qualitative analysis (Section IV) and was substantiated by detailed categorization of malfunctions in the study of the firing phase (Section III-C). It should be noted, however, that the missile systems employed in SEA were not designed for use in close-in, dogfight encounters characterized by high-g maneuvers.

[redacted]

(S) The firing phase studies (Section III-C) were based on "firing attempts" since in the real world of aerial combat, the performance of the weapon for each "trigger squeeze" is the most meaningful criterion for success. The missile hit-to-firing-attempt ratio (as computed on a moving average, and for all types of missiles combined) had steadily decreased from a value of 25 percent in April 1965 to 12 percent in January 1968. In addition to overall missile systems performance, the analysis examined each missile system in detail. The SIDEWINDER (AIM-9B and AIM-9D) failure rates were decreasing, while the SPARROW (AIM-7E) failure rates, though lower than during the early phases of the war, were not decreasing.

(S) With reference to gun systems (Section III-C), the results indicate that the failure rate has decreased from 21 percent to 10 percent.

## WEAPONS VERSATILITY

(S) Studies of the acquisition, attack, and firing phases of SEA air battles indicate needed improvements in the versatility of current air-to-air weapons. The qualitative analysis (Section IV) identified the need for weapons usable within ranges shorter than the minimum range of the current missiles (Section III-C and Appendix B). The studies of SEA acquisitions (Section III-A) substantiated this requirement for short-range capabilities. In addition to the short-range problems, expansion of current weapon envelopes is required to offset the envelope shrinkage and distortion which results from low-altitude air battles against a highly maneuvering target (Section III-C). In the combat environment the mechanical time delays required for properly aiming and firing current weapons are frequently unacceptable, and have highlighted the need for quick response weapons. The boresight mode of firing the AIM-7, a degraded technique for "snapshot" capability, has been unsuccessful in combat (Section III-C). In 65 attempts to fire in the boresight mode, only one hit resulted.

(S) With reference to guns, the results indicate approximately the same level of performance as missiles in terms of kills per firing attempt. For the period of the RED BARON study, gun system overall kill effectiveness per attempt was 14 percent, compared to 17 percent for the missiles.

[redacted]

## TARGET DISCRIMINATION AGAINST GROUND RETURN

(S) Although airborne intercept (AI) radar has in some cases been an asset to U.S. fighters (Section IV), in other cases it was inadequate for use against the low-flying targets which have characterized many of the air battles in SEA. MIG approach tactics have exploited current AI radar limitations by use of the NVN GCI capability as evidenced by the fact that most initial acquisitions were visual and at relatively short ranges (median of 2 miles, Section III-A).

(S) Ground clutter not only hampers the AI radar in acquisition but frequently makes it impossible for the radar to lock-on a target or maintain lock even after a visual acquisition. This radar limitation forces the fighter pilot to select missiles with much smaller launch envelopes (e.g., AIM-9B). The reduced launch envelopes impose greater problems in positioning for attack and hence reduce the probabilities for success (Section III-C).

## AIRCRAFT REARWARD VISIBILITY

(S) The study findings concerning acquisition of enemy aircraft in SEA (Section III-A) emphasize the need for visibility at all bearings and elevations around the U.S. fighter. The analysis of the attack phase (Section III-B) emphasized the importance and dangers of rear-quadrant attacks and stressed the need for improving visibility to the rear of the U.S. fighter aircraft. Restricted visibility contributed to the inadvertent loss of contact with the enemy causing termination of the engagement (Section III-D).

## MAN-MACHINE COMPATIBILITY

(S) The qualitative analysis (Section IV) identified the following as man-machine compatibility problems: distraction of the pilot's attention from observing enemy aircraft by cockpit switching procedures; the possibility for pilot error in arming, aiming, firing or jettisoning of weapons; and the training requirements of the present U.S. weapon systems. Some man-machine weaknesses were accented by the character of the SEA air war, such as the requirement for the pilot to maintain visual contact with the enemy while performing the switching procedure.

[redacted]

(S) Studies of the firing phase (Section III-C) substantiate the qualitative analysis findings. For example, the proper utilization of the F-105 gunsight was severely hampered by the multiple switch procedure; therefore restricting needed capability.

CONCLUSIONS

(S) This study of air-to-air encounters in Southeast Asia identified a number of R&D assets and problem areas relating to future fighter aircraft weapons systems.

(S) The following problem areas were determined to be the most significant and deserving of serious R&D attention:

IMPROVED LOCATION AND DIRECTION INFORMATION;
IMPROVED WEAPON RELIABILITY;
INCREASED WEAPON VERSATILITY;
IMPROVED TARGET DISCRIMINATION AGAINST GROUND RETURN;
IMPROVED AIRCRAFT REARWARD VISIBILITY; and
INCREASED MAN-MACHINE COMPATIBILITY.

(S) Developing specific solutions to these problem areas will require detailed investigation of all contributing operational factors and applicable technologies, in conjunction with an evaluation of related on-going R&D programs.

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## II. BACKGROUND AND STUDY APPROACH

(C) The purpose of Project RED BARON was to collect detailed data to analyze air-to-air encounters in Southeast Asia and to identify research and development required for future fighter aircraft weapons systems. All air-to-air encounters through July 1967 were analyzed in this study.

(C) The original task order requested analysis of air-to-air events from the first known event in April 1965 through 1 March 1967. A significant increase in the intensity of the air-to-air war during April and May of 1967 prompted an extension of the time period covered by the study to 1 August 1967.

(C) Since information relative to all aspects of enemy encounters was desired (including disengagements and inability to engage) the study included all contacts with bogies not identified as friendly even if they were only sightings and involved no maneuvers. Furthermore, this study was limited primarily to encounters involving high-performance U.S. aircraft. A total of approximately 400 events have been identified and the results of F-4, F-8 and F-105 encounters (approximately 350) are analyzed in this volume. Approximately 85 percent of the encounters were with USAF forces. The data also include one F-100 encounter.

### A. CHARACTER OF THE AIR-TO-AIR WAR IN SOUTHEAST ASIA

(C) Essentially all of the air-to-air encounters considered in this study involved MIG-17 or MIG-21 aircraft with the exception of two instances when Colt-type (AN-2) aircraft

[redacted]

were intercepted in night engagements. In general, the encounters took place over North Vietnam although a few were in the vicinity of Hainan Island.

(C) The nature of the war placed operational constraints on U.S. pilots involved in the air-to-air encounters; in most cases their missions were defensive. Generally, fighter aircraft (F-4s and F-8s) were assigned to escort a strike force or other support aircraft thus limiting opportunities to pursue the enemy. Since the primary mission of the fighter was to protect the strike force, the enemy would be engaged only if the mission was threatened. The primary mission of F-105 aircraft was generally a strike mission and their primary objective was to deliver ordnance on target. Thus, they were instructed not to engage unless directly threatened. There was a few instances when U.S. fighter aircraft were employed in MIG sweeps and only then did they assume an initially offensive role.

(C) A further constraint on operations was the requirement for positive identification. This required visual confirmation of the target since numerous nonhostile aircraft (both U.S. and neutral country) might be operating in proximity. Thus, air-to-air battles except for a few isolated instances depended on visual cues. The requirement for positive identification before firing required a close approach which in some cases forced the U.S. fighter to pass entirely through the missile launch envelope in order to make the identification. Thus, the element of surprise was lost as well as exploitation of the advantages offered particularly by the longer range all-aspect missiles.

(S) The North Vietnamese air defense environment had a significant effect on U.S. air-to-air operations. It was characterized by the fact that (1) U.S. aircraft operated in a hostile GCI environment, (2) surface-to-air missiles were used for the first time in a war, and (3) the opposing enemy

fighter force was relatively small compared to number of U.S. aircraft involved. This differed sharply from the Korean conflict wherein both the U.S. and enemy forces had GCI capability and approximately equal numbers of fighter aircraft in the combat area.

The North Vietnamese Air Defense System

(C) There have been a number of recent studies[1] covering various aspects of the air war in North Vietnam (NVN) and these have included a detailed examination of the air defense environment. A brief summary of this environment is included to describe the conditions under which the air-to-air fighters operated. A more detailed description is given in Appendix A.

(S) The NVN Air Defense System had developed from a rudimentary system in 1964 to a relatively complex, up-to-date, and formidable system in 1967. The weapons employed as part of the air defense system can be classified into three major groups: (1) ground-based guns, (2) surface-to-air missiles, and (3) fighter aircraft.

(SNF) The AAA environment encountered in NVN has been extremely dense, particularly in portions of Route Packages V and VI. By the end of July 1967, more than 5600 37mm/57mm guns and 1700 85mm/100mm guns were deployed in North Vietnam. This has had a significant impact on choice of tactics for strike aircraft which, in turn, influenced the altitudes of the protecting fighter force. The antiaircraft artillery capability was further supplemented by surface-to-air missiles.

[1] (U) a. JCS Air Operations Study Group -- Joint Chiefs of Staff, Factors Affecting Combat Air Operations and Aircraft Losses in Southeast Asia (U), November 1966, TOP SECRET/NOFORN.

b. Night Song Study Group -- Joint Chiefs of Staff, Night Song Report (U), Volumes I and II, 30 March 1967, TOP SECRET/NOFORN.

c. WSEG/IDA Study -- Analysis of Combat Aircraft Losses in Southeast Asia (U), IDA Report R-140, WSEG Report 128, dated April 1968.

(SNF) The SA-2 was initially used in combat in July 1965. Since that time there has been a steady buildup of prepared sites to a level of 235 sites by the end of July 1967. It should be noted that these are not occupied sites but that approximately 25 SAM battalions move between these sites on a scheduled (but nonpredictable) basis. The heaviest concentration of these sites has been in the Hanoi-Haiphong Area, but strategic location of sites near the DMZ and in Route Package V have also been employed by the North Vietnamese to protect these areas.

(SNF) The enemy fighter inventory consisting of various versions of the MIG-17 and MIG-21 has remained relatively constant during the past two years at a level of approximately 50-60 MIG-17s and 15-20 MIG-21s. As previously mentioned, this is in sharp contrast to the Korean War when the North Koreans had a force of approximately 500 MIG-15 fighters. Since the beginning of 1967, a large part of the MIG-17 inventory has been stationed outside of North Vietnam. Similarly, 50-60 percent of the MIG-21 force has been moved out of North Vietnam since September 1967. These moves appear to be related to U.S. strike forces bombing North Vietnamese airfields. As will be discussed in the MIG tactics section, there has been an observed change in North Vietnamese control procedures in that fewer aircraft are up at any one time but are controlled in a more selective manner and appear to attack only when they think they have an advantage. As a result, they have been more effective. A description of enemy aircraft and ordnance is given in Appendix B.

(S) The GCI system employed to control MIG aircraft is a manual system. However, control procedures have been achieving a reasonable degree of sophistication as evidenced by the simultaneous employment of AAA, SAMs and MIGs in an integrated fashion. This represents a significant change from the early days of the air war when presence of MIGs would

indicate an absence of SAMs and vice-versa. The effectiveness of the GCI system is evidenced by the fact that MIG interceptors contact U.S. aircraft during cloudy as well as clear weather and approach in a manner indicative of radar-initiated intercept.

(S) The radar order-of-battle (ROB) in North Vietnam consists of a diversified surveillance net and fire control radars. As of early August 1967, more than 400 sets have been identified in North Vietnam including over 200 early-warning GCI radars, 175 AAA fire control radars, and approximately 25 FANSONG-B missile control radars.[1] The radar deployment both in terms of numbers of equipments and the wide frequency diversity is particularly impressive. While ECM has been extensively employed by the U.S. to degrade the effectiveness of the North Vietnamese surveillance net and weapon control radars, the jamming effort has not been able to deny the combined radar net the capability of maintaining an accurate track of penetrating flights. Thus, successful GCI operations are at this time well within the capability of the North Vietnamese air defense system.

MIG Tactics

(S) In general MIGs rely on GCI to position them close to the target before the pilot takes over the intercept.[2] Firing is usually accomplished visually although it is possible for some MIG-21 aircraft to fire without visual reference. Soviet training manuals indicate that they favor a two-ship element with the wingman flying about 5000 ft to the rear and 50 degrees off the leader's wing. Three types of intercepts are practiced, pursuit curve, parallel course attack, and lead cut-off attack.

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[1](U) Source: Defense Intelligence Agency, 9 August 1967.

[2](U) 8th Tactical Fighter Wing, Tactical Doctrine, DCO-67-S-01070, 1 March 1967, SECRET.

(S) The pursuit curve is used with a track crossing angle of 30 degrees and a closing velocity of 100 knots. In a typical GCI approach profile the MIG-21 fighter is vectored at about a 30 degree angle from the rear of the target so that visual detection may take place through the glass on the side of the canopy as the fighter approaches the target at a closing rate of about 50 to 100 knots.

(S) The parallel course attack is a displacement to the side of the target and on the opposite heading, and at the proper time the GCI controller turns the MIG into the target for a tail attack. According to the Soviets, if an intercept is attempted by a MIG-21 on a counter heading, that is, a head-on engagement, visual detection is nearly impossible due to forward visibility restrictions.

(S) The lead cut-off attack is similar to rejoining aircraft into the formation by leading and cutting off to the inside of the aircraft under attack.

(S) The MIG has primarily been committed to low and medium altitude attacks against U.S. strike forces. However, attacks have been made against EB-66 aircraft at 30,000 feet (particularly by the MIG-21). The hostile GCI environment within which U.S. aircraft are forced to operate gives the MIG the definite advantage and places stringent demands on visual scan.

(S) When attacking a maneuvering target the Soviets first recommend use of the IR missile.[1] They train their crews to overlead the target and reduce g loading to permissible launch parameters. If a missile attack cannot be accomplished cannon may be used although only 60 rounds of ammunition are carried. A normal pursuit curve is used when attacking a maneuvering

[1](U) Hq. 388th Tactical Fighter Wing, Combat Tactics and Techniques, DOA-67-03311, 22 August 1967, SECRET.

target. A desired firing range for cannon is under 2000 feet, however, firing can be expected as far out as 3300 feet.

(S) The maneuvering advantage of the MIG-21 relative to the F-105 is exploited by defensive tactics against the F-105. If normal acceleration can first gain the MIG separation, this will be followed by a vector to a position advantage. Further, a climbing high-g turn is recommended if a speed surplus exists. Alternatively, it can be a diving high-g turn for a low position. This high-g turn is considered by the Soviets to be the MIG-21's best defense against the missiles or guns of the F-105.

(S) Another tactic encountered during the middle part of 1967 was the so-called "wagon wheel" employed by MIG-17 aircraft.[1] During this period larger flights of aircraft (perhaps 8 to 10 in number) were common. The tactic was utilized when these flights encountered U.S. aircraft and involved a descent to low altitude and the setting up of a wide circular pattern. Because the MIGs were spread out around the circumference it was difficult for U.S. aircraft (e.g., the F-4) to make an attack on any single MIG without coming under attack from a trailing MIG. In addition, the low altitude used precluded the F-4 from obtaining either a radar lock due to the proximity of the ground, or a good IR source due to background IR radiation. Thus, the combination of low altitude and highly maneuvering targets negated effective launch of U.S. missiles. While the F-4 was continually able to reposition for attack under these situations by yo-yoing in and out of the wagon wheel, insufficient time was available to permit an attack. Often a single MIG-17 was seen in the area, and it was hypothesized by U.S. pilots that this was a lead or director aircraft.

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[1](U) See Volume III of this report.

[redacted]

(S) Experience has shown that the MIGs do not engage unless they think they have an advantage (i.e., they chose when and where to engage). They have been observed to run rather than engage the F-4C, however, they are generally airborne any time strike fighters are in the area. Just because MIGs are airborne is no assurance that the enemy will or will not use SAM and AAA defenses simultaneously. If the MIG force is outnumbered they may be ordered to disengage. When they disengage U.S. aircraft must be alert for concentrated AAA and SAM defense.

(S) There has been increasing evidence of changes in MIG fighter tactics since August 1967 which have resulted in increased U.S. losses.[1] During the period of the study the North Vietnamese Air Force attempted a high volume of intercepts and indulged in dogfighting in the congested air space within the 30-mile circle around Hanoi. This complicated their intercept problems and GCI control training. The more recent success level appears to be largely a result of fewer MIGs being handled at any one time by controllers of increased skill level. This change in operating procedure represents a critical element of NVN air defense capability. The combination of increased skill level of the controllers and their control of fewer aircraft is one of the major factors which have made the hit-and-run tactic of MIG-21s on F-105s as successful as they have been in the latter months of 1967. Typically, a high speed (usually supersonic) descending pass is made against trailing or isolated U.S. flights and when the MIG-21s make visual acquisition and reach missile range they have both the speed and position advantage. In addition they are also positioned for safe high speed withdrawal.

[1](U) Sources:
a. Hq. PACAF, TACEVAL Bulletin, November 1967, SECRET.
b. Hq. PACAF, TACEVAL Bulletin, December 1967, SECRET.
c. CINCPACAF Msg: 010534Z Nov. 1967; PADAF Bulletin No. 49, SECRET.
d. CINCPACAF Msg: 050324Z Jan. 1968; PADAF Bulletin No. 53, SECRET.



[redacted]

(S) To react to this attack, U.S. aircraft had to jettison air-to-ground ordnance and accelerate. Therefore, it was difficult to obtain overtake speed within the available fuel limits to successfully launch missiles. MIGCAP aircraft had frequently driven off these intercept attempts but the improved NVN GCI procedures have been successful in avoiding U.S. CAP aircraft. By late December and early January 1968 the enemy GCI controllers were able to use mixed forces of MIG-17s and MIG-21s and coordinate their attacks from opposite directions and from low as well as high altitudes and at greater distances from Hanoi than before. Multiple MIG approaches and their decoying effects have attempted to degrade CAP flight protection of the entire force throughout their mission. However, it appears that on some major raids U.S. CAP positioning has been successful in preventing an attempt by MIGs to engage.

Character of Air-to-Air Encounters

(C) In attempting to characterize air-to-air combat it is apparent that there is no "typical" air-to-air encounter. Too great a number of variations exist in the parameters describing encounters to permit a single description. However, there are some factors common to the air-to-air encounters in SEA which can be used to characterize them, including:

- Visual contact.
- High-g maneuvering.
- Close-in combat.
- Rapid situation change.
- Generally subsonic speeds.

These characteristics contributed significantly to the air-to-air battle which may be likened to the classical dogfight.

(C) As previously indicated, air-to-air battles were generally dependent on visual cues. It may be noted that visual contact was critical and when broken, usually, it

either was not regained, or permitted the enemy to gain an attack position. The combat was controlled by the pilot's assessment of his adversary's actions. Visual cues were the best and frequently the only method of providing this information from initial identification through the assessment of the results of ordnance expenditure.

(C) The most successful method to defeat an opponent's attack was to present a highly maneuvering target. This was necessary to defeat both the enemy fighter's gun and missile attacks and to avoid enemy ground defenses (AAA and SAM). In addition to defeating enemy attacks, maneuvering was necessary to keep the enemy in sight and to gain attack position.

(C) Because of the necessity of maintaining visual contact the ranges between combatants remained short. As a result, the encounters occurred in limited air space. Further, since the air battles were characterized by close-in, high-g maneuvering, situations developed and terminated within extremely short time periods, usually a matter of seconds. Because of the limited separation, head-on attacks were rare.

(C) Speeds during combat varied but in general they were in the high subsonic range with occasional bursts to supersonic speed (up to about Mach 1.3). These bursts occurred during short periods of acceleration or at the end of a dive. The fact that sustained supersonic speeds were uncommon was due to two major factors: (1) The action started at the subsonic speed of the escorted aircraft or cruise speed while in CAP orbit, and acceleration to high speeds was frequently impossible because of insufficient time and subsequent maneuvering; and (2) The battles were fought at altitudes which did not permit airframe operation at the high Mach numbers.

Results

(S) The confirmed combat results of air-to-air encounters

[redacted]

Table II-1 (S). CONFIRMED COMBAT RESULTS OF AIR-TO-AIR ENCOUNTERS IN SEA (U)
3 APRIL 1965 TO 1 AUGUST 1967

| Confirmed U.S. Kills | MIG-17 | MIG-21 | Other | Total |
|---|---|---|---|---|
| by F-4B | 3 | 0 | 1[a] | 4 |
| by F-4C/D | 23 | 21 | 0 | 44 |
| by F-8 | 11 | 1 | 0 | 12 |
| by F-105 | 23 | 0 | 0 | 23 |
| by other[b] | 3 | 0 | 0 | 3 |
| Total | 63 | 22 | 1 | 86 |

| Confirmed U.S. Losses | by MIG-17 | by MIG-21 | Total |
|---|---|---|---|
| F-4B | 1 | 0 | 1 |
| F-4C/D | 4 | 0 | 4 |
| F-8 | 3 | 0 | 3 |
| F-105 | 4 | 5 | 9 |
| Total | 12 | 5 | 17 |
| Other[c] | | | 4 |
| TOTAL U.S. LOSSES | | | 21 |

[a]AN-2

[b]2 kills by A-1; 1 kill by A-4.

[c]One A-1, A-4, RC-47, KA-3B.

in SEA from April 1965 to 1 August 1967 and 3 January 1968 are presented in Tables II-1 and II-2, respectively.[1] In addition to the confirmed kills shown, as of 1 August 1967, there were 10 probable MIG kills by U.S. aircraft. While U.S. losses to enemy aircraft represent only a small fraction of total U.S. losses over NVN (21 losses out of 635 combat losses as of 1 August 1967), their significance is far greater than indicated by the percentage of attrition shown. It must be remembered that the results of encounters represent a war with a small enemy fighter aircraft force coupled with heavy ground defenses.

[1](U) Table II-2 has been included since the investigation of a few selected ordnance expenditures extended to the 4 January 1968 date. A majority of the analyses cover the time period of Table II-1 (to 1 August 1967).

[redacted]

[redacted]

Table II-2 (S). CONFIRMED COMBAT RESULTS OF AIR-TO-AIR ENCOUNTERS IN SEA (U)
3 APRIL 1965 THROUGH 3 JANUARY 1968

| Confirmed U.S. Kills | MIG-17 | MIG-21 | Other | Total |
|---|---|---|---|---|
| by F-4B | 4 | 3 | 1[a] | 8 |
| by F-4C/D | 31 | 25 | 0 | 56 |
| by F-8 | 12 | 1 | 0 | 13 |
| by F-105 | 28 | 0 | 0 | 28 |
| by other[b] | 3 | 0 | 0 | 3 |
| Total | 78 | 29 | 1 | 108 |

| Confirmed U.S. Losses | by MIG-17 | by MIG-21 | Total |
|---|---|---|---|
| F-4B | 2 | 0 | 2 |
| F-4C/D | 6 | 5 | 11 |
| F-8 | 3 | 0 | 3 |
| F-105 | 5 | 14 | 19 |
| Total | 16 | 19 | 35 |
| Other[c] | | | 4 |
| TOTAL U.S. LOSSES | | | 39 |

[a]AN-2

[b]2 kills by A-1; 1 kill by A-4.

[c]One A-1, A-4, RC-47, KA-3B.

(S) While the data provide an interesting summary of air-to-air action over NVN, great care must be taken when interpreting the results, particularly since the tables provide only a cumulative summary as of a given date. However, the losses and kills are spread over long time periods and are not homogenous with time. For example, the first two F-105 losses were by MIG-17s, and following a no-loss period of 14 months, were followed by two more F-105 losses spread over a 6-month period. Conversely, the F-105 losses to MIG-21s all occurred after these losses and the majority since July 1967. No reliable time trends could be developed from the above data since sample sizes during most time intervals were too small to develop statistically significant results.

[redacted]

## B. STUDY APPROACH

### Introduction

(C) The complexity of real-world air-to-air combat is the result of the sequential decision processes of two or more pilots and the resulting series of interacting maneuvers of the high performance aircraft involved. Additional complexities result from the employment or attempted employment of the sophisticated avionic and weapon systems in the often rapidly changing offensive and defensive roles of the combatants. To examine the fighter aircraft, avionics and weapons systems employed in the SEA air-to-air battles, detailed information was necessary for every phase of combat. The complex interdependence of the fighter systems and subsystems would necessitate the recording of special information in considerable detail before meaningful analyses could be attempted.

(C) Investigations of all known SEA air-to-air combat data sources revealed the inadequacy of the official reporting media for supplying data with sufficiently detailed information to permit meaningful analyses of systems performance. This finding had also been substantiated for aircraft loss and damage and related studies conducted by IDA/WSEG. Quantitative data from instrumented aircraft were unavailable during the study period, although it should be noted that a small percentage of strike aircraft operating in SEA, are now equipped with recorders[1] for structural analysis data. Thus, the only technique available for retrieving the necessary detailed data was by means of in-depth interviews of the air-to-air engagement participants. A detailed discussion of the Data Definition and Collection Program utilized for this study is presented in Appendix C.

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[1](U) These record the following parameters: velocity, "g's", and altitude.

## Data Collection

(U) Implementation of aircrew interviews was complicated by lack of sufficient information for identifying the participants of previous air battles and the lack of tools and techniques for conducting comprehensive and meaningful interviews. Considerable "detective work" was necessary to identify the air-to-air encounters and the participants since this information was often not reported in official message traffic. Appropriate tools and techniques for conducting comprehensive interviews were developed by the project staff with the aid of psychologists and technical personnel from government, industry and the military services who helped formulate the technical and operational questions needed for the interviews. Special, large scale (1:125,000) maps of North Vietnam with transluscent overlays were used during the interviews to record the geometry of the engagement, including flight paths of both U.S. and enemy aircraft. It was found that the landmarks identified on the maps frequently aided the interviewee in reconstructing the engagement.

## Data Reduction

(U) The information obtained from the interviews along with with data from the official reporting channels was then utilized by the project staff to reconstruct the events in detail. This made it possible to resolve conflicts in the data by using those data elements consistent with a logical development of the event.

(U) General interest in the collected data expressed by the Services, airframe and missile contractors as well as study and analysis institutions influenced the decision to publish the reconstructed events separate from the analysis. Each event was identified only by a number and aircrew or official call signs were not used. Anonymity of the interviewees was assured during the interviews to permit greatest possible freedom of comment and criticism. The data for F-4 and F-8

events through 1 March 1967 have been published as Volume I of this report, and the remaining data will be published in Volumes II and III.

(U) To insure that the large data base could be efficiently utilized, an automated Event Index was developed. The index contained data sufficient to categorize each event and to permit rapid identification of specific events for analyses.

Analysis

(U) The data collected were analyzed using two independent approaches: a quantitative analysis which examined the air-to-air engagements by separate phases, quantified the key parameters influencing each phase, and analyzed these across the spectrum of all events; and a qualitative analysis which examined each event as an entity. Thus, the qualitative analysis examined the interaction between the defined combat phases as well as other nonquantifiable factors, for example, enemy mistakes.

(C) The quantitative analysis examined the identifiable phases of air-to-air combat. The flow chart in Figure II-1 indicates their relationship to each other. The engagement always begins at the acquisition and identification phases. Since no knowledge was available concerning these first phases from the enemy's point of view, only U.S. actions can be recorded. The following phases, however, may be described as either U.S. or enemy actions and include challenge, attack, position to fire, firing, damage and separation phase. In any given air-to-air engagement the action flow may recycle to either U.S. action or enemy action or to any other phase until finally one or both combatants terminate the engagement.

(U) The phases as listed above are defined as follows:

- Acquisition. The radar or visual detection of an aircraft (or evidence thereof, i.e., contrail).

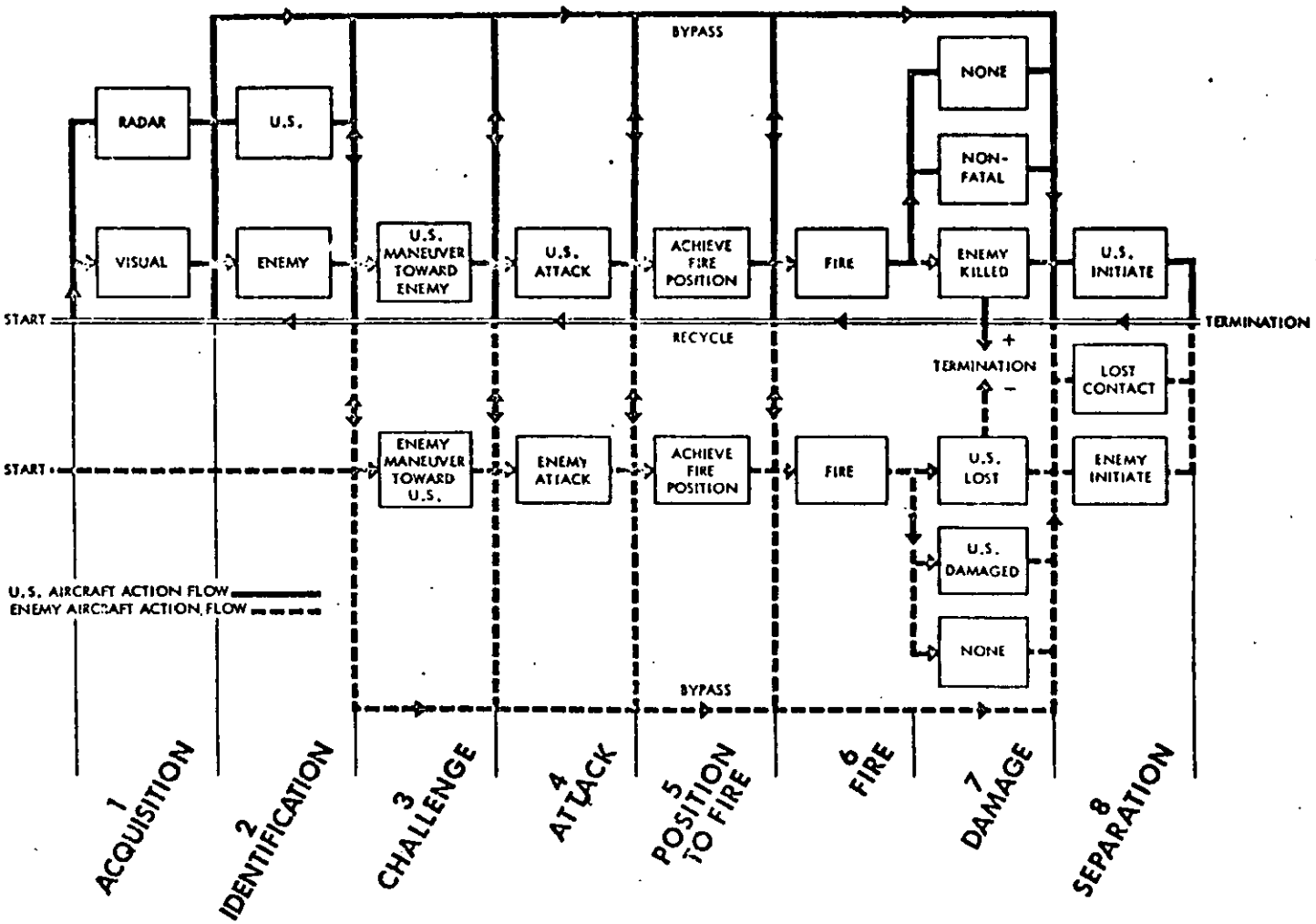


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FIGURE II-1 (S). Encounter Flow Chart (U)

- Identification. The definite determination of identity of the aircraft acquired.
- Challenge. The portion of the engagement where one participant takes the first aggressive action that can be discerned by his opponent.
- Attack. The phase of maneuvering to achieve tactical advantage.
- Position to Fire. The period of maneuver necessary to place the opponent in the firing envelope of the weapon to be used.
- Fire. The period of ordnance expenditure (for U.S. aircraft this included attempts at ordnance expenditure).
- Damage. The results of the firing phase. Damage was classified as none, damage, or kill and further classified as possible, probable, or confirmed.
- Separation. The termination phase of an engagement which ends in loss of contact.

(U) The concurrent but independent qualitative analysis phase was conducted for each event as an entity. This approach was used so that many important factors, not readily quantifiable, would not be overlooked. The analyses were conducted by panels of experts in the field of aircraft, avionics, and air-to-air weapons design (missiles) together with a qualified fighter pilot. The panel moderator, who was a member of the project staff, guided the efforts of the panel. For each event, all factors in the engagement which influenced the final outcome were studied and identified. After the panel reached agreement on the relevant factors, the research and development implications represented by the factors were identified. In some cases these implications were identified as assets of the current weapons system, rather than R&D problems. These were also documented in order that the desirable characteristics of current weapons systems be incorporated or improved in future weapon systems design. This precaution was taken to prevent "designing out" of new systems those characteristics proven advantageous in combat.

(U) The frequency of occurrence of the R&D problems is not

necessarily a measure of importance as related to success in air-to-air combat. To aid in establishing the significance of R&D problems identified by the qualitative analysis, the results of the independent quantitative analyses were employed. Where the results of the quantitative and qualitative analyses were mutually corroborative, strong emphasis was given to the R&D problem so identified. Those R&D problems not supported by the detailed analyses of each phase were then considered separately and given less emphasis.

Definitions

(U) To establish a consistent nomenclature for categorization of the data, several definitions were developed. They are presented here and are used throughout the analysis:

- An event is a description of a group of actions related in time and space and identified as a unit for the purposes of documentation. An event usually involves the action of one flight.
- An encounter is a time continuous sequence during which at least one friendly aircraft becomes aware of one or more possible enemy aircraft, and attempts to maintain either visual or radar contact with them. The encounter ends when it is judged that all participants have broken contact. Frequently, an event consists of multiple encounters.
- An engagement is an encounter which includes aggressive maneuvering by at least one of the participants.
- A sighting is an encounter without aggressive maneuvering on the part of any participant.

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## III. QUANTITATIVE ANALYSIS

(C) The RED BARON Project was formulated as a two-phase program because of the uncertainties in obtaining suitable data for effective analyses of the SEA air battles. The first phase focused major effort on the data collection and event reconstructions. Only after assessment of the quality, character, and extent of the data was the analysis methodology finalized. The quantitative analysis was developed with an appreciation of the data limitations.

(C) The purpose of the quantitative analysis was to investigate some of the many factors (speed, altitude, direction, weapons, etc.), in an air-to-air engagement in order to pinpoint any R&D problems discovered from the analysis. The phases of an engagement have been grouped as follows:

- Acquisition and identification,
- Challenge, and position to fire,
- Fire and resulting damage,
- Termination, and separation.

This grouping was used because these phases were sufficiently interrelated to make the analysis more meaningful than by treating each phase independently.

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## Section III-A

## ACQUISITION AND IDENTIFICATION PHASE

### A. SUMMARY

(S) Data from approximately 350 events in the air-to-air war in SEA have been analyzed to determine the significance of some of the parameters of acquisition and identification. To be properly understood, these data must be viewed with respect to the environment over North Vietnam. SAMs, AAA and GCI had great effect on the results. To summarize the findings:

- Acquisitions were primarily visual for the F-4, exclusively visual for F-8 and F-105 encounters.
- Statistical tests of the data failed to identify either dominant or recessive quadrants in which the enemy was acquired. For the size of the data sample, the frequency of acquisition, statistically speaking, was essentially the same for each quadrant.
- Acquisition range was two miles or less in 50 percent of the cases.
- Due to the short ranges of acquisition, identification was accomplished simultaneously with acquisition in two-thirds of the encounters.

### B. OBJECTIVES

(C) This investigation sought to analyze the data on acquisition and identification in order to:

- Determine if any pattern exists in the distribution of acquisition bearings and ranges.
- Determine the relative frequency of visual versus radar acquisitions.

### C. BACKGROUND AND SCOPE

(S) Acquisition and identification data were obtained from

[redacted]

several sources, including message combat reports, extensive personal interviews, and letter reports from participants in the events included in the study. Interview data were validated by comparison with reports made immediately after the events, and by comparison with interviews of other participants in the same event. Of the 413 events documented in Volumes I, II, and III of the RED BARON Report, approximately 35 percent involved F-4, 5 percent F-8 and 45 percent F-105 aircraft with the remaining from miscellaneous other aircraft types. The quantitative analysis is based on those events which contained data on acquisition ranges and/or bearings, i.e., about two-thirds of the total events. Acquisitions were considered as radar or visual solely from the pilots' viewpoints, disregarding the assistance of external radar vectors, which occurred in only a few events. Acquisitions which were not later positively identified as enemy could not be included in the analysis because the number reported officially was so small, compared to those which were mentioned in pilot interviews, it was felt that erroneous conclusions about the frequency of unidentified acquisitions would be drawn.

(U) Definitions that are pertinent to air-to-air encounters are provided for clarity:

- Acquisition: An acquisition was a radar or visual detection of any enemy aircraft or unit, or some evidence thereof, such as a contrail, that led to a positive identification of the enemy. An acquisition occurred each time a friendly tactical unit detected a different enemy tactical unit. Identification may have occurred simultaneously or at a later time, without breaking contact with the enemy. All acquisitions with data that included clock position[1] and/or range were considered in this analysis.

[1] (U) Clock position - a method used to represent the bearing of a target from an aircraft by visualizing a clock face in the horizontal plane of the aircraft with the sighting aircraft at the center and the hour positions 30 degrees apart. Twelve o'clock is directly ahead of the aircraft, six o'clock directly astern and 3 and 9 o'clock on the right and left sides, respectively.

[redacted]

- Initial Acquistion: For the purposes of this analysis, the initial acquisition was the first acquisition in an event by any member of the flight.
- Subsequent Acquisition: Those acquisitions that occurred after the initial acquisition in an event are referred to as subsequent acquistions.

(U) Initial acquisitions were analyzed separately, as they represented the initial conditions which precipitated the ensuing combat in each event. The subsequent acquisitions were then included for further analysis. In an air battle, subsequent acquisitions -- those which occurred after the initial acquisition and frequently while the U.S. aircraft was maneuvering in an engagement -- precipitated other engagements not associated with initial acquisitions. Two situations representative of subsequent acquisitions were:

- Losing contact with the initially acquired enemy aircraft and after a short time acquiring another, or
- While maintaining contact with an acquired aircraft in one location, another was acquired in a different location.

## D. RESULTS

(U) The parameters of acquisition are related to enemy capability and intent. The adversary who first acquires his enemy has an advantage of time to initiate an attack. The range of acquisition is important because it will equate to time for the crew to prepare for combat and space to maneuver. Range of acquisition is also important to the crew under attack as it equates to time and maneuvering room to thwart the attack, reverse the advantage, or escape.

(S) Full use of the airborne intercept (AI) radar was greatly restricted by the environment in which the events occurred. A continuing need to visually search the area for surface-to-air missiles, antiaircraft fire, and enemy aircraft outside the radar beam, greatly reduced the time available for

[redacted]

monitoring the AI radar scope. Additionally, heavy ground clutter when operating at the lower altitudes over land made the detection of targets extremely difficult. The fact that pilots were constrained to a visual ID before firing partially offset any advantage to be gained by longer range radar acquisitions. Random radar contacts observed but not identified were not included in the analysis because they could have been friendly and thus failed to meet the criteria for an acquisition. A few cases of U.S. aircraft investigating unidentified aircraft which proved to be friendly were reported, but most of these instances were not reported. Since these data were not available from any source, they could not be considered in the analysis, but the cost of these futile intercepts in terms of time and fuel consumption must have been considerable.

(S) Haze often restricted visibility, particularly at the lower altitudes, and hampered visual acquisition. As already stated, the necessity of visual search for MIGs, SAMs, and AAA demanded constant crew attention. The restricted aircraft field of view caused by airframe masking was partially offset by support of other members of the flight and aircraft maneuvering. The silver, metallic color of the enemy airplanes assisted in identification, especially in the early period of the war. Enemy use of camouflaged aircraft became significant later in the period of this analysis (see Appendix B).

F-4, F-8 Aircrew Acquisitions

(S) The acquisition data for high-performance fighter aircraft have been separated from that of aircraft primarily engaged in the strike role. Most of the F-4 and F-8 encounters occurred when the aircraft were assigned missions of MIGCAP, ESCORT, and RESCAP while F-105 encounters occurred while on strike missions.

(S) Data from F-4 and F-8 acquisitions between 1 April 1965 and 1 August 1967 were analyzed. Figure III-A1 represents

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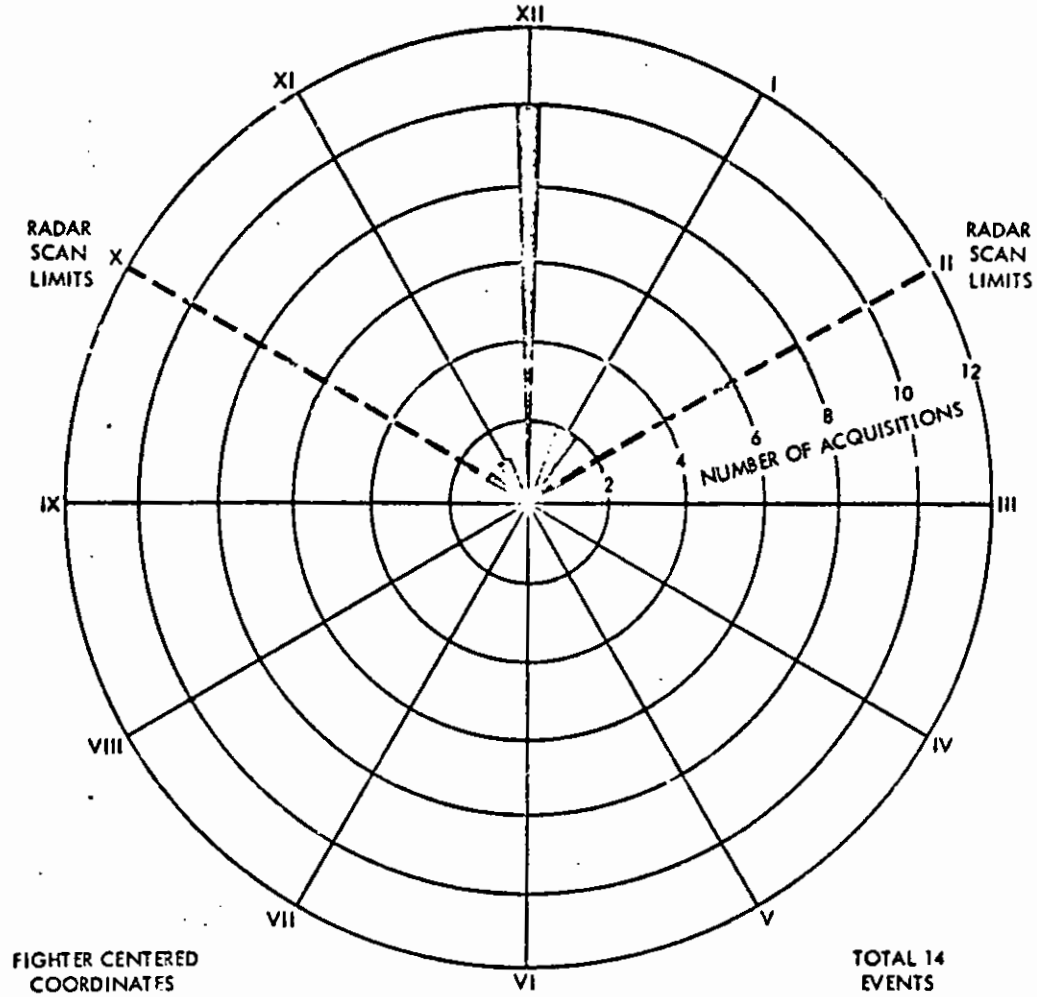


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FIGURE III-A1 (S). F-4, F-8 Initial Radar Acquisitions, 1 April 1965 to 1 August 1967 (U)

14 initial radar acquisitions within the ± 60 degree sector of the radar; 10 of the 14 were at twelve o'clock or directly ahead of the fighter. Figure III-A2 is similar except that it shows initial visual acquisitions which occurred at every clock position around the U.S. aircraft. It is interesting to compare these with the sightings of the Korean War reported in

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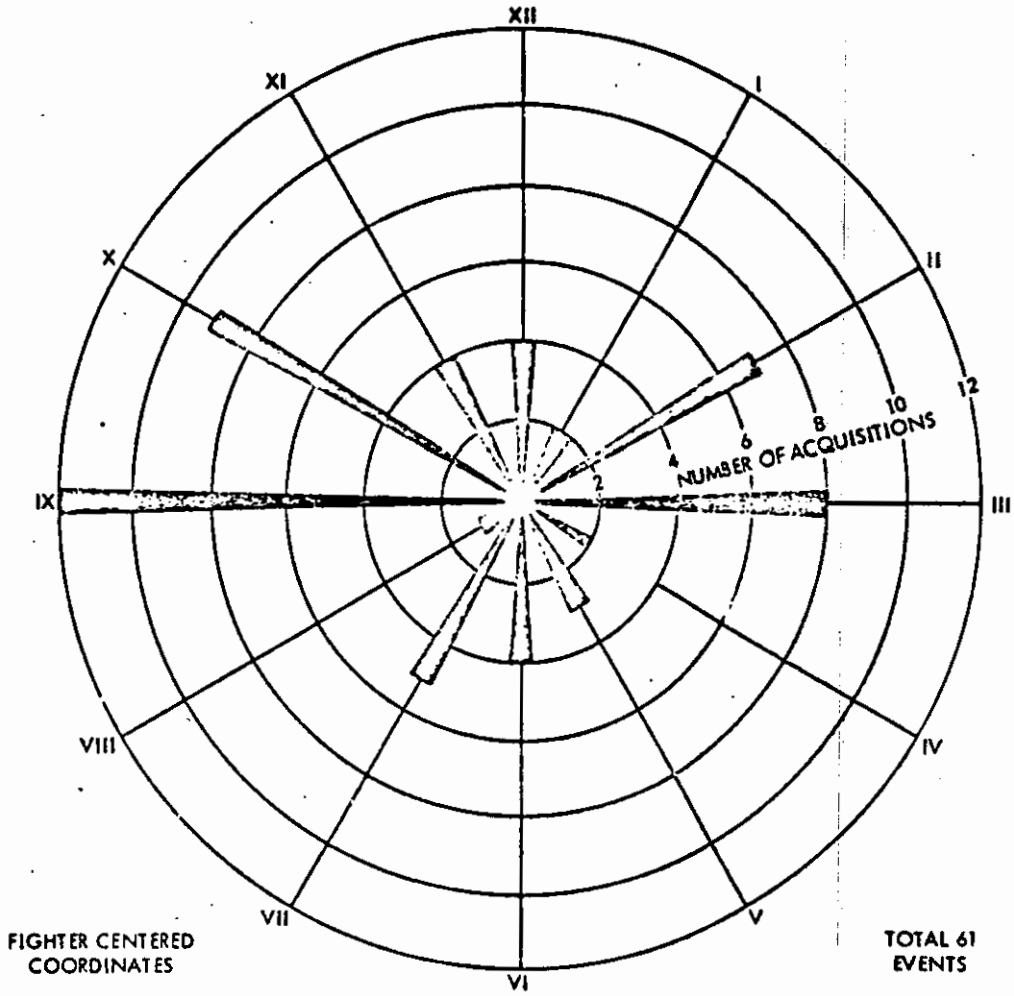


FIGURE III-A2 (S). F-4, F-8 Initial Visual Acquisitions, 1 April 1965 to 1 August 1967 (U)

Project CHORE[1] and shown in Figure III-A3. Over 90 percent of those acquisitions were in the forward hemisphere and all were visual (the F-86 was not equipped with AI radar). The differences in the figures reflect the vast differences in the

[1] (U) Institute for Air Weapons Research, F-86 Versus MIG-15, A Digest of the Briefing on the Analysis of the Korean Air War, University of Chicago, May 19, 1964. Formerly Project CHORE, CONFIDENTIAL.

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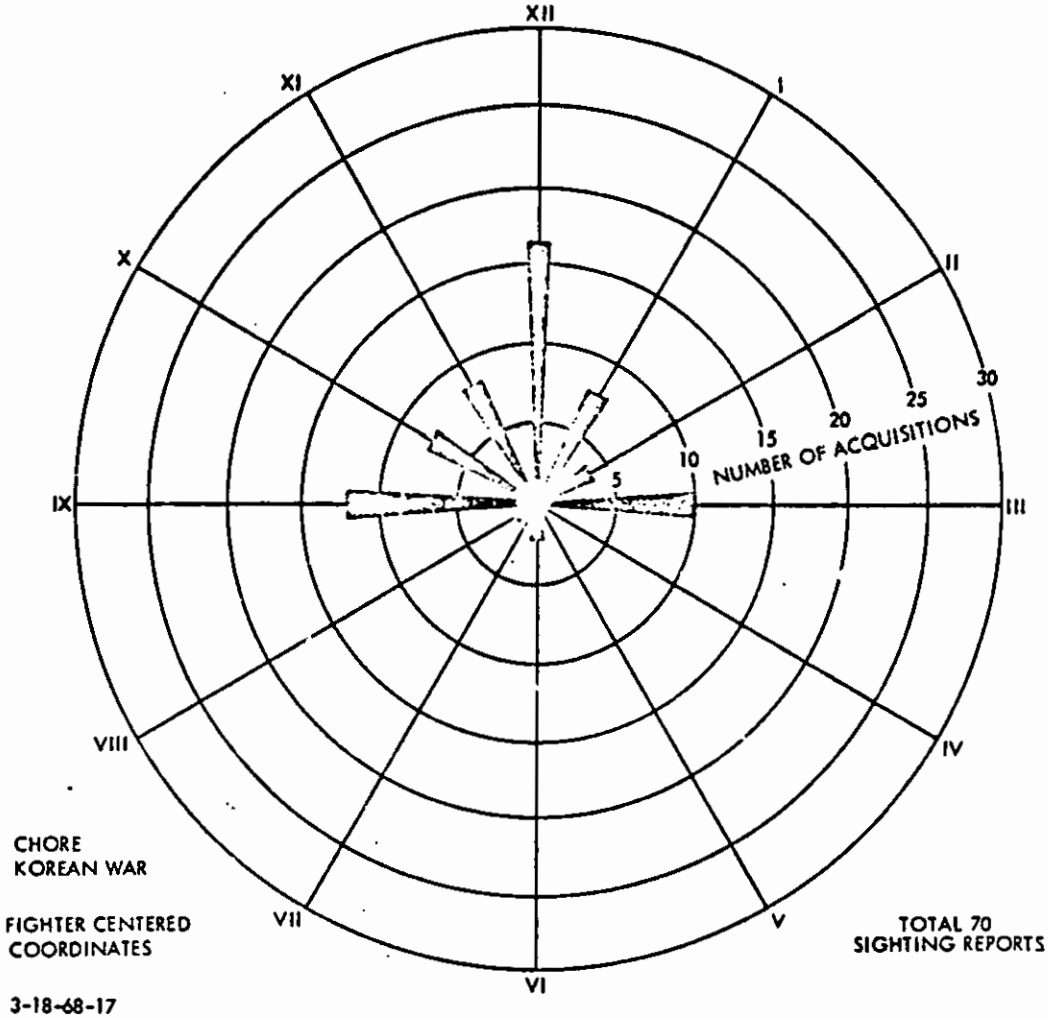


FIGURE III-A3 (C). Clock Position of MIG-15 from F-86 (U)

parameters of the two wars. U.S. pilots in Korea launched directly for MIG Alley to seek out and destroy MIGs. Allied and Communist air forces used GCI radar. Altitudes at acquisition were generally 30,000 to 40,000 feet, and ground fire was not a factor. By contrast, in SEA MIG aircraft were vectored for intercept by a very efficient GCI system while U.S. pilots had to rely primarily on visual acquisition. Also, U.S. fighter missions analyzed in this study were mainly defensive and were

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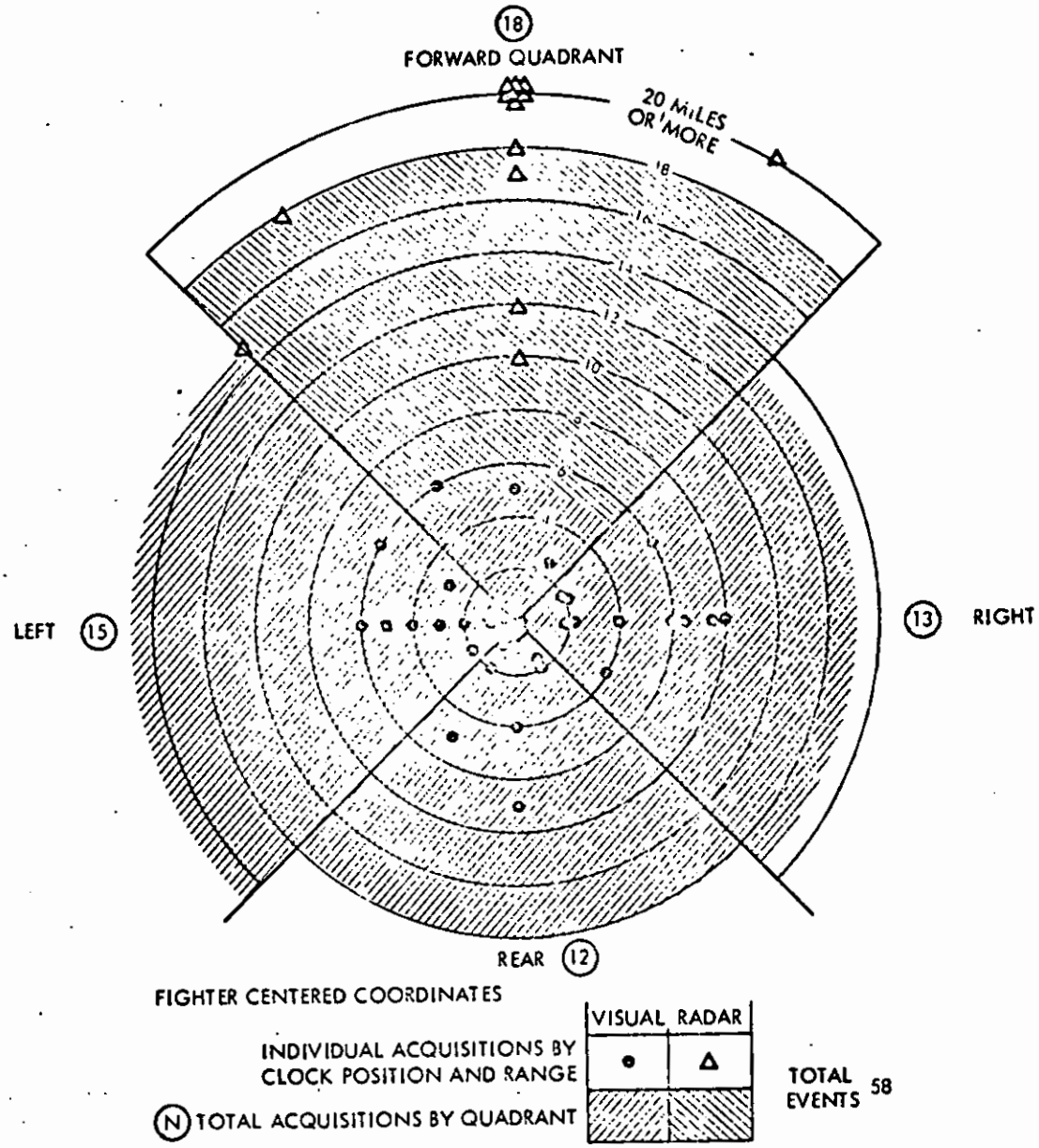


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FIGURE III-A4 (S). F-4, F-8 Initial Acquisitions Versus Range by Event, 1 April 1965 to 1 August 1967 (U)



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flown in a sophisticated MIG, SAM and AAA environment where altitude was chosen as a compromise between the various hazards. The MIG force encountered in SEA was substantially smaller than that encountered in Korea (pp 8-10).

(S) Figure III-A4 is a plot of initial F-4, F-8 acquisitions by clock position and range in 58 cases, both visual and radar. All radar acquisitions were made by F-4 aircraft. The F-8 radar was normally in standby because of the magnitude of ground clutter at the low altitudes flown, and the necessity in the single-place aircraft for a continuous visual lookout. The sample is smaller than that shown in Figure III-A3 because for some acquisitions only the clock position was reported. Radar acquisitions were all beyond 10 miles and visual acquisitions less than 10 miles (except for several detections of contrails at 20 miles and over).

(S) Figure III-A5 displays the distribution by clock position of a total of 121 initial and subsequent acquisitions by F-4 and F-8 aircraft. A chi-square test showed that no quadrant had a statistically greater percentage of acquisitions than any other quadrant for the size of the sample.

(S) Figure III-A6 illustrates both initial acquisitions and subsequent acquisitions which followed initial radar acquisitions. Note in particular that once an enemy was initially acquired visually there were no subsequent radar acquisitions (Figure III-A7). Radar lock-ons during maneuver to fire are not acquisitions. Note also the random cluster of acquisitions inside 4 miles of range for both figures.

(S) F-4, F-8 initial acquisitions for which range data were available are plotted in Figure III-8. The median range is approximately 3 miles. For all acquisitions, initial and subsequent, the median range is about 2 miles. Since most acquisitions were visual and ranges were usually estimated

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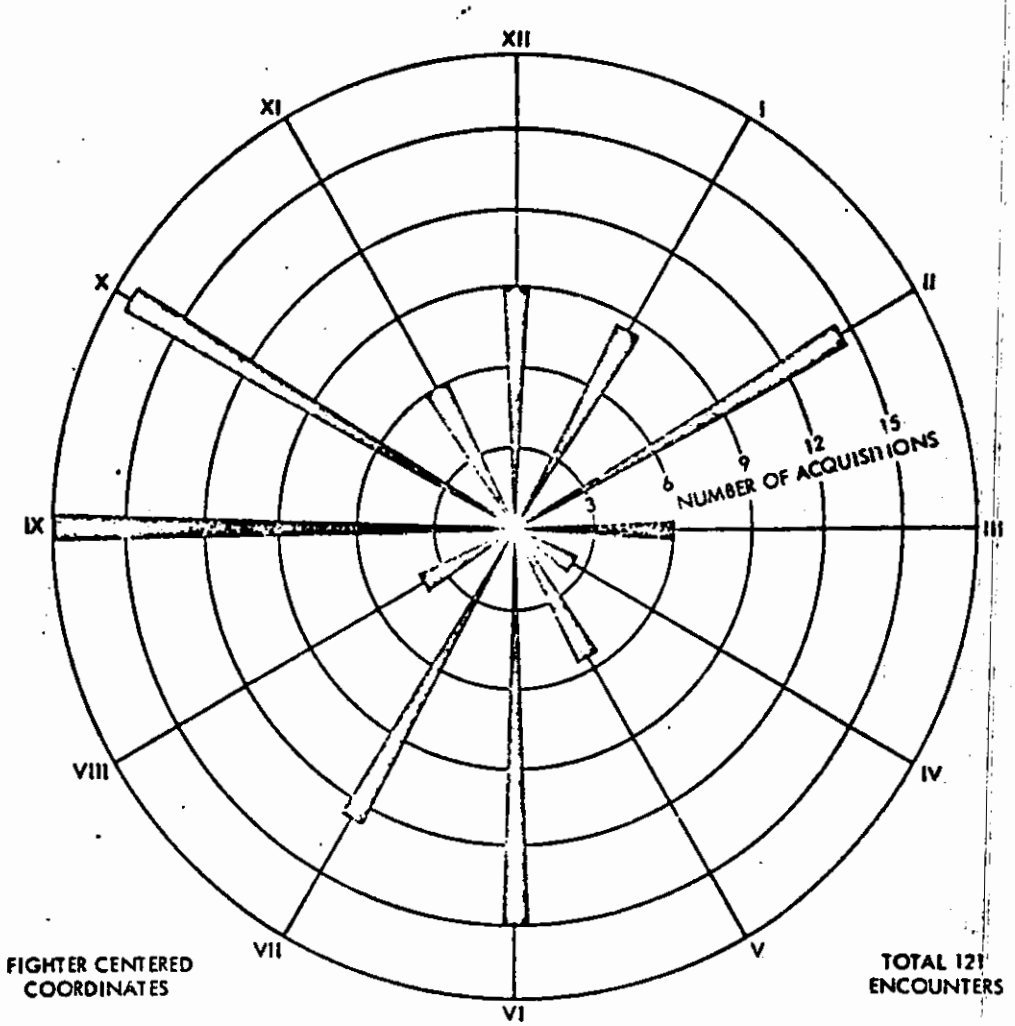


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FIGURE III-A5 (S). F-4, F-8 Visual Acquisitions by Encounter 1 April 1965 to 1 August 1967 (U)

without the aid of radar, the initial acquisitions have been plotted by range increments in Figure III-A9. The greatest number, 15 visual acquisitions, were in the 0 to 1 mile range increment. Compare this with Figure III-A10, a similar graph for the Korean War. The graph of F-86 sightings versus range increments reveals zero detections inside two miles and the greatest number of acquisitions were between 4 and 10 miles.



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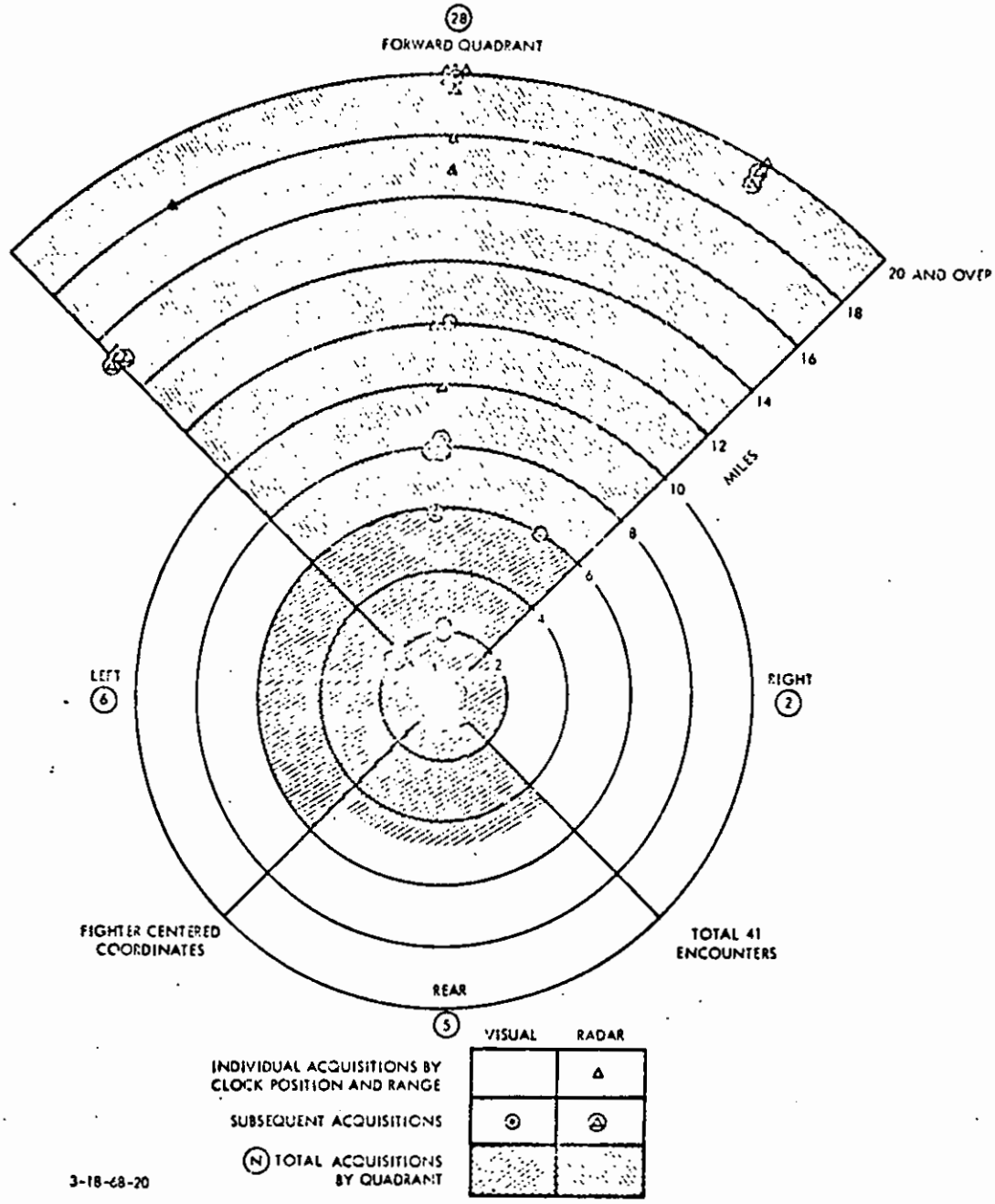


FIGURE III-A6 (S). F-4, F-8 Acquisitions Versus Range Commencing with Initial Radar Acquisition, 1 April 1965 Through 1 August 1967 (U)

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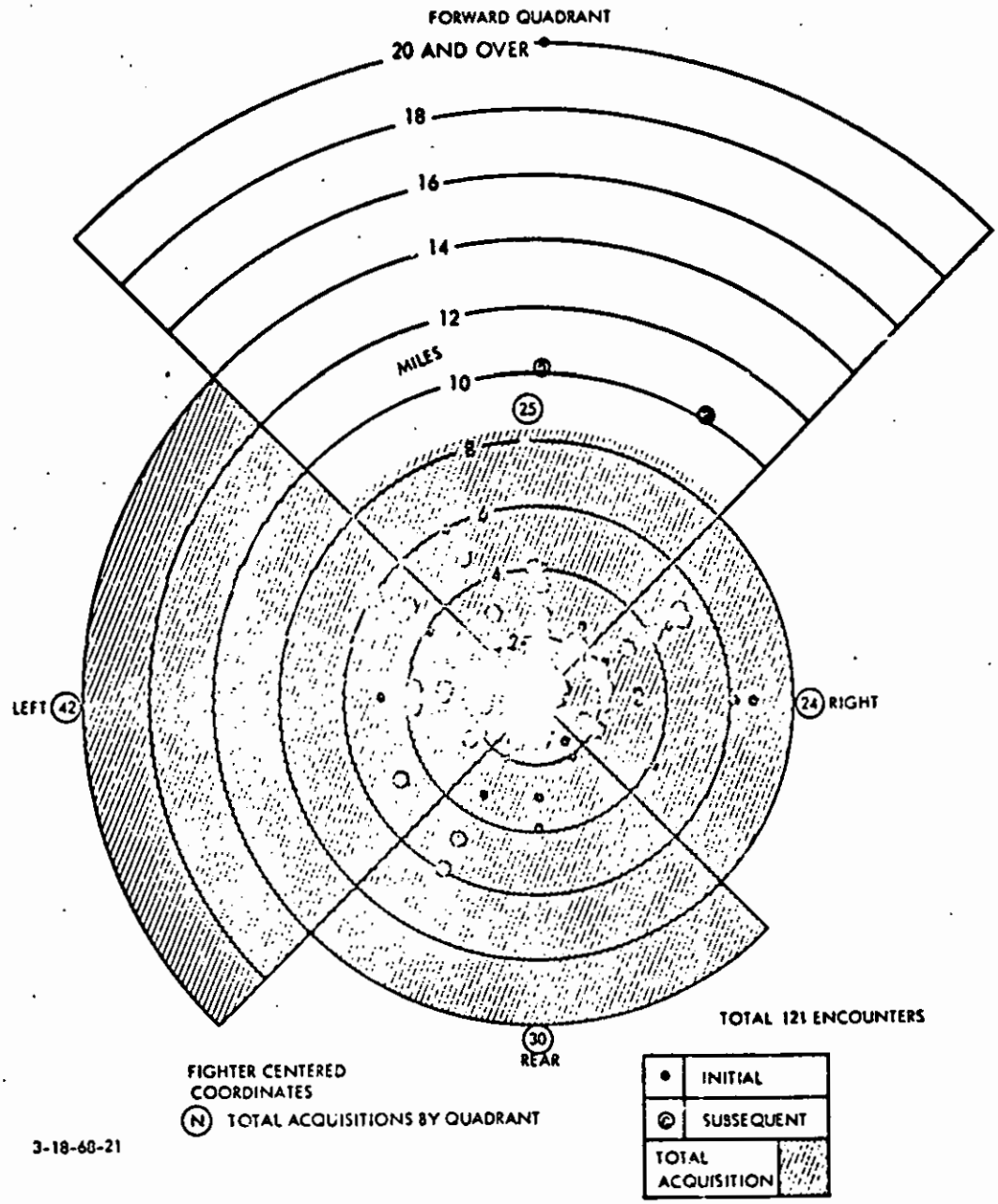


FIGURE III-A7 (S). F-4, F-8 Acquisitions Versus Range Commencing with Initial Visual Acquisition, 1 April 1965 Through 1 August 1967 (U)

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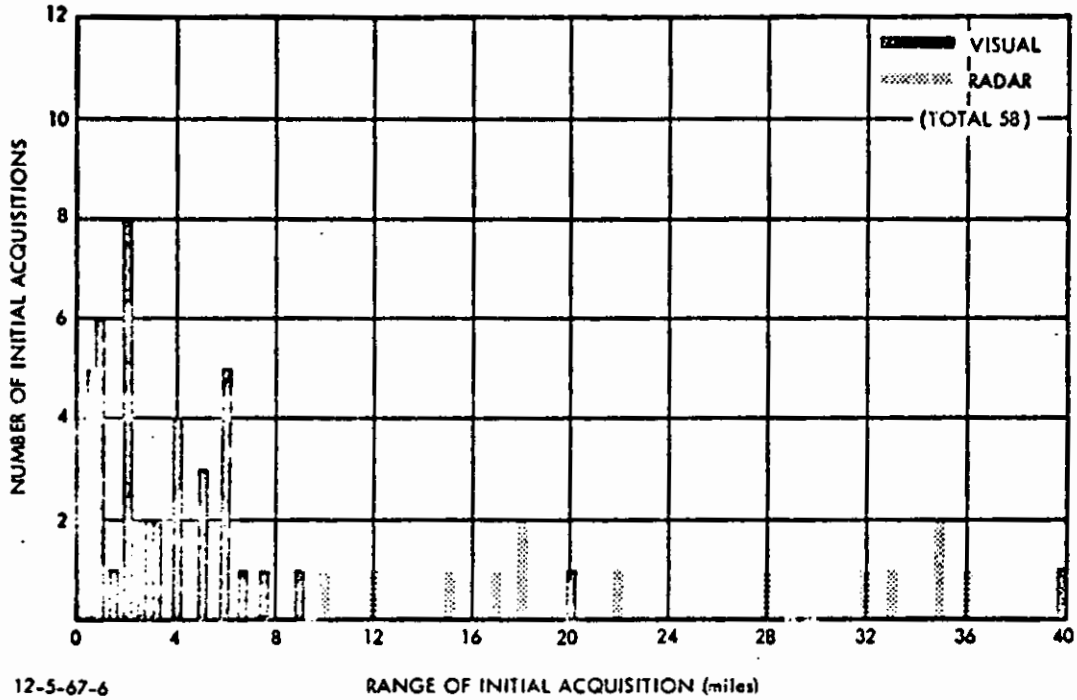


FIGURE III-A8 (S). F-4, F-8 Initial Acquisitions Versus Range, 1 April 1965 to 1 August 1967 (U)

(S) These data show clearly that in about 50 percent of the cases U.S. fighter pilots were not aware of the enemy aircraft until they had closed to within two miles, and the enemy fighters appeared at all bearings around the U.S. aircraft.

F-105 Acquisitions

(S) Air Force F-105 aircraft were employed in an air-to-ground role as their primary mission in Southeast Asia, and were subject to MIG attacks. Figure III-A11 depicts the ranges and bearings of 135 acquisitions made by F-105 pilots. These have been plotted on an expanded scale due to the concentration of data points at short ranges. The extent of the shaded areas represents the relative frequency of sightings in each quadrant. Like acquisitions made by F-4 and F-8, those by F-105s were close in and at all clock positions. The median range of

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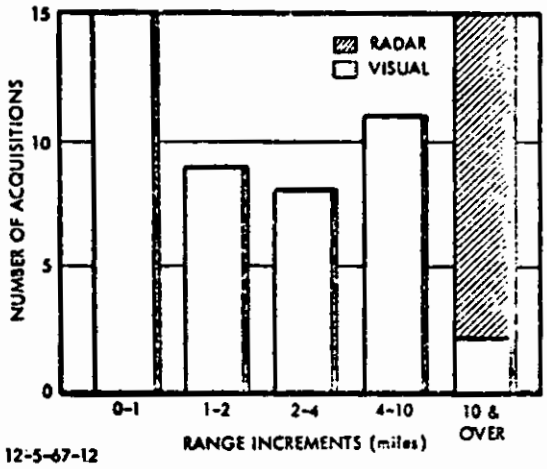


FIGURE III-A9 (S). F-4, F-8 Initial Acquisitions Versus Range 1 April 1965 to 1 August 1967 (U)

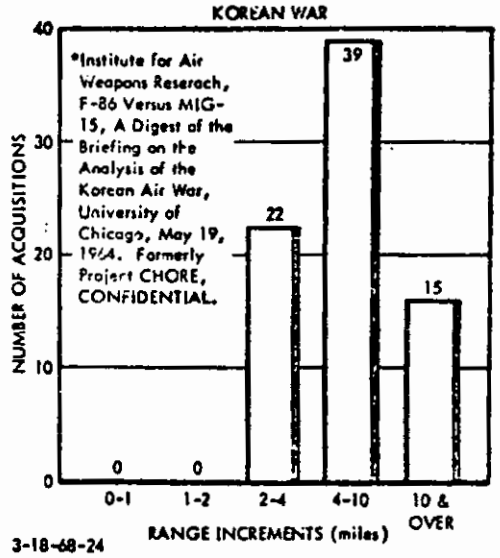


FIGURE III-A10 (C). Extreme Ranges Between F-86 and MIG-15 76 Sighting Reports (U)

initial acquisition was about two miles, the same as for F-4 and F-8 aircraft.

Decoys

(S) An investigation of possible enemy tactics was made to determine whether they could have been using decoy aircraft to draw the attention of U.S. pilots to the forward quadrant to mask an almost simultaneous attack from the rear. An analysis of 78 F-4, F-8 events between 1 April 1965 and 1 March 1967 failed to confirm this tactic. Evidence strongly indicated that there was a simultaneous vectoring of multiple MIG aircraft on a single flight of U.S. aircraft with each enemy intent on conducting an attack. Events 36, 37, and 39 of Volume I are examples which illustrate this tactic.



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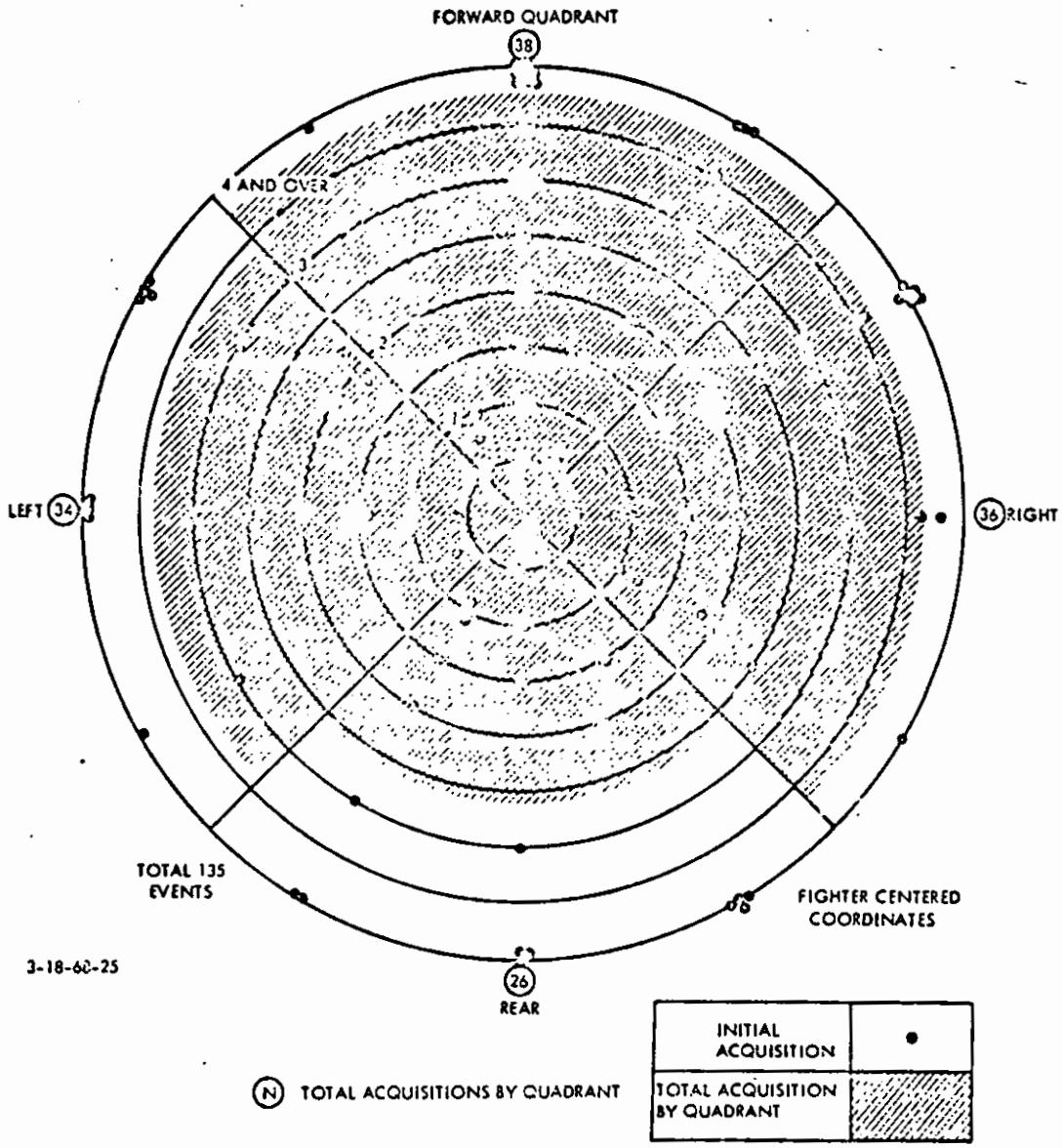


FIGURE III-A11 (S). Ranges and Bearings of F-105 Initial Acquisitions (U)

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## Identification

(S) Identification range was available for almost every event in which acquisition data were available. The identification range was the same as acquisition range in about two-thirds of the encounters. In other words, at the close ranges of detection, identification occurred simultaneously. A correlation between long-range identification and the ultimate success of an engagement was sought, but from the sparse data available wherein long-range identification took place, no correlation could be found.

(S) Identification means included color (MIGs were usually a distinctive silver metallic color, occasionally camouflaged), silhouette, and the sighting of missiles or bullets being fired by an aircraft. In at least two cases the color of contrails was used to identify MIGs. In many cases, however, the specific means of identification was not or could not be recalled by the pilot and thus an inadequate sample was available for analysis.

(S) The full value of a long-range identification capability could not be fully discerned from the quantitative results of the air-to-air engagements. U.S. aircrews encountered several difficulties that were either caused or aggravated by lack of a long-range identification capability. First, there was no complete record of false alarms in the SEA area. Pilots intercepted bogies only to find they were friendlies and these were not reported via official channels, although these false alarms were mentioned in pilot interviews conducted by the RED BARON team. Thus, these events could not be analyzed due to the inadequacy of data but the time and fuel wasted by these unnecessary diversions must have been considerable. When the identification proved the bogey to be hostile, the uncertainty in the initial phase of the pass created new problems, i.e., speed may have been too great to jettison some external stores, handicapping the acceleration, maneuverability and weapons

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choice available to the U.S. aircraft. In some cases it was necessary for the U.S. aircraft to pass entirely through its weapons envelope to make visual identification at a range too close to employ its weapons. This placed a requirement on the U.S. aircraft to achieve separation (sometimes by deceleration) with all the difficulties and dangers involved in such a maneuver. A discussion of the effect of short range identification on the success of an air-to-air encounter is discussed from a qualitative approach in Section IV.

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## Section III-B

## ATTACK PHASE

### A. SUMMARY

(S) The most critical air-to-air requirement was to achieve a position to fire first.

(S) The importance of firing first can be seen in that for the 209 encounters studied, in only four cases did an aircraft attacked first by another aircraft manage to destroy the attacking aircraft. It is of some interest that in all four of these encounters it was the U.S. aircraft that accomplished the conversion.

(S) U.S. F-4 and F-8 aircraft were successful in achieving a position to fire first approximately 95 percent of the time when the enemy aircraft was detected before passing to the rear quadrant.

(S) The enemy was able to attain a position in the rear quadrant before detection in approximately 25 percent of the encounters analyzed.

(S) When the enemy attained a rear quadrant position before detection, the enemy fired first approximately 90 percent of the time.

(S) The success rate of U.S. first firing pass was 27 percent.

(S) The enemy success rate for first firing pass was 13 percent.

### B. OBJECTIVE

(C) The primary objective of this section was to determine

[redacted]

whether the relative position of the combatants when aerial combat began[1] had a significant effect upon the outcome.

## C. BACKGROUND AND SCOPE

### Background

(C) Proper interpretation of the numerical results detailed in this section requires an understanding of the environment in which the events occurred. During the time period covered by this analysis the enemy had a capability to maintain an essentially continuous track of the location and altitude of U.S. aircraft from ground stations. This capability was used to conduct ground controlled intercepts (GCI).

(C) The U.S. aircrews, essentially unaided, were tasked with:

- Detecting the presence of other aircraft.
- Making visual identification of the other aircraft.
- Maneuvering to attack hostile aircraft while avoiding attack upon themselves or the aircraft they were protecting.

### Scope

(U) This section analyzes the results of F-8 and F-4 aircraft against enemy jet aircraft from April 1965 to 1 August 1967.

(S) With few exceptions almost all these encounters began

[1] (U) More explicitly, the relative positions of the two combatants are recorded at the point in time when the U.S. aircraft detected the enemy aircraft. In many encounters the enemy aircraft (with the aid of GCI) were aware of the position of the U.S. aircraft and had already started their approach and attack maneuver undetected. In some events the first indications of enemy aircraft was enemy fire. Therefore, it is obvious that the relative positions of the combatants at the point in time when the enemy initiated the engagement, though unknown, was different than the recorded position. This is an important distinction when interpreting the results that follow.

when the aircraft were flying CAP and escort missions. This differs in many respects from F-105 encounters most of which were initiated at various stages of a strike mission. On these missions the F-105s were instructed not to react to the presence of MIGs unless under imminent threat.

## D. DISCUSSION OF RESULTS

### Measures of Success

(S) Enemy kills and U.S. losses were examined as a potential measure of success for the attack phase. However, this measure is the compound result of achieving a position to employ weapons and the effectiveness of the weapons employed. The results of weapons fire for both participants were variable and uncorrelated to initial combat conditions. This measure had to be discarded since weapon performance effectively obscured any determination of the effect of initial conditions on the outcome of the maneuver-to-fire phase of the attack.

(S) Examination of the results (see Figure III-B1) revealed that 75 percent of MIG kills by U.S. F-4 and F-8 aircraft occurred on the first attack. Furthermore, seven out of eight U.S. losses occurred on the enemy's first firing pass. This result implied that achieving a position to attack (fire) first was probably the most reasonable measure of success for the maneuver phase of the attack.

### Data Base

(S) The events described in Volumes I and III were examined to identify all encounters where there was an apparent attempt by one or both particpants to engage the other aircraft. Examination revealed that approximately one out of four encounters terminated or aborted without either particpant discharging weapons. The reasons for enemy-initiated termination were not always discernible. Where the U.S. aircraft initiated the disengagement it was primarily for reasons unrelated to the

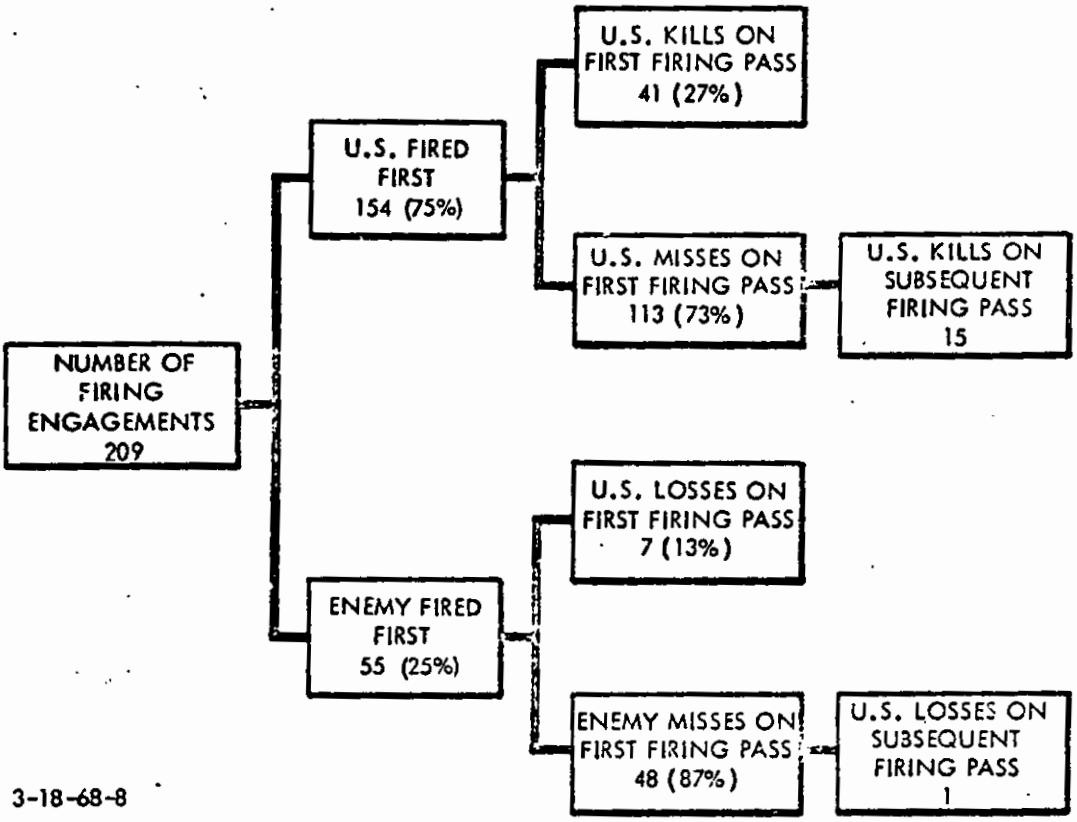


FIGURE III-B1 (S). Results of Engagements in Attack Phase Analysis (U)

potential outcome, e.g., returning to escort position rather than continuing to chase a MIG element that had turned away, etc., (see Section III-D). Any attempt to evaluate the potential outcome of these encounters would be pure conjecture and they were consequently not included in the subsequent analyses. The encounters included (1) the U.S. aircraft attempted to fire its weapons, and (2) the enemy aircraft was observed to fire its weapons. It is recognized that there probably were instances where the enemy achieved a firing position and even fired its weapons without being observed. This might give a slight upward bias to the ratio of U.S. to enemy firing attempts.

[redacted]

(S) Initially this sample of engagements was restricted to include only those engagements for which the following information was available at acquisition:

- U.S. aircraft type
- Hostile aircraft type
- Acquisition range
- Acquisition clock position
- Hostile altitude
- Friendly relative altitude
- Time of day
- Stage of war
- Method of acquisition and identification.

(S) This selection was based primarily on availability of data. Other equally or more important factors such as crossing angles, attitude, sun position, maneuver sequence, etc., were not available on all engagements with the desired accuracy. One hundred and nineteen engagements met the above criteria and were analyzed to determine which of the prior selected factors, if any, influenced the outcome. It was determined that on this subset of encounters, four factors were correlated with the results in a complex way -- enemy aircraft type, quadrant, relative altitude, and acquisition range. (The latter two factors, while statistically significant, had a small effect upon results compared to quadrant). No significant statistical difference was noted between the results achieved by the different U.S. aircraft types, when adjusted for relative starting position. No significant difference could be detected among the three nonrear quadrants. Accordingly, the data base was reexamined to identify all engagements that could be categorized with respect to the following factors:

- U.S. aircraft type
- Hostile aircraft type
- Acquisition range { Close $\leq 2$ n mi; Distant $> 2$ n mi }

[redacted]

- Acquisition quadrant { Rear quadrant / All others
- Relative altitude { 0 ± 2000 feet = coaltitude / Altitude difference >2000 feet = unequal altitude

Numerical Results

(C) The results of the 209 engagements for each of the factors listed in the data base are presented in Figure III-B2 and Figure III-B3, and Table III-B1 and Table III-B2.

Interpretation of Numerical Results

Acquisition in Other Than Rear Quadrants

(S) The performance of U.S. aircraft, combined with the skill and tactics employed by U.S. aircrews versus the enemy aircraft/crew combinations, resulted in a 111/8 advantage against the MIG-17 and 36/1 advantage against the MIG-21. This result indicates that under the prevailing conditions, timely position information of the enemy aircraft was the single most significant requirement to enable U.S. aircrews to achieve a position to fire first.

(S) However, reference to Figure III-B1 indicates that only 41 of 154 or 27 percent of U.S. first attacks resulted in a MIG kill. Any improvement in U.S. weapons or weapon delivery capability would result in an appreciable number of MIG kills for these acquisition conditions.

Acquisition in Rear Quadrant

(S) The implications of the observed results, when the enemy is detected in the rear quadrant, are more serious and more complex. There are three numerical ratios to be examined:

- The relative frequency of attaining a first firing position when the enemy is not detected until positioned in the rear quadrant.
- The effectiveness of the enemy's weapon system in utilizing the first firing opportunity.

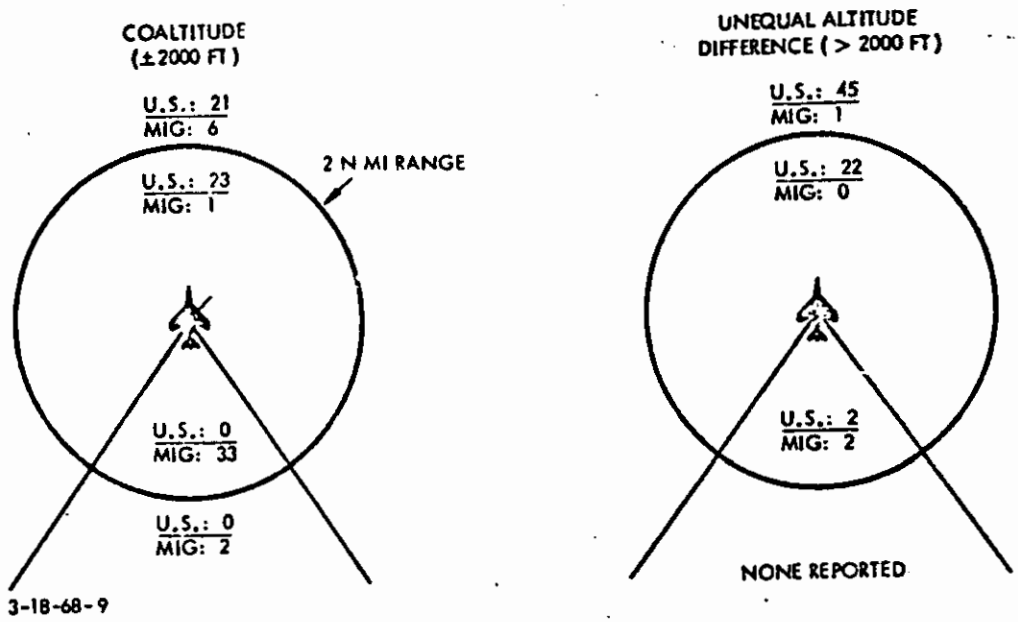


FIGURE III-B2 (S). Ratio of U.S. to MIG-17 First Firings for Different Acquisition Conditions (U)

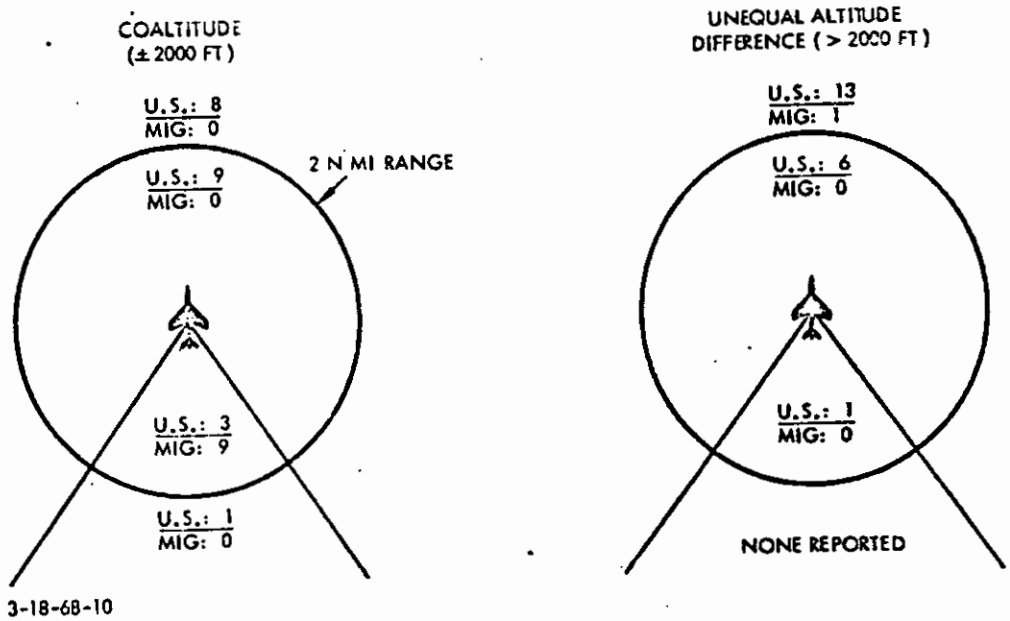


FIGURE III-B3 (S). Ratio of U.S. to MIG-21 First Firings for Different Acquisition Conditions (U)

[redacted]

Table III-81 (S). RATIO OF U.S. AIRCRAFT/MIG-17 FIRST ATTACKS AS A FUNCTION OF INITIAL POSITION AT ACQUISITION (U)

| | | Ratio F-8/MIG-17 | | Ratio F-4B/MIG-17 | | Ratio F-4C/MIG-17 | | Ratio Total U.S./MIG-17 | |
|---|---|---|---|---|---|---|---|---|---|
| | | Rear Quadrant | Other Quadrants | Rear Quadrant | Other Quadrants | Rear Quadrant | Other Quadrants | Rear Quadrant | Other Quadrants |
| Coaltitude ± 2000 | Close ≤2 n mi | 0/5 | 5/0 | 0/5 | 4/1 | 0/23 | 14/0 | 0/33 | 23/1 |
| | Distant >2 n mi | 0/1 | 6/0 | - | 7/4 | 0/1 | 8/2 | 0/2 | 21/6 |
| Unequal Alt. Dif. >2000 ft | Close ≤2 n mi | 1/1 | 2/0 | - | - | 1/1 | 20/0 | 2/2 | 22/0 |
| | Distant >2 n mi | - | 2/0 | - | 2/0 | - | 41/1 | - | 45/1 |
| TOTAL | | 1/7 | 15/0 | 0/5 | 13/5 | 1/25 | 83/3 | 2/37 | 111/8 |

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- The relative frequency of rear acquisitions to all acquisitions.

(U) The third item includes the results of Section III-A, but will be discussed herein.

(S) The enemy, when not detected until he positioned himself in the rear quadrant, usually succeeded in making the first attack. The enemy success ratio in attaining a position to fire first under these circumstances was 37/2 for the MIG-17 and 9/5 for the MIG-21. The possibility of significantly affecting this result appears negligible. The short ranges of detection in this quadrant indicate that the MIG was within a few seconds of a firing position and in several cases he was already firing. The previous statements are made in relation to the enemy's current weapons capability. If and when the enemy increases the range of his weapon system to 2 to 4 miles, there would be no time interval at all for evasion before the attack.

(S) The second item relating to the effectiveness of the enemy's attack has two aspects. First, the success ratio of the enemy's first attack was approximately 13 percent. Tactic or equipment that would degrade this limited effectiveness or

[redacted]

[redacted]

Table III-B2 (S). RATIO OF U.S. AIRCRAFT/MIG-21 FIRST ATTACKS AS A FUNCTION OF INITIAL POSITION AT ACQUISITION (U)

| | | Total U.S.[a]/MIG-21 Rear Quadrant | Other Quadrants |
|---|---|---|---|
| Coaltitude ± 2000 ft | Close ≤2 n mi | 3/9 | 9/0 |
| | Distant >2 n mi | 1/0 | 8/0 |
| Unequal Alt. Dif. >2000 ft | Close ≤2 n mi | 1/0 | 6/0 |
| | Distant >2 n mi | - | 13/1[a] |
| TOTAL | | 5/9 | 36/1 |

[a]This result includes one F-8 first attack. All other results against the MIG-21 are for the F-4C aircraft.

at least counterbalance the enemy's attempts to increase the effectiveness of his firing attempts could reduce or prevent an increase in U.S. losses.

(S) The significance of rear acquisition is apparent. In 25 percent of the encounters the enemy managed to position in the rear quadrant before detection. In most events this was not a chance phenomenon but appeared to be the result of ground controlled intercepts. A study of intercept patterns indicates that many enemy aircraft must have passed through other quadrants where they were at least theoretically visible but went undetected. The short range of most of the acquisitions indicated in the previous section of this report make it quite clear that, under prevailing operating conditions, a MIG can pass through the detection range of 3 to 10 miles with some positive probability (higher than desired) and then turn into the rear quadrant for his attack run undetected. Since,

[redacted]

[redacted]

(S) However, there is a more alarming aspect to the data. The frequency of encounters in which the enemy has successfully attained the rear-quadrant position undetected is probably below the potential achievable for forces with a GCI capability against penetrating aircraft dependent on visual detection. If it may be presumed that the enemy were still in the early part of his learning curve, then an increase in the relative frequency of this type of attack could be expected which would seriously reduce the observed U.S. superiority unless timely and adequate countermeasures are introduced. The seriousness of this is illustrated in Figure III-B4 and Figure III-B5. For example, reference is made to Figure III-B5 for the MIG-21. Point (A) indicates the ratio of U.S. (F-4/F-8) to MIG-21 kills over the study period. If more effective utilization of GCI permitted the enemy to position in the rear quadrant before detection, in one-half the encounters the kill ratio would change to that shown in Point (D), other things being equal. Also a point not to be neglected is that an increase in enemy weapon delivery capability to equal the U.S. capability would further reduce this ratio to Point (E).

## E. CONCLUSIONS

(S) U.S. aircraft attained a position to fire first on the enemy aircraft in 95 percent of the engagements when the enemy aircraft did not attain a close-in, rear quadrant position before detection.

(S) Unaided visual search and existing AI radar were unable to prevent enemy aircraft from an unobserved approach to the rear quadrant of the U.S. aircraft in 25 percent of the engagements.

(S) Real-time position and direction information of enemy aircraft would reduce the frequency of undetected rear quadrant attacks.

[redacted]

(S) If the undetected rear quadrant attacks could have been prevented, the U.S. to enemy success ratio would have been significantly higher.

(S) The relative advantage of U.S. to enemy air-to-air weapons in these encounters was approximately two to one. A large number of the U.S. attacks that did not succeed can be attributed to the low reliability of some U.S. weapons and the limitations of these weapons in a close-in, maneuvering environment. (These latter points are more explicitly set forth in the following section.)

[redacted]

## Section III-C

## FIRING PHASE, DAMAGE PHASE

### A. SUMMARY

(S) Each of the air-to-air engagements of the period April 1965 to 1 August 1967 was examined to determine the specific results of the ordnance expended. Additional material for the period August 1967 to 3 January 1968 is included where applicable. All results were examined on a firing attempt basis where an attempt is defined as a trigger squeeze.

(S) The following conclusions were reached.

- The AIM-9D (SIDEWINDER) has shown a significantly better target-hit performance than any other missile system.
- The boresight mode of firing the AIM-7D and AIM-7E (SPARROW) was not successful in the dogfight conditions of the present air war.
- SIDEWINDER (AIM-9B, AIM-9D) failure rates are decreasing while SPARROW (AIM-7E) failure rates are not decreasing.
- The data do not provide a measurable difference in the effectiveness of Navy and Air Force use of the AIM-7 and AIM-9B missiles.
- In view of the high percentage of missiles fired out-of-envelope, the pilots need either more training, an improved on-board indication of the envelope, and/or a larger margin of error as provided by a larger envelope.
- The hit-to-firing attempt ratio when combined for all missiles reached a value of 12 percent (as of 3 January 1968) and was in a downward trend.
- Missiles and guns showed essentially the same effectiveness in terms of kills per firing attempt.

[redacted]

[redacted]

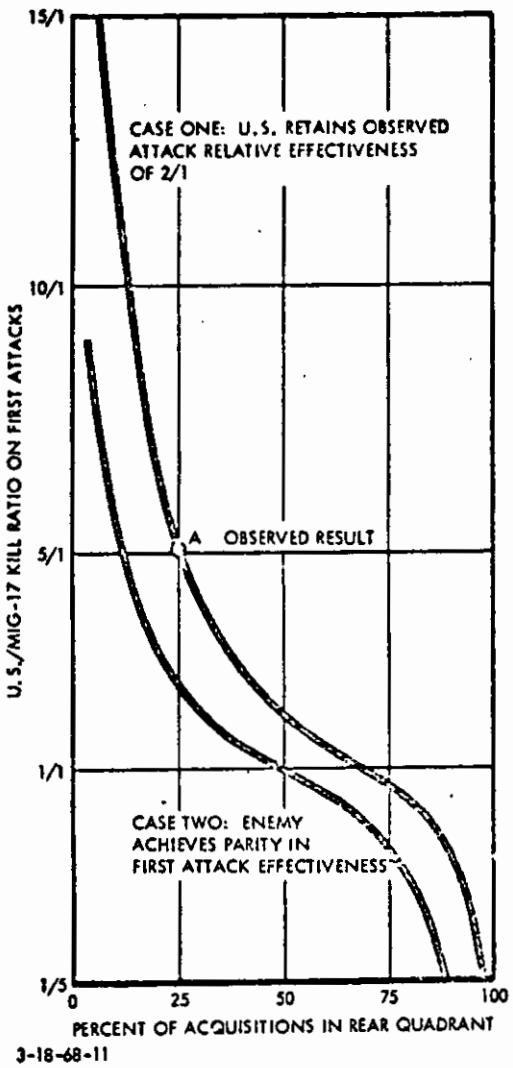


FIGURE III-B4 (S). Estimated Kill Ratio for Different Levels of Enemy Capability - MIG-17 (U)

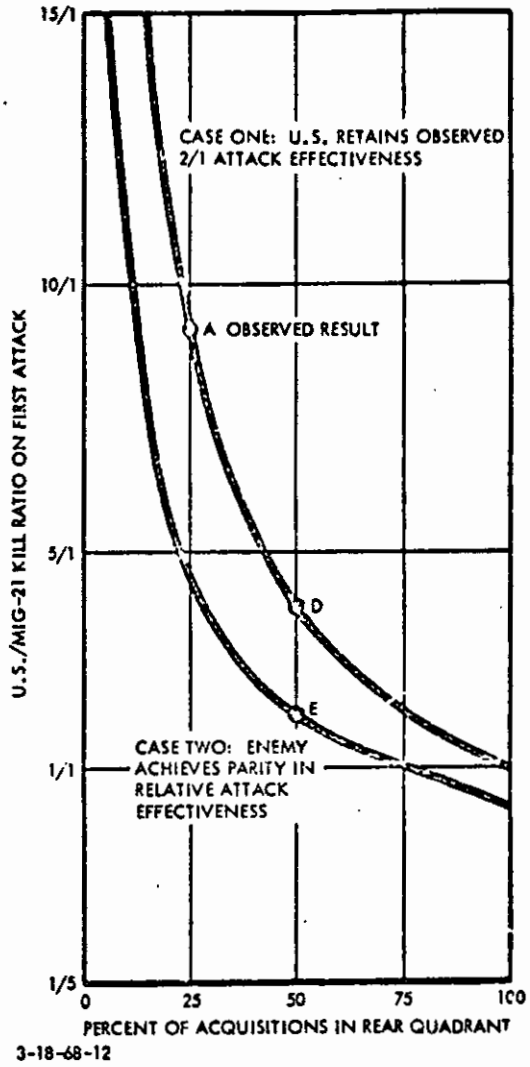


FIGURE III-B5 (S). Estimated Kill Ratio for Different Levels of Enemy Capability - MIG-21 (U)

when the MIG is detected prior to this turn, U.S. elements have demonstrated a high degree of success in the ensuing encounter, it is obvious that if a real-time position and direction information on the enemy elements were made available to the U.S. aircrews, other things being equal, the enemy MIGs would seldom attain a favorable combat position.

[redacted]

[redacted]

## B. OBJECTIVE

(C) The objective of this section was to categorize the results of air-to-air ordnance firing attempts and to determine those significant categories and trends of interest to the R&D community.

## C. BACKGROUND AND SCOPE

(C) The following sources of data were available to Project RED BARON:

- Aircrew interviews
- OPREPS[1]
- FMSAEG forms[2]
- USAF missile firing reports (since May 1967)
- USAF supplementary OPREPS (since May 1967).

All available data were screened to identify all attempts to expend ordnance. The more valuable sources of data were the aircrew interviews, the USAF missile firing reports, and the USAF supplementary OPREPS. In general, the data available from OPREPS were not sufficiently detailed to determine firing parameters. In addition, the OPREPS do not list all missile firing attempts.

(C) All of the data sources listed above were based on the aircrew's description of the ordnance expenditure. Since no other sensors recorded these data, it follows that although specific quantities are derived from the reports, they are subject to some inexactness. These limitations have been recognized and have been taken into account when defining the results categories and when computing the various ratios and trends which follow. It is not felt that the inherent inexactness in any way negates any of the conclusions.

---

[1] (U) Joint Chiefs of Staff Operational Reporting System.
[2] (U) Fleet Missile System Analysis and aluation Group.



[redacted]

[redacted]

(C) This section identifies and discusses the various categories of results in terms of all attempts by the pilot to expend ordnance; that is, each trigger squeeze is a firing attempt. The analysis covers a discussion of the total attempts to expend ordnance in order to identify results related to all elements of the weapon system (i.e., pilot, aircraft, and missile). In general, discussion is made relative to total firing attempts and the analysis has not addressed missile single-shot kill probability or reliability per se. Single-shot kill probability is a predictive measure (as opposed to a past descriptive measure) which has limited use in light of the objectives of this study. Therefore, the percentages presented in this section are not estimates of kill probability. In addition, no overall estimate of the reliability has been made since the total number of missiles carried in all sorties and the malfunctions found during preflight testing were not collected as part of the data. For example, a gun's firing history prior to the air-to-air engagement is unknown and it may have been used in an air-to-ground mode. Thus, reliability as expressed by rounds between failures could not be assessed. In the case of missiles, the data analyzed represent only those missiles which were attempted to be fired.

Definition of Results Categories

(C) An assessment of the air-to-air ordnance expenditures has been made and the results categorized. In several respects the categories included here differ from those of a range test. This is because it was not possible to determine why a missile failed to guide or why a radar broke lock. On the other hand, many range test firings are (justifiably) considered "no test," Out-of-Envelope firings, for example. In this study the results of each trigger squeeze have been placed in one of the following 17 categories:

- Failed to Leave Aircraft: Results were recorded in this category when a firing attempt was made

[redacted]

but the missile did not leave the aircraft. (This includes AIM-4D and AIM-9 No Motor Ignitions). Many of the reporting media overlook this category when making their standard reports. Included in this subdivision were two firing attempts which failed because the multiple ejection rack (MER) could not be jettisoned to complete the enabling circuit on the forward missiles.

- No Motor Ignition (AIM-7): Applicable to AIM-7 missiles which were successfully ejected from the aircraft but were not observed in powered flight. Even though ejected, this category is considered as a prelaunch failure.

- Results Unobserved: Results recorded here came from two sources:

  Unobserved by crew, except when superseded by other sources.

  Insufficient data available to permit reasonable assignment to any other category.

  The latter source accounts for only a small number of firing attempts. The major cause was that the crew lost sight of the launched missile due to clouds or U.S. aircraft maneuvers.

- Desperation: Those missiles deliberately fired out of parameters for tactical reasons are categorized as fired in desperation. Inclusion in this category required a pressing need to put the enemy on the defensive or to attempt to cause him to break off his attack on another aircraft.

- Personnel Error: Personnel errors are limited to those firing attempts in which a missile was launched in spite of indications present that the missile could not function. For example:

  Firing an AIM-7 with the radar in search; that is, with the antenna sweeping

  Target aspect switch in head-on mode when attacking from the target's rear.

  Overriding circuit breaker to fire missile past centerline stores.

- System Failures: For missile systems, this category is comprised of rare occurrences which did not fit in any other place. They are: no ready light, ordnance rack malfunction, radar malfunction, and mechanical failure. In the tables which follow, the first two groups are included in Failure to Leave Aircraft while the others are listed specifically.

[redacted]

For gun systems, System Failures cover all occurrences which prevented the firing of the guns.

- Out Maneuvered: A missile was "out maneuvered" if there was a strong indication that the target had executed a violent evasive maneuver after the missile had left the aircraft. It was also necessary that the missile had been launched within parameters and had begun to guide on the target.
- Out-of-Envelope: Where applicable, an estimate of the kinematic launch envelope was made based on the weapon type, the firing parameters of the attacking aircraft, and the maneuver undertaken by the target. This coupled with the seeker limits of the missile determined if the missile could physically guide to an intercept. Not included in this category are those missiles which could be judged to have been fired inside the minimum range of the missile.
- Inside Minimum Range: Those out-of-envelope firing attempts which were clearly within the minimum range defined by the safety and arming activation limitations were categorized here. These are listed separately in the tables but in all further discussion they have been included in the category Out-of-Envelope.
- Radar Broke Lock After Launch (AIM-7). All instances of break-lock are grouped here. The reasons for break-lock were seldom available.
- Illumination Interrupt (AIM-7). Aircraft tactical maneuvers to avoid enemy attack may pull the radar antenna off the target with the resulting loss of guidance information for the missile.
- Failure to Guide: Those missiles which failed to guide properly (including catastrophic failures) were summarized here. It should be observed that in the case of the AIM-7 the failure to guide could be caused by a misaligned radar as well as by a failure in the missile's guidance system. The data base contains seven engagements in which two or more AIM-7 missiles were fired by a specific aircraft and for which the only result was failure to guide. The limits of the launch envelope (e.g., gimbal angle limits on the AIM-9B) may cause some ambiguity as Out-of-Envelope firing resembles failure to guide. However, such results were listed as Out-of-Envelope.
- Boresight Mode Miss (AIM-7): This category is restricted to AIM-7s fired in the boresight mode; that is, with the radar antenna fixed and aligned with the centerline of the aircraft. In order for the

[redacted]

and Missile Out Maneuvered. Therefore, the estimates for Desperation, Missile Out Maneuvered, and Minimum Range must be considered lower bounds; the combination of Minimum Range and Out of Envelope is also a lower bound (Out of Envelope may contain some Minimum Ranges). While no general rule can be implied, in many cases results were categorized as Failure to Guide when the original data would not justify placement in the above categories. However, if there were serious doubt, the result was listed as Unobserved.

(S) While enemy countermeasures could have caused results which appear like False Detonations or Failure to Guide, there is no evidence which indicates the employment of ECM against the radar missiles or flares against the IR missiles.

## D. RESULTS

(S) This section is subdivided into three parts: Summary of Firing Attempts, Gun Firing Attempts, and Missile Firing Attempts. The gun subsection is subdivided by aircraft type while the missile subsection is subdivided by missile type and by major categories:

### Summary of Firing Attempts

(S) A summary of the results of expenditures is given in Table III-C1 which gives the total confirmed kills made by each fighter/target/weapon combination. Enemy missile firings are not identified by missile type due to the difficulty of identification. These results are presented for the time period April 1965 to 1 August 1967 and also through 3 January 1968, a period for which some additional ordnance expenditure data were available. (These additional data are limited in most respects but do contain all the kills.)

(S) Table III-C1 excludes the following categories of aircraft kills:

[redacted]

Table III-C1 (S). RESULTS OF ORDNANCE EXPENDITURES CONFIRMED KILLS BY AIRCRAFT ORDNANCE ONLY (U)

| | April 1965-1 August 1967 | | April 1965-3 January 1968 | |
|---|---|---|---|---|
| | MIG-17 | MIG-21 | MIG-17 | MIG-21 |
| Enemy Kills By: | | | | |
| F-8 | | | | |
| Gun | 3 | 0 | 3 | 0 |
| AIM-9 | 8 | 1 | 9 | 1 |
| F-4B | | | | |
| AIM-7 | 2 | 0 | 3 | 1 |
| AIM-9 | 1 | 0 | 1 | 2 |
| F-4C/F-4D | | | | |
| Gun | 3 | 1 | 5 | 2 |
| AIM-7 | 5 | 9 | 7 | 9 |
| AIM-9 | 13 | 10 | 13 | 10 |
| AIM-4 (F-4D Only) | 0 | 0 | 3 | 0 |
| F-105 | | | | |
| Gun | 20 | 0 | 25 | 0 |
| AIM-9 | 3 | 0 | 3 | 0 |
| | MIG-17 Guns | MIG-21 Missiles | MIG-17 Guns | MIG-21 Missiles |
| U.S. Losses:[a] | | | | |
| F-8 | 3 | 0 | 3 | 0 |
| F-4B | 1 | 0 | 2 | 0 |
| F-4C/D | 4 | 0 | 5 | 5 |
| F-105 | 4 | 5 | 4 | 12 |

[a]The MIG-17s have achieved zero kills with a missile, while the MIG-21s have achieved zero kills with a gun system. Neither MIG has achieved a kill with a rocket system.

4-29-68-2

- Enemy loss resulting from enemy pilot error rather than missile hits.
- Probable enemy aircraft losses (11 MIG-17s and 2 MIG-21s through 3 January 1968).

It is of interest that although the MIG-17 was equipped at times with missiles, all of its kills were achieved by the gun system. Also, the MIG-21 has only achieved kills with missile ordnance even though it frequently attacked with guns while

[redacted]

[redacted]

Table III-C2 (S). GUN-FIRING ATTEMPTS
APRIL 1965 TO 1 AUGUST 1967 (U)

| Aircraft: | F-105 | F-105 | F-8 | F-4C | F-4C | F-100 | |
|---|---|---|---|---|---|---|---|
| Target: | MIG-17 | MIG-21 | MIG-17 | MIG-17 | MIG-21 | MIG-17 | Totals |
| Firing Attempts | 134 | 14 | 25 | 13 | 1 | 3 | 190 |
| System Failures | | | | | | | |
| Ordnance Power Failure | 1 | | | | | | 1 |
| No Ammunition | | | 1 | 1 | | | 2 |
| Switchology | 3 | | 1 | | | | 4 |
| Gun Jam | 8 | | 3 | 1 | | | 12 |
| Over Gassing | | 3 | | | | | 3 |
| Malfunctions | 1 | 2 | 2 | | | | 5 |
| Total | 13 | 5 | 7 | 2 | | | 27 |
| Misses | 76 | 8 | 11 | 8 | | 2 | 105 |
| Hits | | | | | | | |
| Damage | 24 | 1 | 3 | | | | 28 |
| Probable Kill | 1 | | 1 | | | 1 | 3 |
| Confirmed Kill | 20 | | 3 | 3 | 1 | | 27 |
| Total Hits | 45 | 1 | 7 | 3 | 1 | 1 | 58 |

4-11-68-1

flying without missile ordnance. In addition, although both the MIG-17 and the MIG-21 have fired rockets, no hits have been recorded.

## Gun Firing Attempts

(S) A total of 190 gun firing attempts was analyzed. A summary of the data collected is shown in Table III-C2. For all gun systems, 31 percent of the attempts resulted in hits. Given a hit, a kill occurred 47 percent of the time. Considering confirmed kills only, the gun system's overall effectiveness per attempt is 14 percent compared to an overall effectiveness of 17 percent for missiles.

(S) The combined gun firing effectiveness is plotted in Figure III-C1. A moving average, plotted at the midpoint of

[redacted]

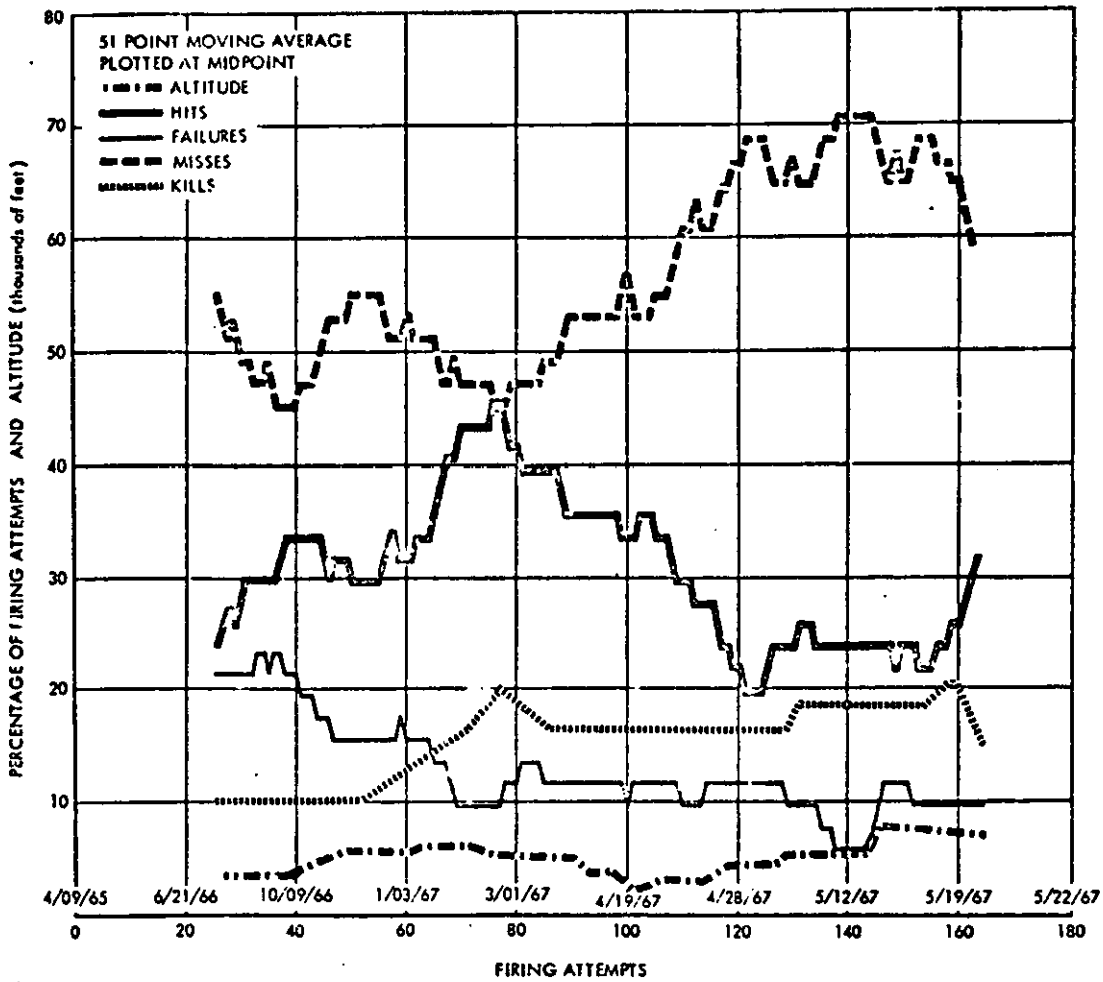


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FIGURE III-C1 (S). Trends for All Gun-Firing Attempts (U)

51 attempts, was computed for the firing altitude and the three categories of results: Hits, Misses, and Failures. Enemy aircraft kills are also shown in this figure. The kill trend rises from 10 percent to 20 percent following the hit-trend line, but then quickly levels off at a reduced value of 15 percent. This value is close to the overall average of kills per attempt for all gun systems.

(S) It can be seen that the number of F-105 attempts is much greater than the other gun attempts. In addition, the

[redacted]

installations of the various gun systems are different between aircraft. For these reasons the various aircraft will be discussed separately.

F-105 Gun-Firing Attempts

(S) There were 148 F-105 gun-firing attempts from April 1965 to 1 August 1967, as shown in Table III-C2. Of these, 90 percent of the attempts and all but one hit were against MIG-17 aircraft. Table III-C3 compares the F-105 frequency of

Table III-C3 (S). COMPARISON OF F-105 EXPOSURE AND GUN-FIRING ATTEMPTS - APRIL 1965 to 1 AUGUST 1967 (U)

| | Frequency of Exposure | Frequency of Gun-Firing Attempts |
|---|---|---|
| MIG-17 | 125 | 134 |
| MIG-21 | 77 | 14 |
| TOTAL COUNT | 202 Events | 148 Attempts |

exposure to the frequency of gun-firing attempts against MIG aircraft. Exposure is measured in terms of the number of events in which F-105s encountered MIG aircraft. While 38 percent of the F-105 events involved MIG-21s, only 9 percent of the gun-firing attempts were against MIG-21s. The gun-firing attempts occur significantly less frequently than the exposures. The same result is evident for F-105 missile-firing attempts over the period December 1966 to 1 August 1967.[1]

(S) There are several reasons which account for this discrepancy. The main reason is the performance differences between the F-105 and MIG-17 contrasted to those between the F-105 and MIG-21. While the F-105 cannot out turn either

[1] (U) Prior to December 1966 a missile was seldom carried. After December 1966 some F-105s of each flight regularly carried the AIM-9B.

[redacted]

aircraft, the acceleration and high speed capability relative to the MIG-17 permit disengagement at will. Against the MIG-21 the F-105 has higher maximum speed at sea level but has inferior acceleration. Because of these performance differences, an F-105 pilot will generally choose to evade a MIG-21.

(S) A related reason for the variation in exposure and firing attempts is tactics. The MIG-17 can exploit only

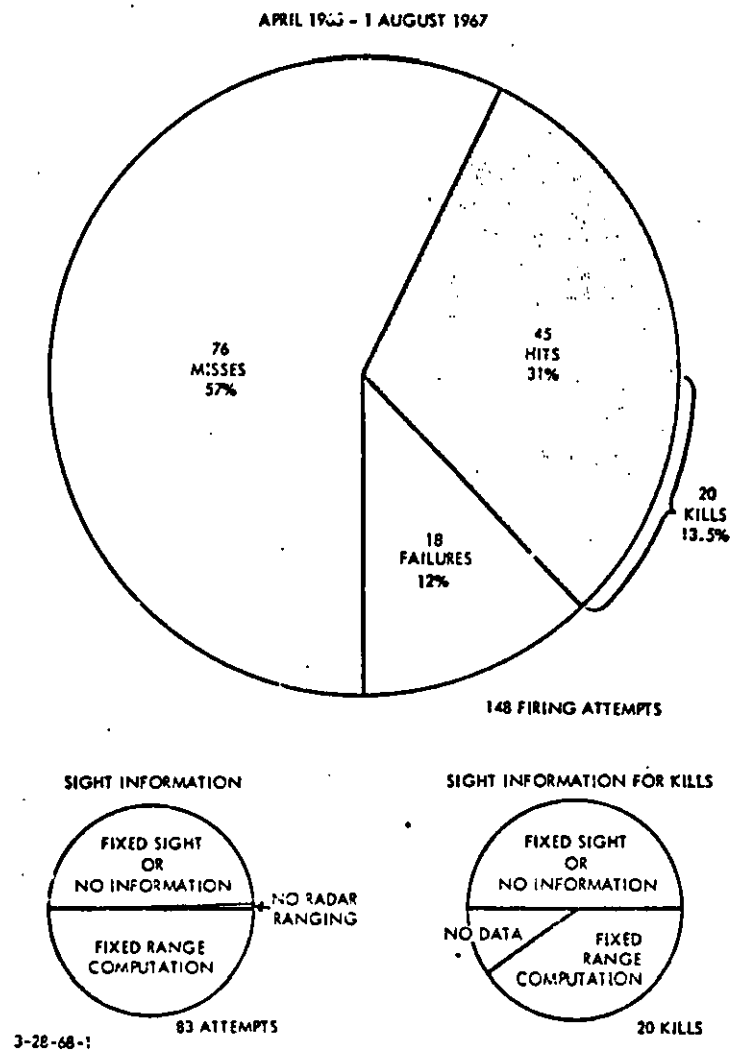



FIGURE III-C2 (S). F-105 Gun-Firing Attempts Summary (U)

limited tactics,[1] due to the performance deficiency relative to the F-105. The MIG-21, on the other hand, has had more tactical latitude to negate F-105 attacks, including evasion when necessary. Finally, the mission of the F-105 aircraft was not to attack other aircraft unless seriously threatened by attack. Therefore, engagements with other fighters were normally avoided.

(S) The F-105 firing attempts can be summarized as 31 percent hits, 12 percent failures, and 57 percent misses as shown in Figure III-C2. The probability of a kill given a hit is 0.46. The largest source of failure was gun jams. In most cases the cause of a jam could not be ascertained.

(S) Effective gun utilization requires the use of a gun sight. However, in many engagements the sight was set for air-to-ground use and either there was no image on the combining glass or the sight picture was fixed pipper (usually depressed for bombing). Sufficient information to permit a determination of the sight states was available for 83 of the 148 firing attempts. Of these 83, 41 attempts were made without the aid of a computing air-to-air sight; that is, with no image or depressed pipper only. The remaining 42 attempts were made with the pipper depressed as a function of aircraft g-loading for a fixed range. The range presented depended on the mode selected and could vary from 800 to 1400 feet. Variable ranging is available if a radar lock-on is achieved. However, no radar lock-ons were obtained because of the very rapid nature of the combat and the several seconds of settling time required after achieving a radar lock. In addition, some target acquisitions were made inside minimum lock-on range (2200 feet).

(S) The F-105 was credited with 20 confirmed gun kills, two of which were made head-on. One-half of the kills (10)

[1] (U) See Tactics Section, II-A.

were made despite the absence of computed sight information. Only fixed-range information was available for eight of the remaining ten kills. No information regarding sight status was available for the other two kills. A summary of the F-105 sight information is presented in Figure III-C2.

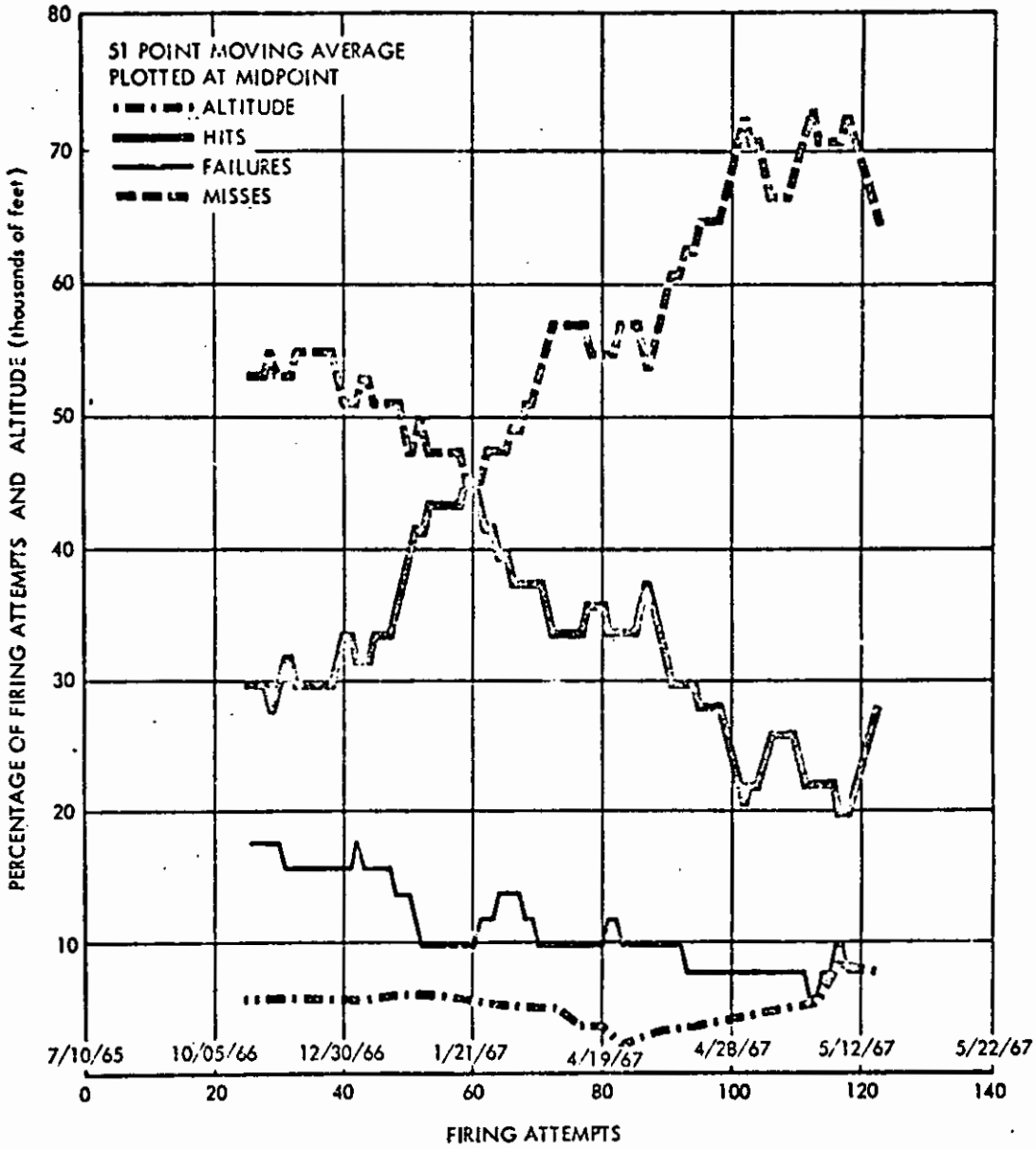
(S) This ineffective use of the F-105 gun sight is indicative of man-machine incompatibility. The sight could not be exploited to its full capability (radar ranging); moreover if radar ranging lock-ons were attempted but not achieved, no sight picture would be available. In addition, even if lock-on had been achieved, several seconds of settling time would be required for the computations to be made. In half the cases no computing sight was available. The failure to achieve even fixed-range computations was influenced by the switchology involved. Therefore, despite the fact that guns could be fired immediately by simply squeezing the trigger, the lack of accurate sight information to the pilot reduced the gun capability in the snapshot role.

(S) Figure III-C3 displays the F-105 gun-firing results for the period of the study, plotted as a 51 point moving average. The altitude at firing has remainded relatively constant in the 3000- to 7000-foot band. The percentage of failures shows a steady decrease. The percentage of hits shows a steady increase until December 1966 at which time a level of 45 percent was reached. After December a decline is noted which leveled off at about 20 percent in the final 2 months of the study.

### Other Gun-Firing Attempts

(S) The other gun-firing attempts listed in Table III-C2 represent a much smaller sample than that of the F-105. The F-100 was involved in only one event (3 firing attempts) and Navy aircraft had much less exposure to MIGs. The F-4C aircraft carried external gun pods as air-to-air armament only since May 1967.

[redacted]




3-26-68-6

FIGURE III-C3 (S). Trends for F-105 Gun-Firing Attempts (S)

(S) The F-8 Mk 12 gun system was plagued by many difficulties, particularly early in the war. This accounts for the relatively higher percent of attempts resulting in failure. Also, the F-8 gun sight computed inaccurate lead if the fighters were pulling more than 3 g.

[redacted]

[redacted]

## Missile-Firing Attempts

(S) The results of all the missile-firing attempts for the study period are presented in Table III-C4. Table III-C5 is a further categorization of the missile failures. Tables III-C6 and III-C7 are an extension of the missile-firing results and the failure classifications for the period August 1967 to 3 January 1968. The information contained in Tables III-C6 and III-C7 is based on supplemental data, not involving aircrew interviews, and consequently is much less detailed than those of the remainder of the report. Note that Hits are the only known information for the AIM-9B and AIM-9D. In the case of the AIM-4D, the information is a little more complete but not as detailed as that in Tables III-C4 and III-C5. The data for the AIM-7E were obtained from forms completed by the pilots and permit an adequate characterization of results. Even in the case of the AIM-7, however, it is not known that all launch failures are included, and for this reason the number of attempts represent a lower bound.

(S) Table III-C8 presents the results of the 65 boresight

Table III-C4 (S). SUMMARY MISSILE-FIRING ATTEMPTS BY ORDNANCE, AIRCRAFT, AND TARGET - APRIL 1965 TO 1 AUGUST 1967 (U)

| Ordnance: | AIM-4D | AIM-7D | | | AIM-7E | | | | | AIM-9B | | | | | | | | AIM-9D | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aircraft: | F-4D | F-4B | F-4C | | F-4B | | F-4C | | F-4D | F-8 | | F-4B | F-4C | | F-105 | | F-100 | F-8 | | F-4B | |
| MiG Target: | 17 | 17 | 17 | 21 | AN2 | 17 | 17 | 21 | 17 | 17 | 21 | 17 | 17 | 21 | 17 | 21 | 17 | 17 | 21 | 17 | Totals |
| Firing Attempts | 10 | 12 | 5 | 12 | 4 | 5 | 56 | 44 | 16 | 1 | 1 | 4 | 76 | 47 | 18 | 1 | 2 | 26 | 1 | 3 | 346 |
| Desperation | | | | 1 | | | 1 | 1 | | 1 | | | 10 | 3 | | | | | | | 17 |
| Unobserved | | 3 | | | | | 8 | 6 | 7 | | | | 8 | 8 | 1 | | | 4 | | | 45 |
| Personnel Error | | | | | | | 1 | | | | | | | | 1 | | | | | | 2 |
| False Target | | | | | | | | | | | | | 2 | 1 | | | | 1 | | | 4 |
| Outmaneuvers | | | | | | | 3 | | | | | 1 | 6 | 1 | | | | 1 | | | 12 |
| Prelaunch Failure | 1 | 4 | 2 | 6 | 2 | | 9 | 9 | | | | 2 | 5 | | | | | 2 | | | 42 |
| Postlaunch Failure | 1 | 1 | 1 | 5 | 2 | 4 | 18 | 15 | 3 | | | 1 | | 10 | 4 | 1 | | 4 | | | 70 |
| Miss | | | | | | | 8 | 1 | | | | | | | | | | | | | 9 |
| Out-of-Envelope | 8 | | 1 | | | 1 | 5 | 3 | 5 | | | | 27 | 13 | 9 | | 2 | 4 | | | 78 |
| (Minimum Range)[a] | (7) | | (1) | | | (1) | (3) | | | | | | (4) | (1) | (1) | | | (1) | | | (19) |
| Hit | | 4 | 1 | | 2 | | 3 | 9 | 1 | | 1 | | 18 | 11 | 3 | | | 10 | 1 | 3 | 67 |
| (Probable Kill)[a] | | (2) | | | (1) | | | | | | | | | (1) | | | | (1) | | (2) | (7) |
| (Kill)[a] | | (2) | (1) | | (1) | | (3) | (9) | (1) | | (0.5) | | (13) | (10) | (3) | | | (8) | (0.5) | (1) | (53) |

[a]() Indicates this value included in previous total.



[redacted]

## Table III-C5 (S). MISSILE SYSTEM FAILURES APRIL 1965 to 1 AUGUST 1967 (U)

| Ordnance: | AIM-4D | AIM-7D | | | AIM-7E | | | | | AIM-9B | | | | | | | | AIM-9D | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aircraft: | F-4D | F-4B | F-4C | | F-4B | | F-4C | | F-4D | F-8 | | F-4B | F-4C | | F-105 | | F-100 | F-8 | | F-4B | |
| MiG Target: | 17 | 17 | 17 | 21 | EN. | 17 | 17 | 21 | 17 | 17 | 21 | 17 | 17 | 21 | 17 | 21 | 17 | 17 | 21 | 17 | Totals |
| Prelaunch Failures | | | | | | | | | | | | | | | | | | | | | |
| Launch | 1 | 1 | | 4 | 1 | | 7 | 3 | | | | 2 | 5 | | | | | 2 | | | 26 |
| No Motor Ignition | | 3 | 2 | 2 | 1 | | 2 | 6 | | | | | | | | | | | | | 16 |
| Postlaunch Failure | | | | | | | | | | | | | | | | | | | | | |
| Guidance | | 1 | 1 | 5 | | 1 | 12 | 12 | 2 | | | 1 | | 3 | 4 | 1 | | 4 | | | 47 |
| Fuze | | | | | | | | | | | | | | 3 | | | | | | | 3 |
| Detonation, No Kill | | | | | 2 | | 4 | 1 | | | | | | 4 | | | | | | | 11 |
| Radar Broke Lock | | | | | | 3 | 2 | 2 | | | | | | | | | | | | | 7 |
| Mechanical | 1 | | | | | | | | 1 | | | | | | | | | | | | 2 |
| Boresight Mode Firing, Miss | | | | | | | 8 | 1 | | | | | | | | | | | | | 9 |
| Missile Failures | 2 | 5 | 3 | 11 | 4 | 4 | 35 | 25 | 3 | 0 | 0 | 3 | 5 | 10 | 5 | 1 | 0 | 6 | 0 | 0 | 121 |
| Firing Attempts | 10 | 12 | 5 | 12 | 6 | 5 | 56 | 44 | 16 | 1 | 1 | 4 | 76 | 47 | 18 | 1 | 2 | 26 | 1 | 3 | 346 |

## Table III-C6 (S). ADDITIONAL MISSILE-FIRING RESULTS AUGUST 1967 THROUGH 3 JANUARY 1968 (U)

| Ordnance: | AIM-4D | | AIM-7E | | | | | AIM-9B | | | | AIM-9D | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aircraft: | F-4D | | F-4B | | F-4C | F-4D | | F-3B | F-4C | | F-4D | F-8 | F-4B | | |
| MiG Target: | 17 | 21 | 17 | 21 | 21 | 17 | 21 | 17 | 17 | 21 | 21 | 17 | 17 | 21 | Totals |
| Firing Attempts [a] | 8 | 5 | 5 | 2 | 3 | 21 | 40 | 1 | 4 | 4 | 1 | 7 | 3 | 10 | 114 |
| Desperation | | | | | | 2 | | | | | | | | | 2 |
| Unobserved | 2 | 3 | | | 3 | 1 | 2 | 1 | 4 | 4 | 1 | 6 | 2 | 6 | 35 |
| Personnel Error | | | 1 | | | 1 | 5 | | | | | | | | 7 |
| False Target | | | | | | | 2 | | | | | | | | 2 |
| Out-Maneuvered | | | | | | | | | | | | | | | |
| Lost Illumination/ Aircraft Maneuver | | | | | | 6 | | | | | | | | | 6 |
| Prelaunch Failure | | | | | | | 1 | | | | | | | | 1 |
| Postlaunch Failure | | | 3 | 1 | | 6 | 17 | | | | | | | | 27 |
| Out-Of-Envelope | 3 | 2 | | | | 1 | 9 | | | | | | | | 15 |
| (Min Range) | (2) | | | | | (1) | (3) | | | | | | | | (3) |
| Miss | | | | | | 2 | 2 | | | | | | | | 4 |
| Hit | 3 | | 1 | 1 | | 2 | 2 | | | | | 1 | 1 | 4 | 15 |
| (Damage) | | | | | | | (1) | | | | | | (1) | | (2) |
| (Prot. Kill) | | | | | | | (1) | | | | | | | | (1) |
| (Kill) | (3) | | (1) | (1) | | (2) | | | | | | (1) | | (2) | (10) |

[a] ( ) indicates this value included in previous total.

[redacted]

## Table III-C7 (S). ADDITIONAL MISSILE SYSTEM FAILURES AUGUST 1967 THROUGH 3 JANUARY 1968 (U)

| Ordnance: | AIM-4D | | AIM-7E | | | | | AIM-9B | | | | AIM-9D | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aircraft: | F-4D | | F-4B | | F-4C | F-4D | | F-4B | F-4C | | F-4D | F-8 | F-4B | | |
| MIG Target: | 17 | 21 | 17 | 21 | 21 | 17 | 21 | 17 | 17 | 21 | 21 | 17 | 17 | 21 | Totals |
| Prelaunch Failures | 4 | 4 | | | | | | 4 | | | | 4 | | | |
| Launch | | | | | | | | | | | | | | | |
| No Motor Ignition | | | | | | | 1 | | | | | | | | 1 |
| Postlaunch Failures | | | | | | | | | | | | | | | |
| Guidance | | | 1 | | | 3 | 4 | | | | | | | | 8 |
| Detonation, No Kill | | | 2 | 1 | | 2 | 9 | | | | | | | | 14 |
| Radar Broke Lock | | | | | | | 2 | | | | | | | | 2 |
| Mechanical | | | | | | 1 | | | | | | | | | 1 |
| Radar Malfunction | | | | | | | 2 | | | | | | | | 2 |
| Boresight Mode Firing | | | | | | | | | | | | | | | |
| Miss | | | | | | 2 | 2 | | | | | | | | 4 |
| Total Failures | | | 3 | 1 | | 8 | 20 | | | | | | | | 32 |
| Firing Attempts [a] | 8 | 5 | 5 | 2 | 3 | 24 | 40 | 1 | 4 | 4 | 1 | 7 | 3 | 10 | 114 |

[a] Failure Data not available except for 7L.

## Table III-C8 (S). AIM-7D AND AIM-7E BORESIGHT MODE FIRING ATTEMPTS (U)

| Date: | 1 Apr 65-1 Aug 67 | | 1 Aug 67-3 Jan 68 | | 1 Apr 65-3 Jan 68 | | Total |
|---|---|---|---|---|---|---|---|
| MIG Target: | 17 | 21 | 17 | 21 | 17 | 21 | |
| Desperation | 1 | 2 | | | 1 | 2 | 3 |
| Launch Failure | 3 | 5 | | | 3 | 5 | 8 |
| No Motor Ignition | | 3 | | 1 | | 4 | 4 |
| Guidance | 2 | 1 | 1 | | 3 | 1 | 4 |
| False Detonation | 3 | | | 2 (1)[a] | 3 | 2 | 5 |
| Radar Broke Lock | | | | 1 | | 1 | 1 |
| Boresight Mode Miss | 8 | 1 | 2 | 2 | 10 | 3 | 13 |
| Envelope - General | | | | 4 (4) | | 4 | 4 |
| Envelope - Min Range | 9 | | 1 | | 10 | | 10 |
| False Target | | | | 2 (2) | | 2 | 2 |
| Out-Maneuvered | 1 | | | | 1 | | 1 |
| Pilot Error | | | 1 | 2 | 1 | 2 | 3 |
| Illumination Interrupt | | | 6 | (2) | 6 | | 6 |
| Hit (Kill) | | | 1 | (1) | 1 | | 1 |
| Total | 27 | 12 | 12 | 14 | 39 | 26 | 65 |

[a] Ten Boresight firings with Range Lock.



[redacted]

firings made over the period 1 April 1965 through 3 January 1968. While the same limitations mentioned above also apply to this post-July data, a chi-square test of the pre-July and post-July samples did not detect a significant difference in the two sets of data.

(S) Tables III-C4, C5, C6, C7, and C8 can be used to develop many statistics and while care must be exercised when comparing a heterogenous sample space such as this one, it is often useful to check the performance of a specific missile against the aggregate performance as well as against the specific computations of other missile types. Table III-C9 is supplied to fulfill this function. Notice that the table is divided into two parts. On the left are the percentages of hits for the period April 1965 through 3 January 1968 while on the right are the percentages for the major categories for the period ending July 1967. From this presentation it can be seen that the AIM-9D had the highest ratio of hits, the AIM-9B had the lowest percentage of failures, and the AIM-7D had the lowest ratio of out-of-envelope firing attempts. Of

Table III-C9 (S). MISSILE COMPARISONS (S)

| Missile | April 1965 to 3 January 1968 | | April 1965 to 1 August 1967 | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total Firing Attempts for all aircraft | Percent of Hits | Percent of Hits | Percent Failures | Percent Out of Envelope | Percent Other | Total Firing Attempts for All Aircraft | Probability |
| AIM-4D | 23 | 13 | 0 | 20 | 50 | 0 | 10 | NA |
| AIM-7D | 29 | 17 | 17 | 66 | 3 | 14 | 29 | 0.32 |
| AIM-7E | 198 | 11 | 12 | 56 | 11 | 21 | 127 | 0.59 |
| AIM-9B | 160 | 21 | 22 | 16 | 34 | 28 | 150 | 0.28 |
| AIM-9D | 50 | 40 | 4 | 20 | 13 | 20 | 30 | 0.79 |
| All Missiles | 460 | 18 | 19 | 35 | 23 | 23 | 346 | NA |

Hypothesis: For a specific missile, there is no measurable difference in performance between aircraft types carrying that missile.
Procedure: Takes corrected [illegible].
Acceptance level: The hypothesis is accepted if the computed probability that the sample could have been drawn from a set of homogenous elements is greater than 0.05.
Conclusion: Each probability is greater than 0.05. Therefore, the hypothesis is accepted for each missile; that is, no difference between aircraft types.

AIM-9D

the missiles currently in the inventory, the missile with the smallest percentage out-of-envelope is the AIM-7E closely followed by the AIM-9D. The air war in SEA has fluctuated through periods of no activity to periods of intense activity. This variation can be observed by the changing slope of the cumulative total of firing attempts shown in Figure III-C4.

(S) A test of the hypothesis that there was no measurable difference in performance between aircraft carrying a given missile resulted in the probability values also given in Table III-C9. The Yates-corrected chi-square procedures were used because of the large variation in the expected value

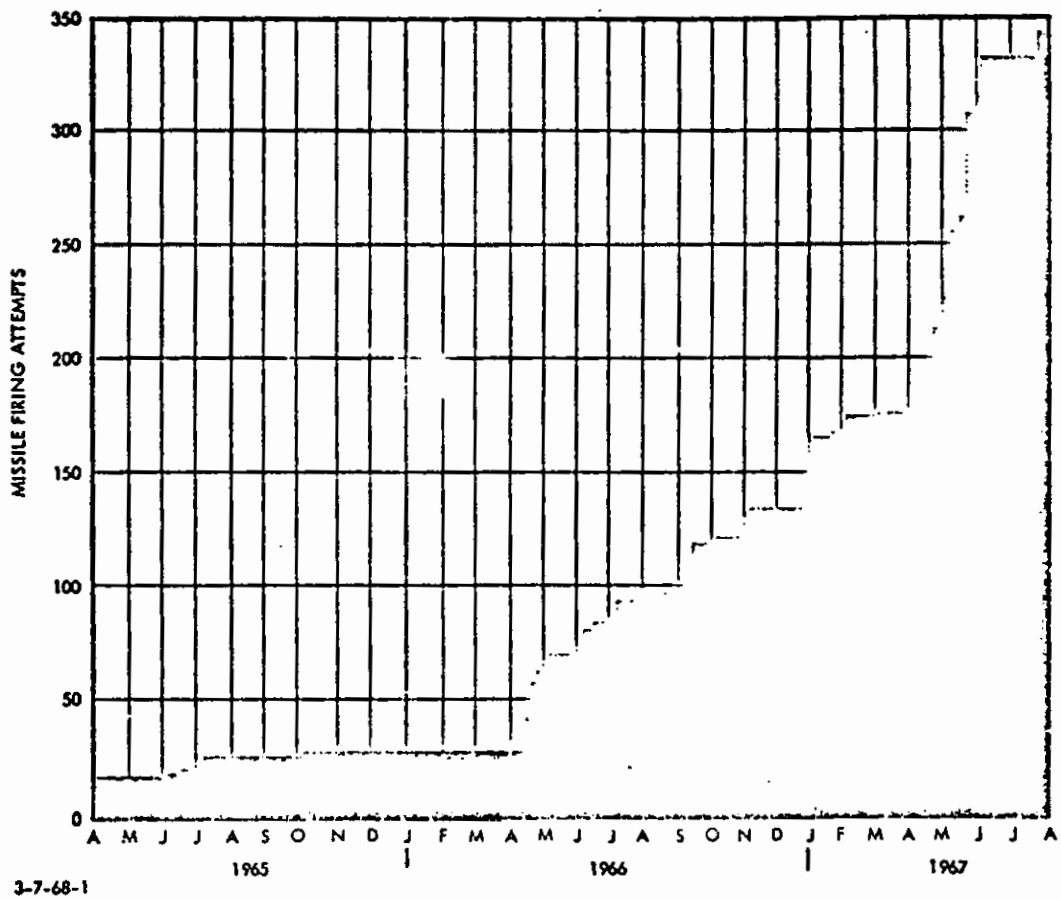



FIGURE III-C4 (S). Cumulative Total of Missile Firing Attempts April 1965 to August 1967 (U)

[redacted]

## Table III-C10 (S). COMPARISON OF MISSILE RESULTS AND TARGET TYPES (U)

| Ordnance: | AIM-4D | | AIM-7E | | AIM-9B | | AIM-9D | |
|---|---|---|---|---|---|---|---|---|
| MIG Target Type: | 17 | 21 | 17 | 21 | 17 | 21 | 17 | 21 |
| Firing Attempts to 1 August 1967 | 10 | 0 | 77 | 44 | 101 | 69 | 29 | 1 |
| Hits | 0 | | 4 | 9 | 21 | 12 | 13 | 1 |
| Failures | 2 | | 42 | 25 | 13 | 11 | 6 | 0 |
| Out of Envelope | 8 | | 11 | 3 | 38 | 13 | 4 | 0 |
| Probability | NA | | 0.09 | | 0.53 | | 0.75 | |
| Firing Attempts to 3 January 1968 | 18 | 5 | 103 | 89 | 106 | 54 | 39 | 11 |
| Hits | 3 | 0 | 7 | 12 | 21 | 12 | 16 | 5 |
| Probability | 0.75 | | 0.19 | | 0.78 | | 0.80 | |

Hypothesis: For a specific missile, there is no measurable difference in performance between target type.
Procedure: Yates corrected chi-square.
Acceptance Level: The hypothesis is accepted if the computed probability that the sample could have been drawn from a set of homogenous elements is greater than 0.05.
Conclusion: Each probability is greater than 0.05. Therefore the hypothesis is accepted for each missile type; that is, no difference between target type.

of individual cells. The level of rejection was placed at 5 percent. On the basis of these tests (the lowest probability was 0.28) the hypothesis was accepted that there is no difference in aircraft types and throughout this report the missile carrier is suppressed in favor of the missile system itself.

(S) A similar computation was made on the variation of missile results with target type. Table III-C10 presents these data for the missiles currently in the inventory. The table is subdivided into the two periods, April 1965 to 1 August 1967 on top and April 1965 to 3 January 1968 on the bottom. The hypothesis tested was that missiles worked equally well on both targets and the level of rejection was placed at 5 percent. Based on this criteria, the hypothesis could not be rejected. The relative low probability for the AIM-7E during the early period is a direct result of the high ratio of MIG-21 kills. This tendency was reversed in the last six months so that the probability that there is no difference between the targets is increased when considering the entire period (April 1965 through 3 January 1968).

[redacted]

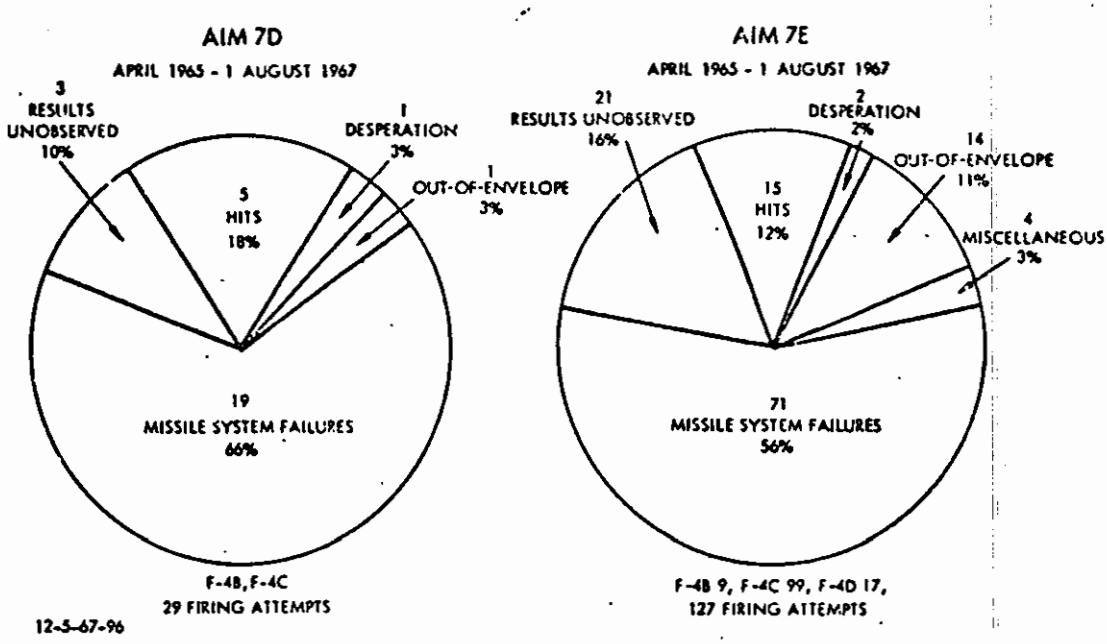



FIGURE III-C5 (S). AIM-7 Summary (U)

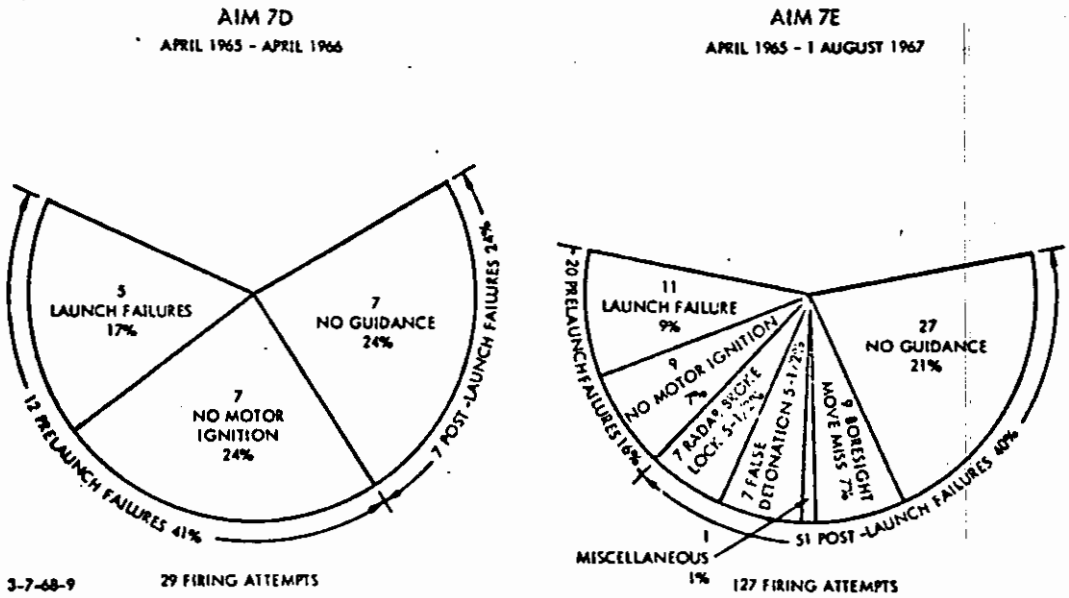



FIGURE III-C6 (S). AIM-7 Missile System Failures (U)



[redacted]

[redacted]

AIM-7 SPARROW

(S) The AIM-7D was employed in SEA from April 1965 through April 1966. The AIM-7E replaced the AIM-7D in April 1966 and has been used since that time. The summary of AIM-7 results is shown in Figure III-C5, while Figure III-C6 further subdivides the missile system failures. Note that the fraction of attempts fired out-of-envelope is small and that the fraction of prelaunch failures of the AIM-7D has been reduced. When considering the postlaunch results of the AIM-7E, the environment should be examined. Figure III-C7 combines a time-based histogram of AIM-7D and AIM-7E firing attempts (subdivided into Hits, Missile System Failures, and other results) with a target maneuvering, non-maneuvering dichotomy

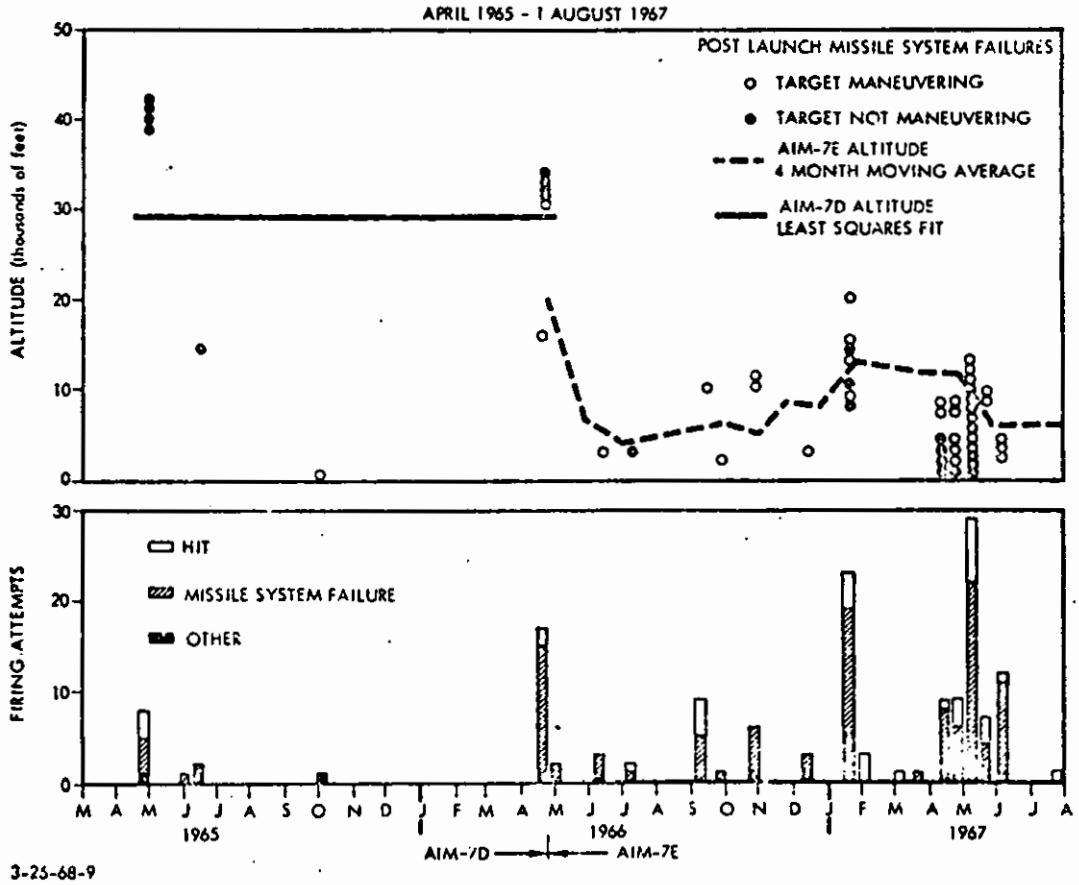



FIGURE III-C7 (S). History of AIM-7 Firing Attempts (U)

[redacted]

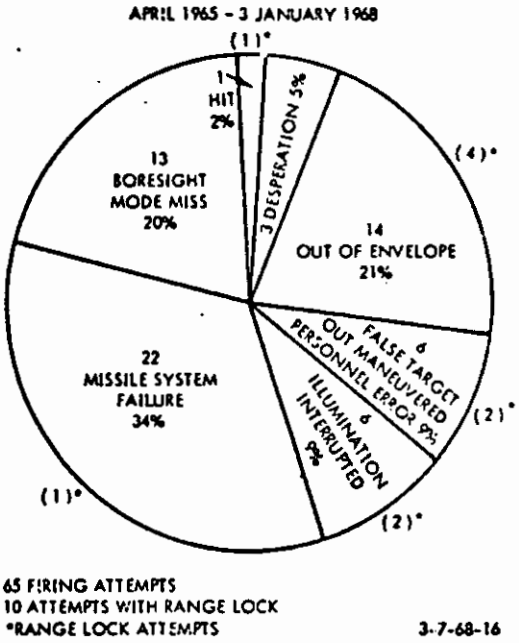



FIGURE III-C8 (S). AIM-7 Boresight Firing Summary (U)

superimposed on the target-altitude profile. The solid line on the left shows a least-squares fit for the four groups of altitudes for the AIM-9D, while the dotted line on the right is a four-month moving average of AIM-7E altitudes. It should be remembered that the SPARROW, like the SIDEWINDER and the FALCON, was designed for use against high-flying, non-maneuvering targets. This was not the combat environment during 1966 and the first half of 1967.

(S) Figure III-C8 presents results of the 65 boresight mode firings of Table III-C8 for the period 1 April 1965 through 3 January 1968. It should be noted that the only hit was one of ten boresight-mode firing attempts made with range lock. Firing in the boresight mode in the dogfight environment of SEA was not successful.

AIM-4D, FALCON

(S) The AIM-4D was introduced into the theater during the last three months of the data collection phase. Of the first ten missiles fired the results were one prelaunch failure, one postlaunch failure, eight fired out-of-envelope, and zero hits. The preliminary data received on the firings between 1 August 1967 and 3 January 1968 indicated that the AIM-4D has achieved three hits in 13 additional firing attempts assuming all firing attempts have been reported. The overall hit/firing-attempt ratio is a maximum of 13 percent (similar to the AIM-7 but less than the AIM-9).

[redacted]

AIM-9, SIDEWINDER

(S) The summary of the AIM-9B results is shown in Figure III-C9. The observed percentage of hits for the AIM-9B is higher than that of the AIM-7 but less than one-half that of the AIM-9D. Percentage of failures is significantly less than the AIM-7 and comparable to the AIM-9D. The percentage fired out-of-envelope is over twice as high as for either the AIM-7 or the AIM-9D. Figure III-C10 presents a more detailed description of the AIM-9B post- and prelaunch failures. Similar detailed information for the AIM-9D is shown in Figure III-C11 and Figure III-C12. Note that the much smaller percentage fired out-of-envelope and the much higher percentage of hits.

(S) If the preliminary data of August 1967 through January 1968 are included, the AIM-9D hit/firing-attempt ratio is reduced to 40 percent.

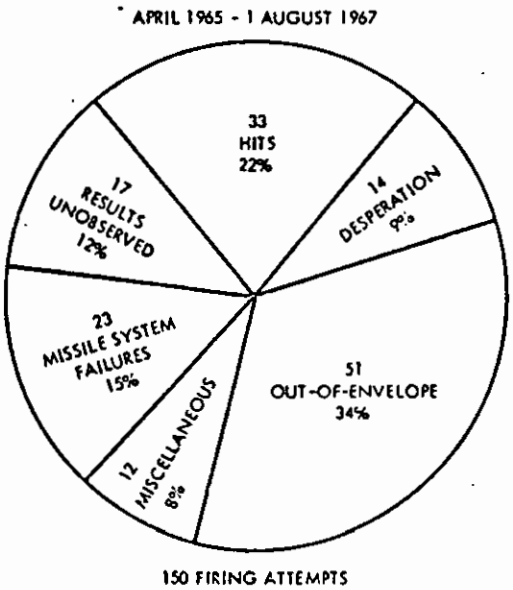



FIGURE III-C9 (S). AIM-9B Summary (U)

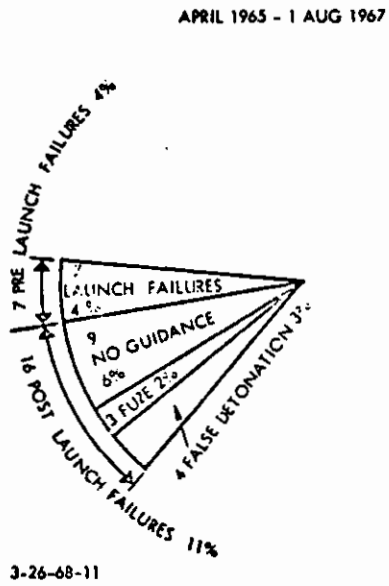



FIGURE III-C10 (S). AIM-9B Missile System Failures (U)

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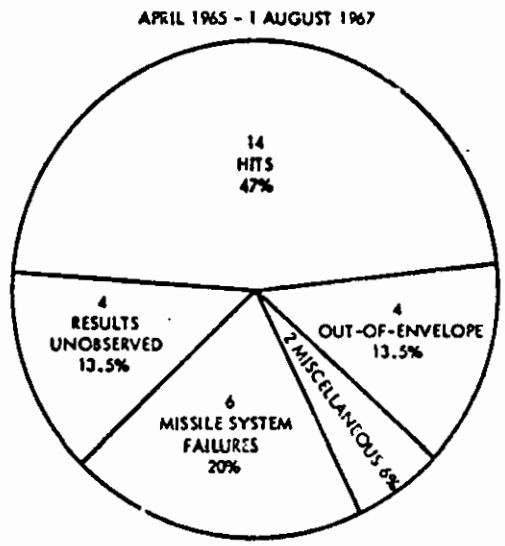


FIGURE III-C12 (S). AIM-9D Missile System Failure (U)

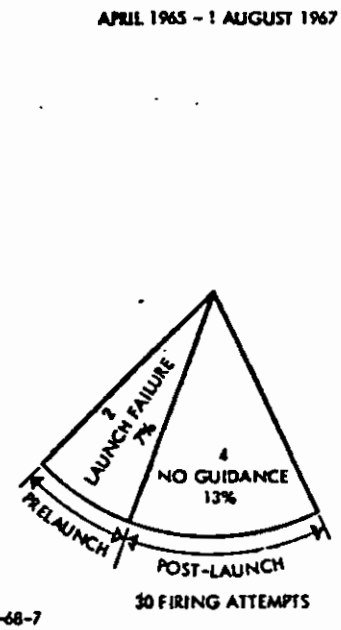


FIGURE III-C11 (S). AIM-9D Summary (U)

Out of Envelope

(S) Figure III-C13 presents a comparison of the percentage of missiles fired by each aircraft-ordnance combination together with the number fired out of envelope for each category. Chi-square tests of these comparisons indicate that the combinations are heterogenous at the 5-sigma level and therefore there is near-zero probability that this set could have been drawn from a homogenous random sample.

(S) A detailed examination of the data identified those combinations which contributed to the hetorogenous results. This process indicated that the AIM-7E/F-4C had relatively the least out-of-envelope firings and the AIM-4D/F-4D and the AIM-9B/F-4C had relatively the most out-of-envelope firings.

(S) When a comparison is made of the percentage of out-of-envelope firings with altitudes, there is a statistical



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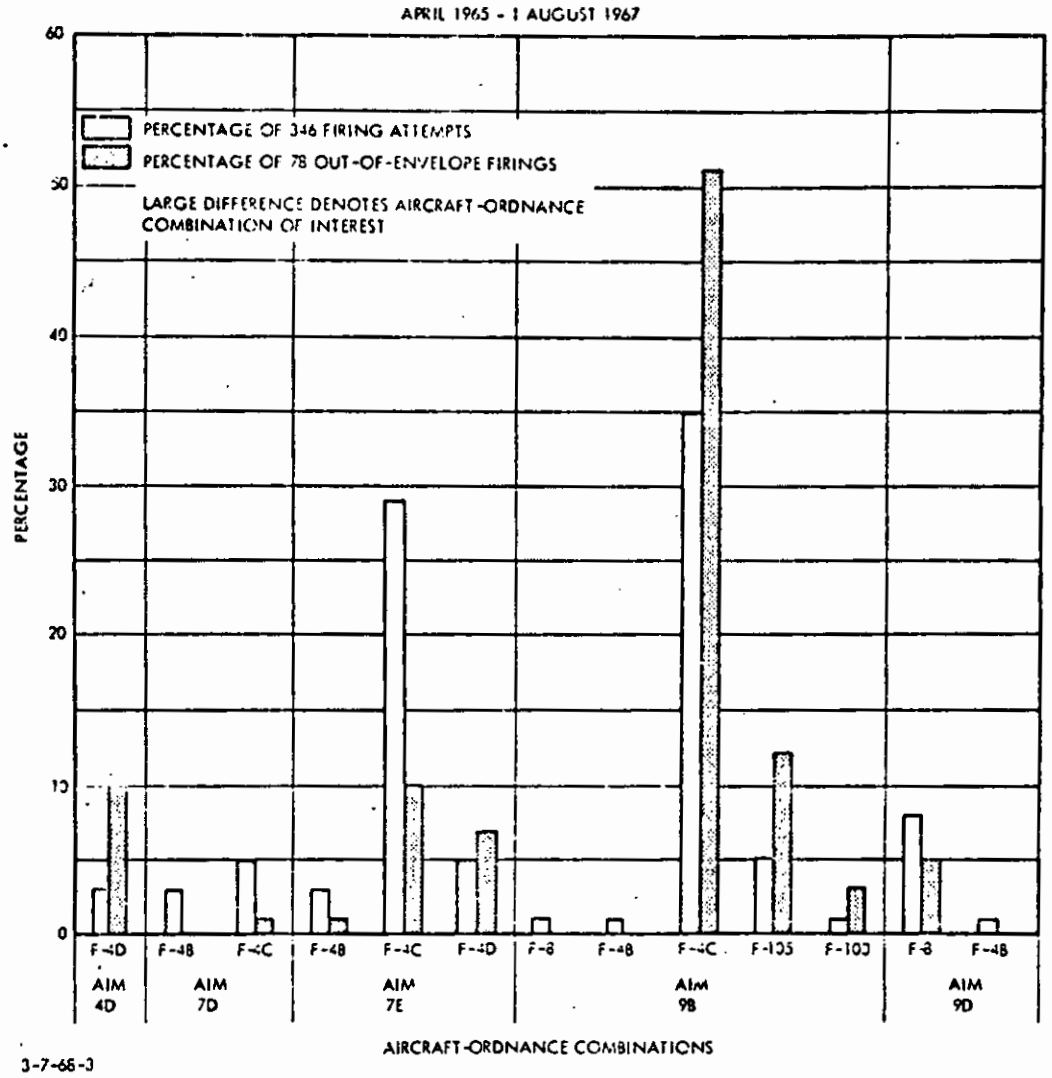


FIGURE III-C13 (S). Comparison of Aircraft-Ordnance Combinations for Percentage Fired Out of Envelope (U)

inverse correlation between the two; that is, as the altitude decreases, the percentage of out-of-envelope firings increases, as depicted in Figure III-C14.

(S) There are a variety of contributing causes to the out-of-envelope phenomenon; among these are missile type, aircraft g's, target g's, and altitude at time of firing. Although less obvious, the effect of altitude on out-of-envelope firings becomes apparent by a comparison of envelopes at

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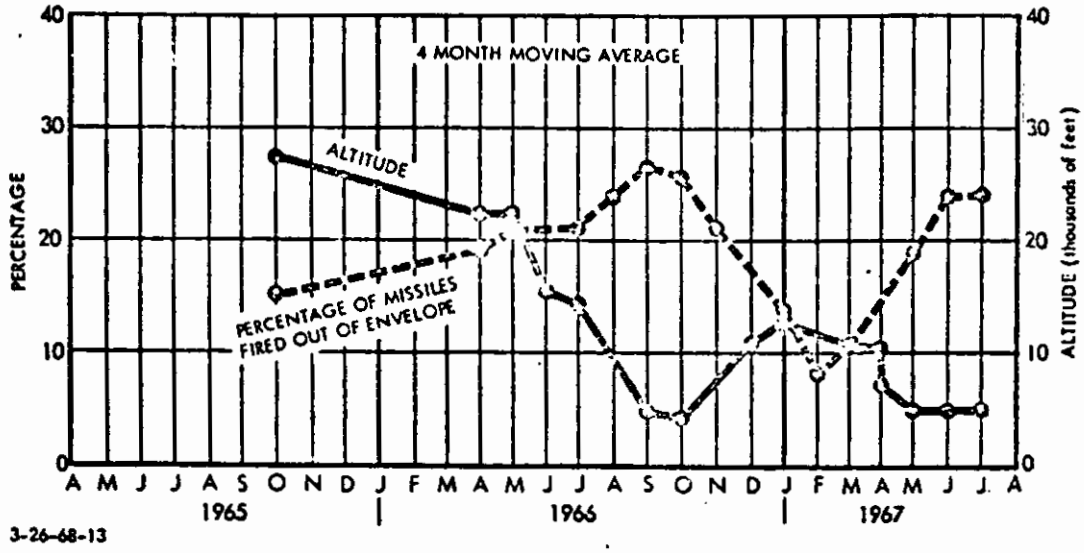


FIGURE III-C14 (S). Comparison of Altitude and Out-of-Envelope Ratio (U)

different altitudes. As altitude decreases, the envelope shrinks rapidly, predominately as a result of increased aerodynamic drag. The capability of the target to distort the envelope also increases as altitude decreases. Representative envelopes are shown in Appendis B.

Hits

(S) The desired result of a missile firing attempt is a target hit. In this sense all results in the other categories (with the possible exception of desperation firing) must be considered a nonsuccess. Figure III-C15 shows the percentage of firing attempts together with the percentage of hits for each aircraft-ordnance combination (data through 3 January 1968). Again the combinations are heterogenous (at the 2.6-sigma level). The AIM-9D hit ratio was significantly higher than that of the other missile types. No significant difference could be detected among the remaining missile types. (Note that the zero hits of the AIM-9B/F-4B do not negate this conclusion because the sample size is small).



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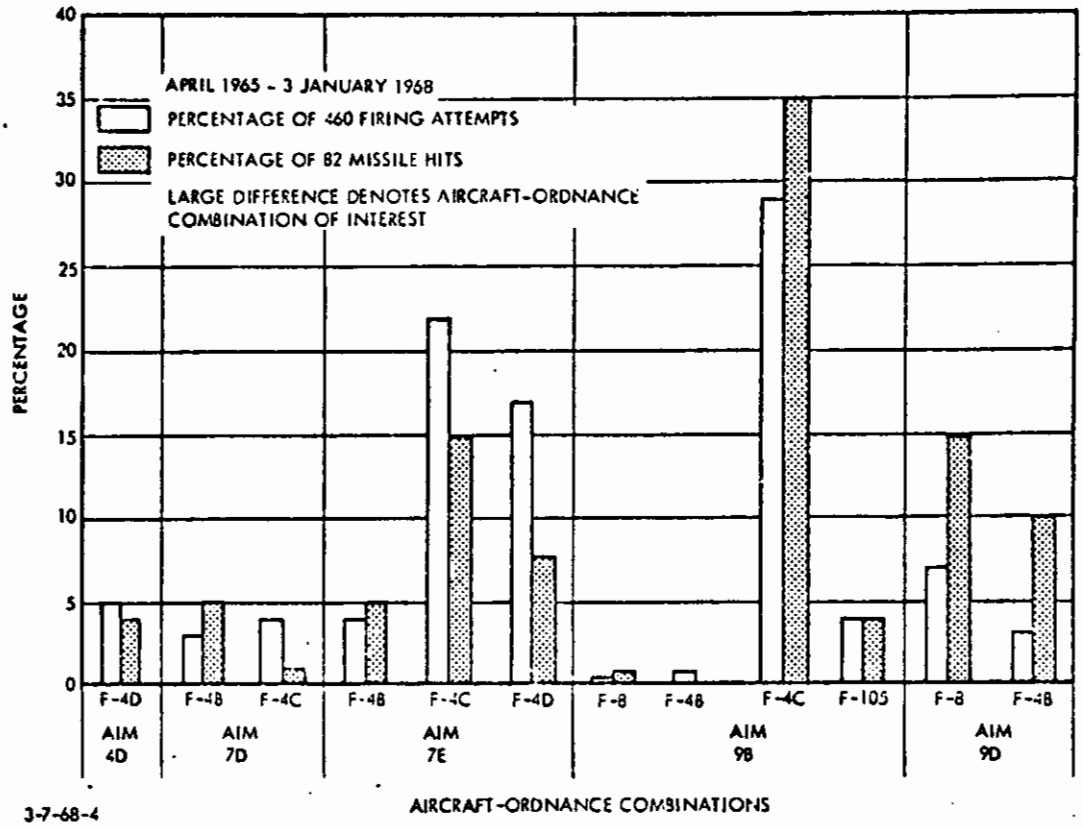


FIGURE III-C15 (S). Comparison of Aircraft-Ordnance Combinations for Percentage of Missile Hits (U)

Missile System Failures Trend Analysis

(S) It was recognized early in the analysis phase that any cumulative results such as those of Figure III-C16 may distort evaluation of a missile system if most of the failures occurred early in the war. A method to test a hypothesis that the failures were decreasing was by means of trend analysis. The specific procedure selected was the method of moving averages.

(S) It was found that the choice of a base was not critical. For the individual missiles, a summing base of approximately one-third the number of firings smothered the

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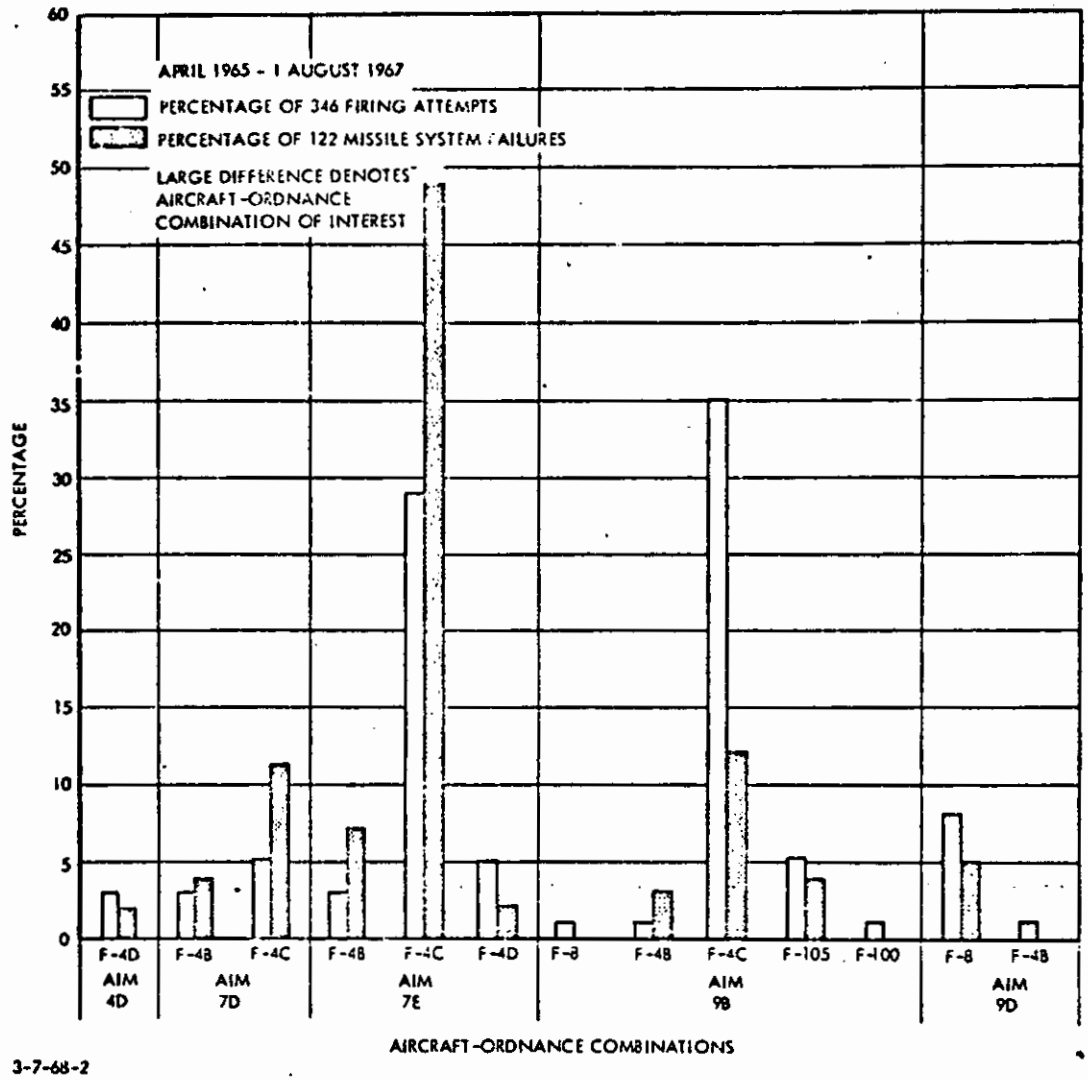


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FIGURE III-C16 (S). Comparison of Aircraft-Ordnance Combinations for Percentage of Missile System Failures (U)

minor variations while leaving the major trend visible. It should be noted that the abscissa for most of the plots is firing attempts rather than calendar days. This scale was selected because the rate of fire varied over such a wide range that any grouping by week or month distorted the trends. Those trends which are plotted as a function of time were computed using firing attempts and then plotted by date.



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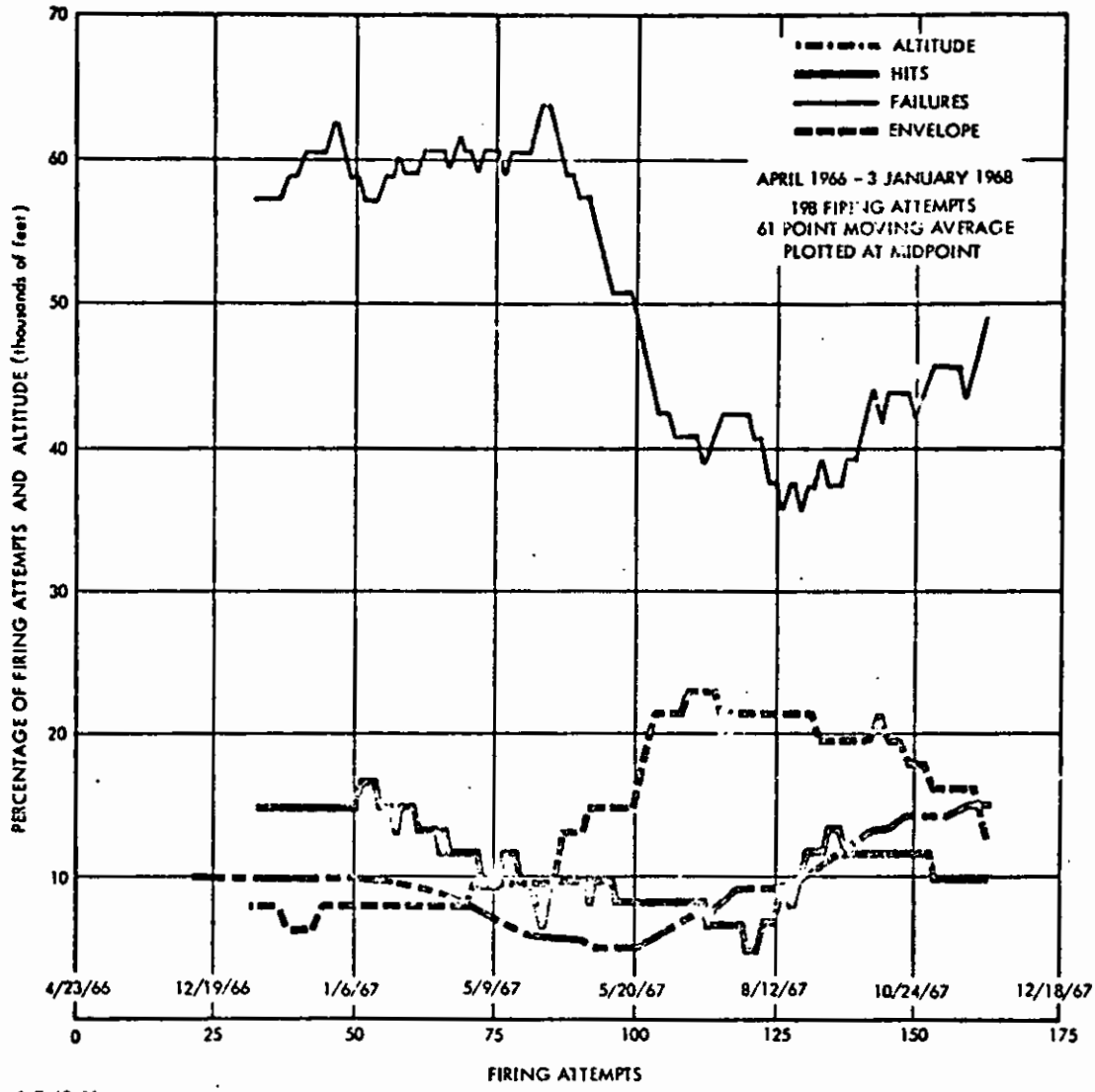


FIGURE III-C17 (S). AIM-7E Trend Analysis (U)

(S) The moving average plots for the AIM-7E are shown in Figure III-C17. The failure rate can be seen to be holding at a 60 percent value until mid-May 1967. The low point was reached in August and has been gradually rising until the final of 49 percent failures is obtained. Unfortunately, the decrease in failures did not result in a corresponding increase in hits as the hit trend remained fairly constant at

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10 percent throughout the entire time period. It should be reemphasized that these percentages do not reflect kill probability or missile reliability.

(S) Figure III-C18 presents the trend plots for the AIM-9B. Note the decreasing failure rate. The hit percentage is returning near its original value of 28 percent after reaching a low of 10 percent. The out-of-envelope percentage increased

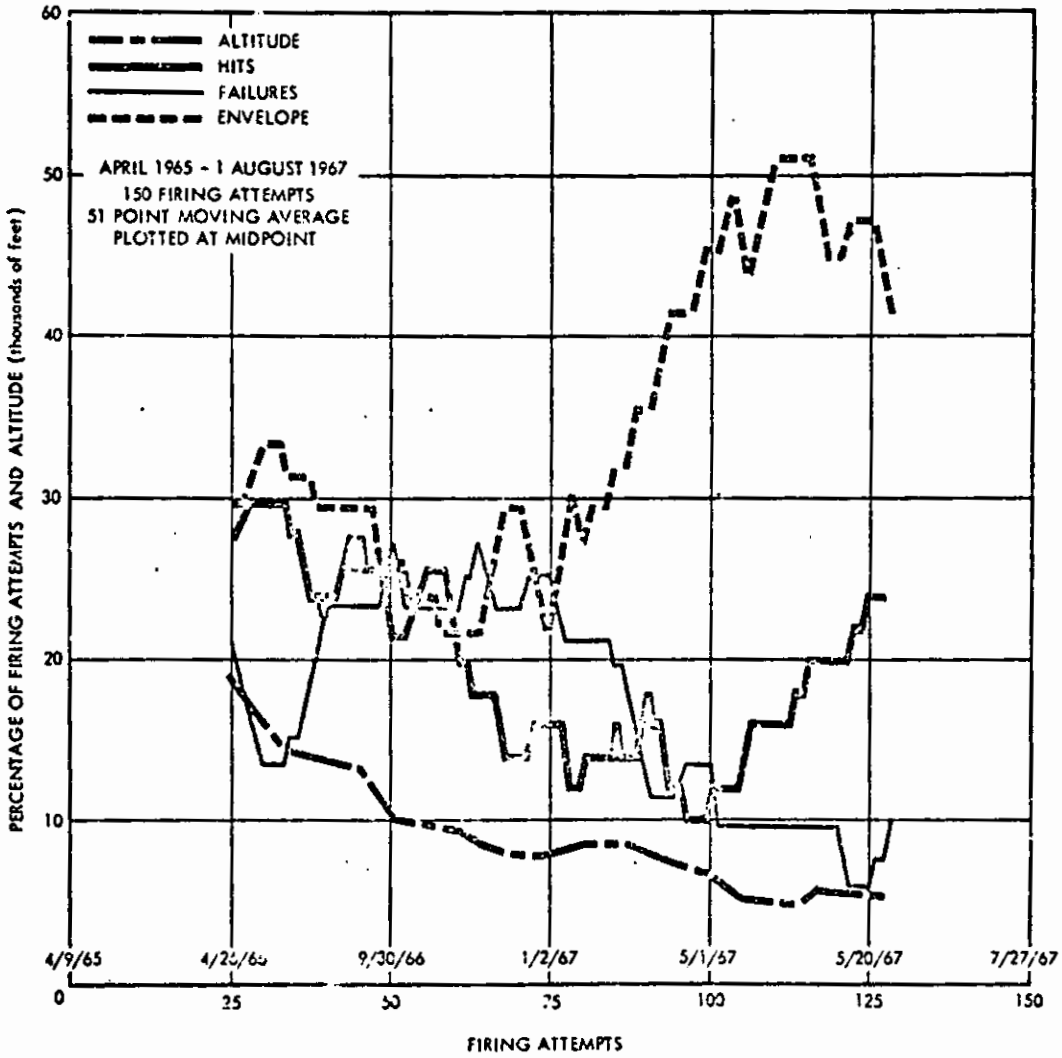


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FIGURE III-C18 (S). AIM-9B Trend Analysis (U)



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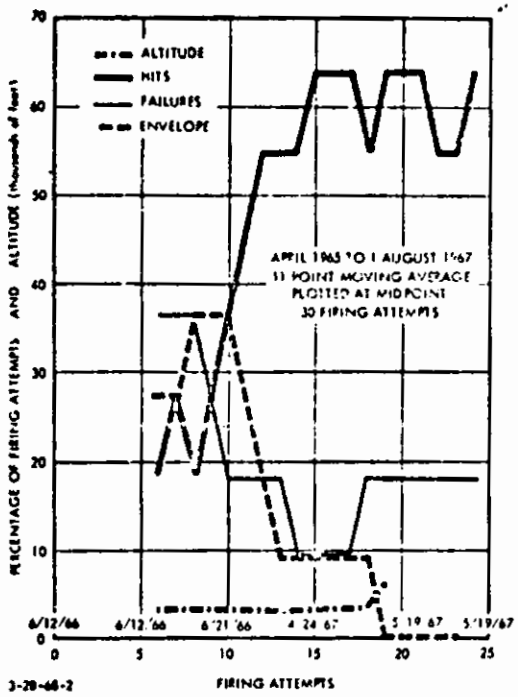


FIGURE III-C19 (S).
AIM-9D Trend Analysis (U)

as the altitude decreased as discussed in the out-of-envelope subsection.

(S) The number of AIM-9D firing attempts is too small (30 for the time period of the study) to justify any detailed trend analysis. However, Figure III-C19 indicates that the trend of each curve appears to be favorable: hits up, failures and out-of-envelope percentages down. An analysis of the AIM-4D was not considered because of the small number of firing attempts and the incompleteness of the post-August 1967 data.

Analysis of Overall Trends

(S) One measure of effectiveness for the air-to-air war is the composite hit-to-firing-attempt ratio. A 51 point moving average plot of this measure is shown in Figure III-C20.

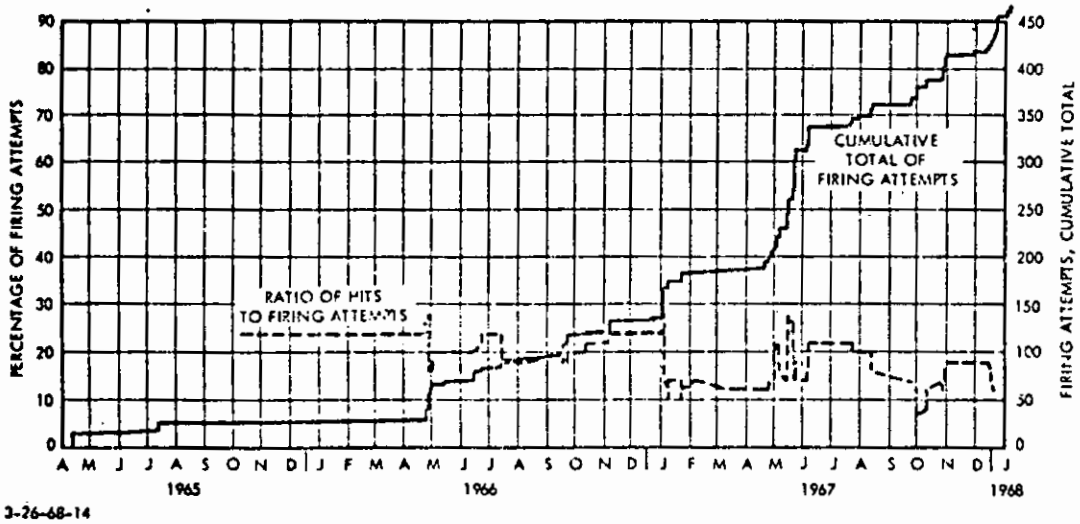


FIGURE III-C20 (S). Hit Trend Analysis (U)

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The moving average is plotted at the date of the midpoint. The cumulative total of all missile firing attempts is included for comparison. (Note that the specific combination of missiles expended in any specific period is not indicated.) The general trend is a series of plateaus of decreasing value and reaching 12 percent in April 1967. The ratio increases to 22 percent in June. A low point of 6 percent was attained in October. The final value for percentage of Hits (representing data as of 3 January 1968) can be seen to be 12 percent in a downward trend.

(S) The moving average of altitude at which missiles were fired is presented in Figure III-C21. While the early air battles were at high altitudes since mid-1966 the altitudes have been lower and followed a more seasonal trend (lower in the summer than in the winter). Figure III-C22 shows the moving average of altitude for the MIG-17 and the MIG-21. The cumulative total for each target is also included. Of interest is the fact that the altitudes at which MIG-17s were engaged is significantly lower than those of the MIG-21s. Table

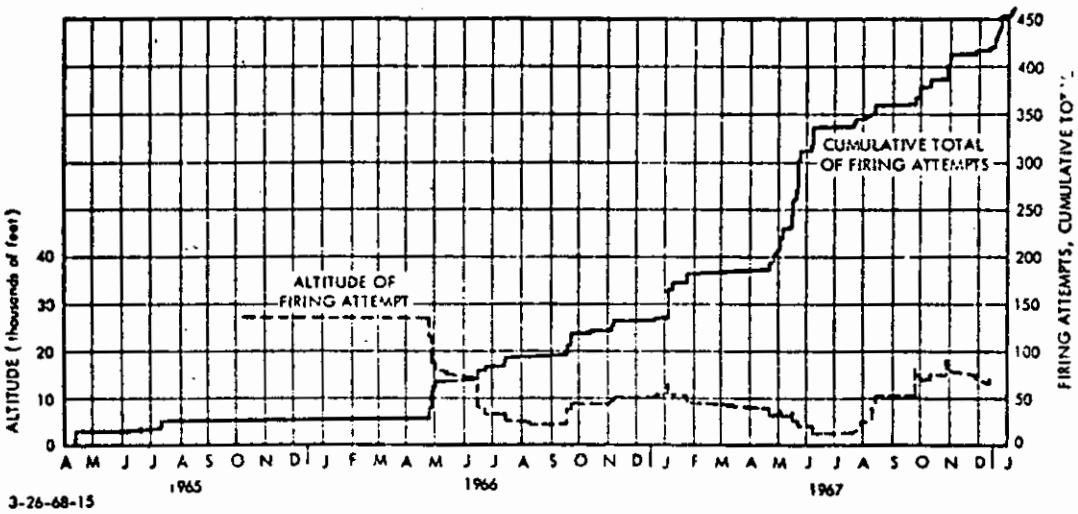


FIGURE III-C21 (S). Altitude Trend Analysis (U)



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Table III-C11 (S). COMPARISON OF ORDNANCE EXPENDITURE ALTITUDES, APRIL 1965 - 3 JANUARY 1968 (U)

| | MIG-21 | | | MIG-17 | | | |
|---|---|---|---|---|---|---|---|
| | No. | Mean Altitude K Feet | Standard Deviation K Feet | No. | Mean Altitude K Feet | Standard Deviation K Feet | Probability |
| Missiles Only | 134 | 16.4 | 9.3 | 208 | 7.3 | 9.1 | 0 |
| Guns Only | 7 | 9.3 | 8.3 | 56 | 4.4 | 3.0 | 0.09 |

Hypothesis: There is no measurable difference in altitude of ordnance expenditure against the MIG-17 or the MIG-21

Procedure: Student's t Test.

Acceptance Level: The hypothesis is accepted if the computed probability that the sample could have been drawn frmm a set of homogenous elements is greater than 0.05.

Conclusion: The probability that missile system firing altitudes are the same for each target is less than 0.05. Therefore, the hypothesis is rejected for missiles. That is, there is a difference in target altitude (MIG-21s higher than MIG-17s). However, the computed probability for gun systems is 0.09. Therefore, the hypothesis is accepted. That is, there is no difference in target altitudes for the gun systems firing attempts.

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of investigation is based on factoring the hit probability into its conditional probabilities. The factors chosen are:

- A. Probability of successful launch given a launch attempt.
- B. Probability missile fired in envelope given a successful launch.
- C. Probability missile will track to the target given it was launched in envelope.
- D. Probability of target hit given the missile tracked the target.

(S) The product A·B·C·D is the hit probability given a launch attempt. Table III-C12 provides the specific definitions for these probabilities along with the basic data and the resulting individual probabilities. The disposition of Desperation, Unobserved, and Personnel Error results should be noted. Desperation attempts were included in the denominator

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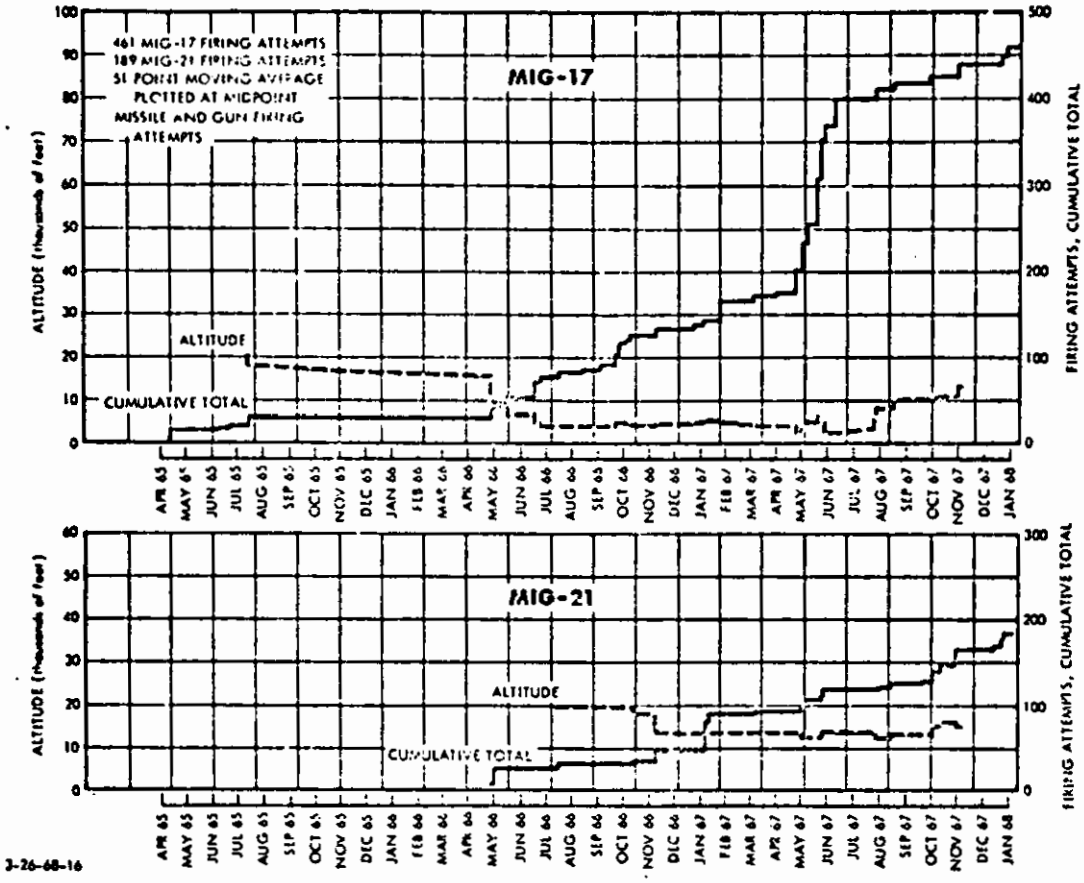


FIGURE III-C22 (S). Altitude of Firing Attempts by Target Type (U)

III-C11 summarizes the altitude information for missiles and for guns. The hypothesis that the altitudes for the MIG-17 and the MIG-21 are the same may be accepted for gun-firing attempts but must be rejected for missile-firing attempts (MIG-17s lower than MIG-21s).

Hit Probability Components

(S) Up to this point, the missile-firing results have been considered as a description of past performance on the basis of three major categories: hits, missile failures, and missiles fired out-of-envelope. A second method of

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of factor B as they were not fired in envelope. Unobserved attempts were included in factor A since they were launched successfully, but were discarded from the other factors. Personnel Error results were not included in any of the factors.

(S) These four factors (A,B,C,D) and their product (A·B·C·D) were plotted as a moving average for the AIM-7E, AIM-9B, and AIM-9D as shown in Figures III-C23, C-24, and C-25.

(S) The curves for the AIM-7E indicate that the early prelaunch failure problems have been solved: the probability of launching in envelope has climbed back up from a low of 0.6 to above 0.9; and the probability of a missile tracking (given a successful launch in envelope) increased toward the later periods from a low of 0.2 to a value of 0.5. The biggest single contributor to the latter factor was Failure to Guide.

(S) Except for two peaks which reached above 0.8, the probability of a hit (given a successful track) has been going down steadily from an early value of 0.6 to a value of 0.3 in January 1968. The first of these peaks (at 45 Firing Attempts) occurred during Operation BOLO. The second peak occurs in late May, early June 1967. No other corresponding cause-effect relationship was observed. The major single contributor to the Hit factor was the False Detonation category. While the seven False Detonations represent only 5.5 percent of the 127 AIM-7E firing attempts, this contributor is given great leverage due to the small number of missiles which successfully tracked the target.

(S) The precombat estimates of these factors by OPTEVFOR[1] are given in Table III-C13. These values may be compared

[1] (U) Operational Test and Evaluation Force, Norfolk, Virginia.

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Table III-C12 (S). HIT PROBABILITY COMPONENTS
APRIL 1965 - 1 AUGUST 1967 (U)

| | Result | AIM-4D | AIM-7D | AIM-7E | AIM-9B | AIM-9D |
|---|---|---|---|---|---|---|
| $R_1$ | Failure to Launch | 1 | 12 | 20 | 7 | 2 |
| $R_2$ | Desperation | | 1 | 2 | 14 | |
| $R_3$ | Out of Envelope | 8 | 1 | 14 | 51 | 4 |
| $R_4$ | Failure to Guide | | 7 | 27 | 9 | 4 |
| $R_5$ | False Target | | | | 3 | 1 |
| $R_6$ | Boresight Mode Miss | | | 9 | | |
| $R_7$ | Mechanical Failure | 1 | | 1 | | |
| $R_8$ | Radar Broke Lock | | | 7 | | |
| $R_9$ | Out Maneuvered | | | 3 | 8 | 1 |
| $R_{10}$ | Fuze Failure | | | | 3 | |
| $R_{11}$ | False Detonation | | | 7 | 4 | |
| $R_{12}$ | Hit | | 5 | 15 | 33 | 14 |
| $R_{13}$ | Unobserved | | 3 | 21 | 17 | 4 |
| $R_{14}$ | Personnel Error | | | 1 | 1 | |
| | TOTAL | 10 | 29 | 127 | 150 | 30 |

Factor/Description

A Probability of successful launch given a launch attempt

$$A = \frac{\sum_{i=2}^{13} R_i}{\sum_{i=1}^{13} R_i}$$ 0.90 0.59 0.84 0.95 0.93

B Probability missile fired in envelope given a successful launch

$$B = \frac{\sum_{i=4}^{12} R_i}{\sum_{i=2}^{12} R_i}$$ 0.11 0.86 0.81 0.48 0.83

C Probability missile will track target given it was launched in envelope

$$C = \frac{\sum_{i=9}^{12} R_i}{\sum_{i=4}^{12} R_i}$$ 0 0.42 0.36 0.80 0.75

D Probability of a hit given the missile tracked target

$$D = \frac{R_{12}}{\sum_{i=9}^{12} R_i}$$ NA 1.00 0.60 0.69 0.93

Product A·B·C·D 0 0.21 0.15 0.25 0.54

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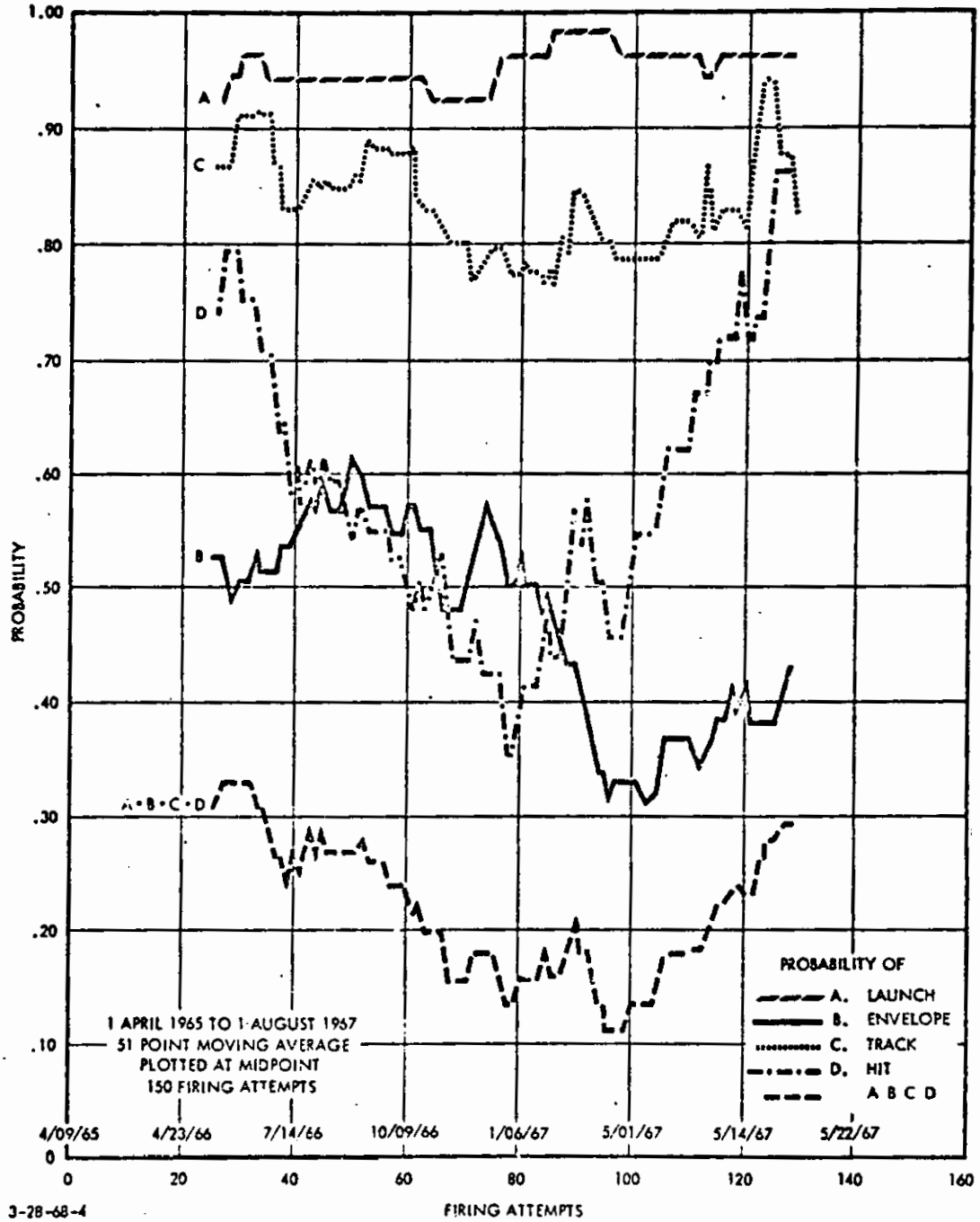


FIGURE III-C24 (S). Trends of AIM-9B Probability Factors (U)



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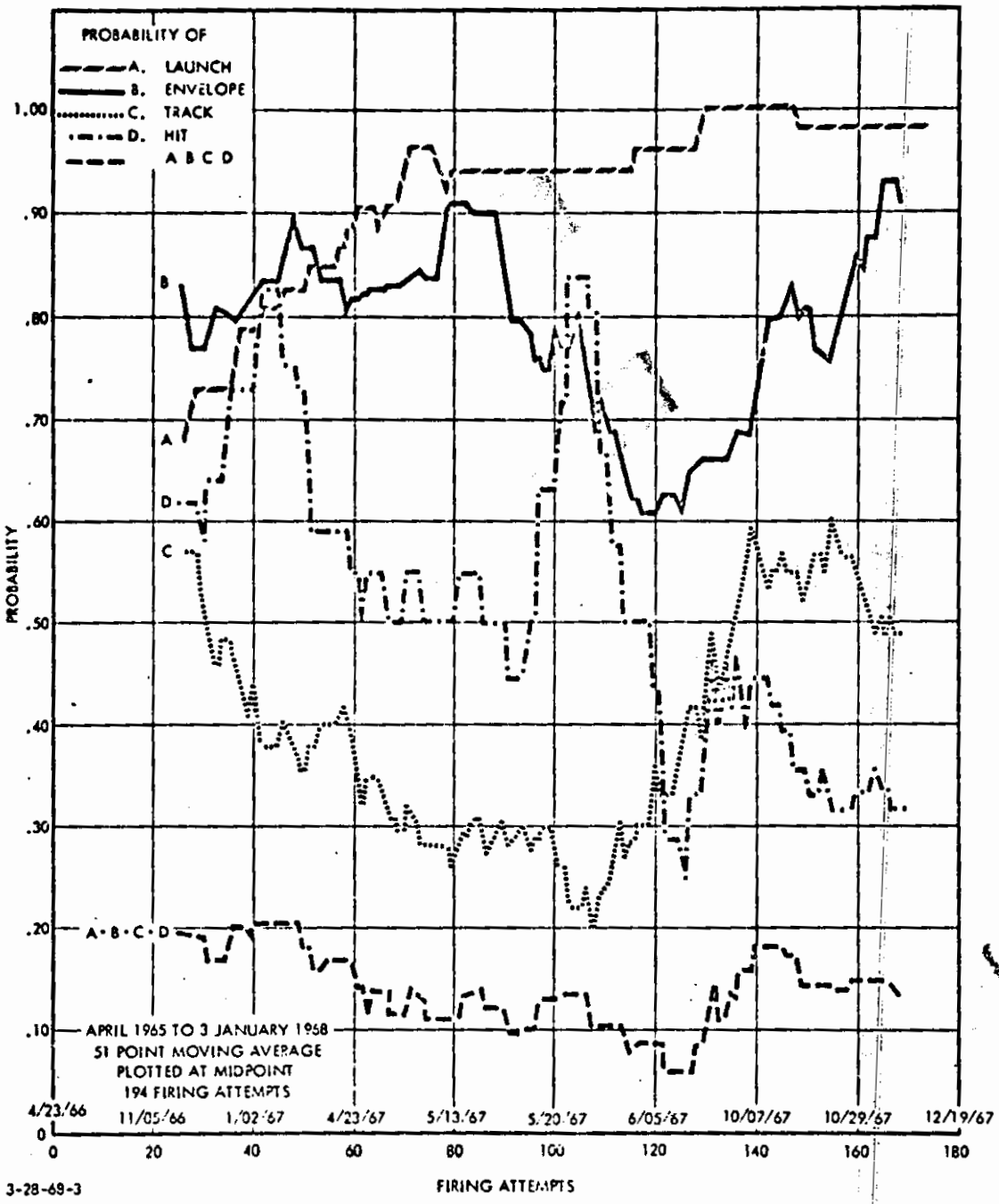


FIGURE III-C23 (S). Trends of AIM-7E Probability Factors (U)

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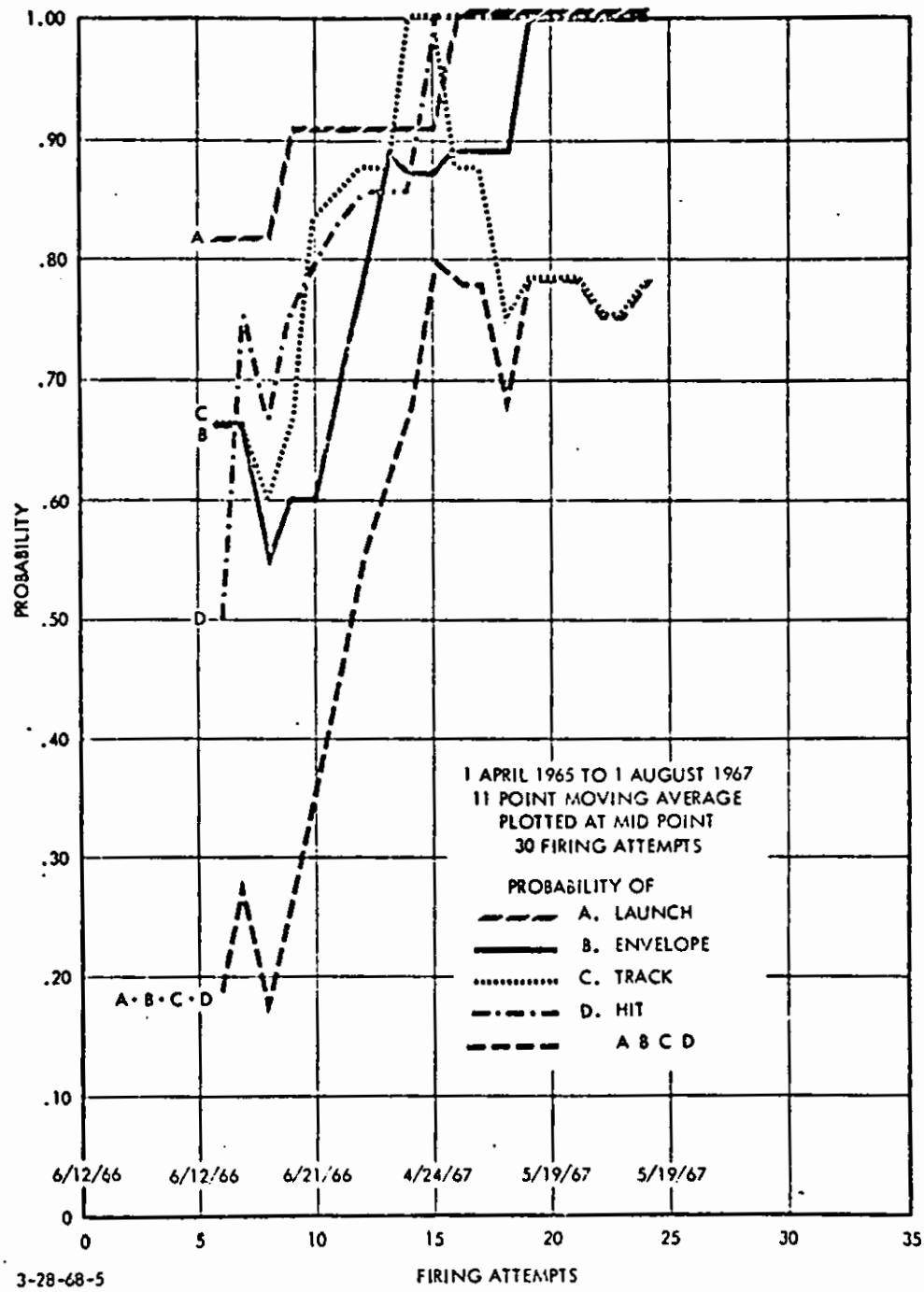


FIGURE III-C25 (S). Trends of AIM-9D Probability Factors (U)

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## Table III-C13 (S). COMPARISON OF PRECOMBAT ESTIMATES WITH COMBAT DATA (U)

| | AIM 7E | | | | AIM 9B | | | | AIM 9D | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 50% | 75% | 100% | Precombat Estimate[a] | 50% | 75% | 100% | Precombat Estimate[b] | 50% | 75% | 100% | Precombat Estimate[c] |
| A. Probability successful launch given attempt | 0.96 | 0.96 | 0.98 | 0.98 | 0.94 | 0.98 | 0.96 | 1.00 | 0.91 | 1.00 | 1.00 | 0.96 |
| B. Probability of launch in envelope given successful launch | 0.84 | 0.61 | 0.93 | 1.00 | 0.60 | 0.43 | 0.43 | 1.00 | 0.60 | 0.89 | 1.00 | 1.00 |
| C. Probability of track given successful launch in envelope | 0.31 | 0.35 | 0.49 | 0.70 | 0.88 | 0.84 | 0.83 | 0.78 | 0.75 | 0.88 | 0.78 | 0.77 |
| D. Probability of hit given successful track | 0.55 | 0.46 | 0.32 | 0.93 | 0.57 | 0.57 | 0.86 | 0.83 | 0.78 | 1.00 | 1.00 | 0.79 |
| Product A·B·C·D | 0.14 | 0.09 | 0.14 | 0.71 | 0.28 | 0.20 | 0.29 | 0.65 | 0.32 | 0.78 | 0.78 | 0.58 |

[a] OPTEVFOR Report O/V 16 FY 61, dated 29 September 1965 (nonmaneuvering target).
[b] USN Ordnance Laboratory Report 65-63-43, dated 11 March 1963 (nonmaneuvering target).
[c] OPTEVFOR Report C/V 1 FY 61, dated 2 April 1965 (nonmaneuvering target).
[redacted]

with the missile firing attempts corresponding to 50, 75, and 100 percent of the sample size.[1] It can be seen that the biggest discrepancy between precombat and postcombat results is in the Hit factor.

(S) Figure III-C24 shows these probability trends for AIM-9B. Comparison with Table III-C12 shows that the Launch, Track, and Hit probabilities are adequate. However, as discussed previously, the Out-of-Envelope firings are negating the effectiveness of this system.

(S) The AIM-9D curves of Figure III-C25 show that early difficulties have been overcome. The last values actually surpass the precombat estimates by OPTEVFOR. It will be of interest to observe the next 30 firing attempts to see if these favorable trends continue.

[1] (U) For example, there were 194 AIM-7E attempts. With a 51 point moving average the last point is plotted at 169. Twenty-five percent of 194 is 48. Thus, the 75 percent point occurs at 121 and the 50 percent point is at 73.

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## E. CONCLUSIONS

(S) The analysis as presented in the preceding sections has indicated the following conclusions:

- With the exception of the AIM-9D (SIDEWINDER) which was significantly better, all missiles and missile-aircraft combinations showed essentially the same level of target-hit performance.
- The lack of success of the AIM-7 (SPARROW) when fired in the boresight mode (1 hit in 65 attempts) indicates that this mode was not successful in the dogfight conditions of the present air war.
- Failure rates for the various missiles are quite erratic and each trend must be analyzed separately:

  The AIM-7D (SPARROW) has been phased out.

  The AIM-7E (SPARROW) held a 60 percent plateau from April 1966 to June 1967 and then dropped to 40 percent in the summer of 1967. Additional data collected on the AIM-7E from August 1967 to 3 January 1968 indicate the failure rate has increased to approximately 50 percent.

  The AIM-9B (SIDEWINDER) trend has decreased to about 10 percent.

  The AIM-9D (SIDEWINDER) trend has decreased to about 15 percent.

  Thus, SIDEWINDER failure rates are decreasing while SPARROW failure rates, though better than during the early phases, are not decreasing.
- Missile performance (as measured by a chi-square comparison of Hits, Missile System Failures, and Out-of-Envelope firing attempts) is similar for each aircraft type. Thus, the results of the ordnance firing attempts did not provide a measurable difference in the effectiveness between Navy and Air Force use of the AIM-7 and AIM-9B missiles.
- The correlation of Out-of-Envelope firing attempts with altitude (the percentage increases as altitude decreases) coupled with the high percentage in this category for both the AIM-4D and the AIM-9B indicates that either:

  The pilots need more training to know when they are within the envelope;

  The pilots need an improved on-board indication of when they are within envelope; and/or

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The pilots need a large weapon envelope to provide more latitude in launch parameters.

- The hit-to-firing attempt ratio when combined for all missiles reached a value of 12 percent (as of 3 January 1968) and was a downward trend. This ratio, as computed on a 51 attempt moving average, has varied between a high of 25 percent (at the start of the war) and a low of 6 percent.
- Although employed under varying conditions of target type and altitude, missiles as one set and guns considered as a second set showed essentially the same effectiveness in terms of kills-per-firing attempt.



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## Section III-D
## TERMINATION PHASE

### A. SUMMARY

(S) The analysis of the termination phase has indicated that the major causes were loss of contact, fuel limits, and mission requirements. While termination due to expenditure of all available ordnance occurred only 7 percent of the time, F-8 aircraft which terminated due to lack of ordnance did so relatively more frequently than the F-4.

### B. OBJECTIVE

(U) This portion of the analysis sought to determine the reasons which caused termination of air-to-air combat.

### C. BACKGROUND AND SCOPE

(S) Current doctrine dictates that the tactical unit[1] maintain integrity. Therefore, when an individual aircraft of the unit must terminate, it is standing operating procedure for the others to accompany. Under the exigencies of combat, however, tactical unit integrity frequently was not maintained. For this reason the analysis sought first to identify those tactical units operating independently during any event.

(S) As discussed in previous sections, the actions of any one event can be composed of multiple encounters. For this analysis, however, only the last encounter of any independent tactical unit or aircraft was considered to be of interest. The data base used were all F-4 and F-8 events over

[1] (U) The tactical unit may consist of a flight (4 aircraft), or an element (2 aircraft).

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the time period April 1965 to August 1967. For each of the encounters identified in the events, a reason for termination was specified. No a priori categorization of reasons was made; however, the results can be summarized by the following:

- Fuel: Fuel limits were specified as a reason for termination for those units which were in contact with the enemy but could not pursue or continue the engagement because of low fuel state. The normal operational procedure is to refuel USAF strike and CAP aircraft inbound to the target. USAF aircraft are also refueled outbound, unless the distance from the strike to the recovery base is such that more fuel is required to reach a tanker than recover. Due to the distances, USN aircraft are not refueled on a regular basis. Whether or not refueling was planned, the fuel levels established for mission termination were such that return to some friendly base was possible without refueling. In a majority of terminations due to fuel the normal levels were observed.
- Ordnance Expended: The category includes those terminations caused by lack of usable ordnance.
- Loss of Contact: Inclusions in this category are the result of two major situations. If after successful completion of an attack, no further targets were contacted and a judgment was made to retire, the termination was included. The other situations are those encounters during which the U.S. forces unintentionally lost contact with the enemy force. Due to the imprecise knowledge of enemy actions, it is not possible to ascertain how many of the latter cases could be attributed to a successful enemy disengagement.
- Tactical Disadvantage: If the U.S. fighters decided to disengage due to favorable enemy position, and contact was broken in the process, the termination was categorized as the result of tactical disadvantage.
- Battle Damage: If damage to the friendly aircraft caused the termination it is included in this category. Inclusion occurred if a U.S. fighter was forced to break off action, even though the source of damage was flak or SAMs.
- Enemy Defense or Sanctuary: If contact was broken because the enemy went into China or a restricted zone, the termination is included in this category. Also included are those cases where contact was

[redacted]

broken due to the presence of flak or SAM concentrations.

- Mission: If the encounter with enemy aircraft was terminated due to overriding mission requirements, it was categorized as mission. An example of this termination is the determination not to pursue enemy aircraft who pose no immediate threat to an escorted aircraft.

## D. RESULTS

(S) Since any one event was usually comprised of the actions of several tactical units which could terminate separately, at different times, or for different reasons, these tactical units form the basis of the count of terminations. Note that this is on a slightly different basis from the encounter or event count used in other parts of the analysis. To be consistent, these could be called the terminal encounter count. Table III-D1 presents the categorization of all 160 identified F-4 and F-8 terminations for the time period April 1965 to August 1967. Not included in this total were the 8 confirmed U.S. losses during this period.

Table III-D1 (S). REASONS FOR TERMINATION
F-4 AND F-8 TO 1 AUGUST 1967 (U)

| Reason | Number | Percent |
|---|---|---|
| Fuel | 37 | 23 |
| Ordnance Expended | 11 | 7 |
| Lost Contact | 51 | 32 |
| Tactical Disadvantage | 11 | 7 |
| Battle Damage | 15 | 9 |
| Enemy Defense or Sanctuary | 10 | 6 |
| Mission | 25 | 16 |
| Total | 160 | 100 |

[redacted]

[redacted]

(S) The highest frequency of terminations were in the group comprising loss of contact with the enemy and no more targets, which represented 32 percent of the cases. Both of these categories imply the need to know enemy location in order to reestablish contact; that is, some sort of enemy position and direction information as well as better visibility from the cockpit. In several cases contact was lost when radar return was obscured by ground clutter. In other cases, visual contact was lost due to poor visibility (e.g., haze).

(S) The second major category for termination was fuel limits. Most of these terminations resulted from the observation of normal fuel levels and in only 8 of the 37 cases would the aircraft have been lost without refueling. The ability of U.S. aircraft to disengage successfully permitted termination when normal fuel levels were reached. There was no difference between F-4 and F-8 relative frequency of terminations in this category.

(S) The third most frequent reason for termination was mission requirements. In general, there are no R&D implications in this item. There is no evidence that equipment deficiencies were the basis of the mission requirements that required the escort to terminate.

(S) An item which occurred with small frequency but with potential R&D implications is the lack of useful ordnance. This circumstance occurred 11 times. Almost half of the cases (5 of the 11) were F-8 aircraft, which carried only two missiles and had 6 seconds of gun-firing time. The poor reliability of the Mk 12 cannon system over the period of the study also contributed to the unavailability of ordnance on the F-8, since gun failures were frequent (28 percent of firing attempts) in air-to-air combat. In the remaining 5 cases the F-4 aircraft were loaded with only a partial missile complement (usually 4) due to operational considerations, such as



[redacted]

landing weight for night carrier operations or bombs in store locations otherwise occupied by missiles. In only one case did an aircraft armed with 8 missiles expend all ordnance during air-to-air combat.

(S) There was a significant difference between the F-4 and F-8 relative frequency of terminations due to ordnance expenditure, with the F-8 terminating more frequently. This would indicate that two missiles and a failure-prone gun system are insufficient armaments for the type of combat experienced in SEA. In the other categories of terminations the relative frequency is about the same for both F-4 and F-8 aircraft.

## E. CONCLUSIONS

(S) The successful termination when fuel limits were reached was evidence of U.S. ability to disengage at will.

(S) The relatively higher frequency of F-8 terminations due to ordnance expenditure indicates that two missiles and a failure prone gun system are not sufficient for the type of combat experienced.

[redacted]

# IV. QUALITATIVE ANALYSIS

## A. BACKGROUND AND SCOPE

(U) In this study it was appropriate to go beyond the usual quantitative methods of analysis. Important considerations were:

- The air combat process offered a particular type of complexity with its great number of variables, and the interdependence and interaction of all elements of a fighter weapon system.
- The data for reconstruction of encounters were in many ways quite subjective in nature. Since there was no real-time recording of flight data, it was necessary to exploit the human ability to sense, analyze, and recall the details of an encounter.
- Many aspects of air combat simply do not lend themselves to quantification, e.g., the development of the pilot's rationale for the actions he took over a period of time, or some of the maneuvers which took place: "I went into a high speed yo-yo."

(U) It was determined that these considerations could be most effectively dealt with, in the light of RED BARON purposes and in addition to quantitative analyses, through a qualitative approach by persons intimately familiar with the various aspects of the fighter weapon system and its employment.

(C) Six qualitative analysis panels were formed to assess the various air-to-air encounters. The panels were composed of experienced individuals both from within the IDA/WSEG organization and elsewhere, representing the major subsystems of the fighter weapon system.[1] Each panel consisted of an

[1](U) For purposes of analysis the fighter weapon system is considered to be composed of the following four subsystem: the airframe, propulsion, and controls; avionics; weapons and fire control; the human being (pilot and crew).

[redacted]

aeronautical engineer with fighter design background; persons with design and development experience in avionics and in air-to-air weapons, and an experienced fighter pilot. Additionally, a member of the RED BARON Project acted as moderator for each panel.

(C) The objective of a panel was to consider each air-to-air encounter assigned to it and to identify the factors, i.e., systems, subsystems, and environment, etc., which contributed to complete success, partial success, or failure in the U.S. fighter weapon system. From the factors identified, the panel was then to outline the R&D implications for future weapons systems.

## B. METHODOLOGY

(C) The 78 events in the period from April 1965 to 1 March 1967 documented in Volume I of this report were assigned to the panels, each group being assigned events representing equivalent cross-sections of complexity, outcome, and chronology. Panel deliberations were limited to the Volume I events since these were the only ones sufficiently reconstructed to permit qualitative analysis.

(C) The qualitative analysis panels were given the following guidelines:

- The outcome of the events in air-to-air engagement can be considered as a spectrum of possibilities between success and failure. For the purposes of these analyses, success occurs when an enemy aircraft is destroyed and the U.S. fighter is undamaged and returns safely to base. The other extreme is failure, in which a friendly aircraft is downed by enemy air action. All outcomes which are neither success nor failure are designated non-success. It should be noted that in any one event there may be multiple outcomes.
- For each event the panel should attempt to answer, in terms of the R&D implications, the following basic questions:

  (1) In those instances where success was achieved, which were the key elements which contributed to success?

(2) Where success was not achieved, to which factors may nonsuccess be attributed? Also, suggest the possibilities which may have resulted in success.

(3) In cases 1 or 2, where failure was narrowly averted, which were the key elements in averting failure?

- The results of the above findings will serve to highlight problem areas, as well as the strengths and desirable qualities of the weapons systems.
- In assessing an encounter the panel should avoid compound speculations. While certain suppositions are clearly necessary,[1] supposition based on supposition should be avoided, e.g., "if this had been the case, then that would have occurred."
- The panels should recognize that the collection of assessments from each of the panels, for all the events considered, will be examined by the Project for patterns of findings, and degrees of significance to air-to-air combat.

## C. FINDINGS

(C) Each panel produced a report on each event it considered in which it identified the factors affecting the outcomes of the event and the R&D implications of each factor in the way of assets or problem areas.

### Assets

(C) The significance of identifying assets was to emphasize the characteristics of the current weapons systems that should not be designed out of the future weapons systems. The items identified as assets were those considered to have significantly and favorably contributed to the outcome of the events studied. The assets have been grouped by the two primary aircraft types considered by the panels: The F-4 (as shown in Table IV-1), and the F-8, since there is a clear distinction between the assets attributable to each.

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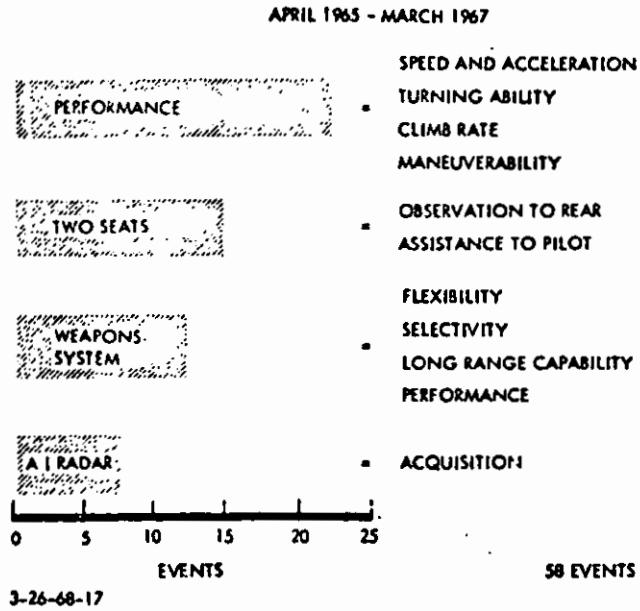
[1](U) To consider something that did not happen (i.e., nonsuccess) and make statements about it, clear requires supposition.

[redacted]

Table IV-1 (S). F-4 ASSETS (U)




F-4 Aircraft

(S) There were 58 F-4 events considered by the panels. Of these, the performance of the F-4 was identified as an asset in 23 events. Performance was divided into subfactors such as speed and acceleration, turning, and vertical climb ability. Of these, the most significant factor to emerge was that of speed and acceleration, which permitted successful separation and disengagement at the discretion of the pilot.

(S) The other items of performance relate to maneuverability and require some elaboration. In the SEA environment they were employed to:

- Defeat AAA fire.
- Evade SAMs.
- Negate enemy aircraft gun attacks.



[redacted]

[redacted]

- Outmaneuver enemy air-to-air missiles.
- Keep a maneuvering target within weapon launch envelopes.

The maneuverability of the aircraft (and its weapons) must be such that it can be converted into some tactical advantage which can be exploited. However, this advantage need not exist under all conditions. For example, although unable to out turn the MIG-17, the climb capability of the F-4 relative to the MIG-17 permitted vertical maneuvering to reposition for reattack. While the F-4 had a slight excess power advantage at low altitude (below 15,000 ft) relative to the MIG-21, it was insufficient to be tactically exploited and the combat resulted in a stalemate with neither aircraft capable of achieving an advantage. The conditions which permitted the F-4 to attain a tactical advantage (or stalemate) were devised in part on the basis of the energy maneuverability concept, and have in general proved successful when executed correctly. This depends on pilot skill which some lacked due to peacetime restrictions on air combat maneuvering.

(S) While performance aspects, such as velocity and acceleration, were recognized as contributing to the success, performance must be utilized and controlled to be an asset. The control which can be successfully employed depends in part on such items as aircraft handling qualities, aircraft stability, control forces, and inertial coupling. If these items are poor, the pilot must exert extra attention to flying the aircraft and must limit the performance to those conditions for which good control can be exercised.

(S) Although in collecting the data no special effort was made by the interview teams to discuss the pros and cons of one- and two-seater fighters, in 15 cases the assistance to the pilot provided by the backseater was a contributing factor to the outcome of the engagement. This assistance was over and above that of operating the radar. The advantages attributed to the

[redacted]

backseater primarily concerned his ability to provide additional visual surveillance. There were instances of his making the initial visual identification, and of his assistance to the pilot by keeping him advised of the tactical situation during combat.

(S) The advantages of the weapons systems accrued from their flexibility and selectivity (in terms of IR or radar missile selection and the inherent characteristics of each), and the long-range capability of the AIM-7. These desirable weapons systems qualities were prevalent in 12 of the 58 F-4 cases considered.

(S) In addition to the long-range capability of the weapons, the long-range and all-weather AI radar capability in the F-4 had a favorable effect on the outcome in 7 cases.

F-8 Aircraft

There were eight F-8 events considered by the panels. The F-8 had much less exposure to enemy aircraft during the time period of the study as evidenced by the small number of events, and only encountered the MIG-21 once. In four of the eight cases, performance (mainly the turning and high-speed capability) was considered to be a major factor exerting a favorable effect on outcome of the engagements.

R&D Problems

(S) The panels considered 66 events where there were sufficient data to identify factors affecting the outcomes of the event. R&D problems were then derived from consideration of these factors. These R&D problems have been combined into general areas and are listed in Table IV-2 with the number of events in which they occurred. Whereas in the case of assets it was meaningful to distinguish between the type of aircraft being referred to, with regard to problem areas it was more desirable to generalize. The problems were carefully

identified in terms which did not indicate specific solutions but rather indicated areas for further R&D consideration. Ultimate solutions depend on considering the problem in its many ramifications and interactions with other requirements, which was outside the scope of the study. The relative importance ascribed to the problems here depended on the context of combat in SEA, but of course, ultimate solutions rest in the overall needs of the U.S. defense posture.

Table IV-2 (S). R&D PROBLEMS IDENTIFIED
F-4/F-8 EVENTS APRIL 1965 TO MARCH 1967 (U)

| | NO. EVENTS |
|---|---|
| A. ENEMY POSITION AND DIRECTION INFORMATION | 39 |
| B. WEAPON VERSATILITY * | 27 |
| 1. SHORT RANGE WEAPON (20) | |
| 2. EXPAND PERFORMANCE ENVELOPE (17) | |
| 3. RAPID RESPONSE WEAPON (14) | |
| C. LONG RANGE POSITIVE IDENTIFICATION | 22 |
| D. WEAPON RELIABILITY | 19 |
| E. VOICE COMMUNICATION PROBLEMS | 18 |
| F. AIRCRAFT REARWARD VISIBILITY | 17 |
| G. A.I. RADAR CAPABILITY | 15 |
| H. AIRCRAFT DECELERATION CAPABILITY | 13 |
| I. MAN-MACHINE COMPATIBILITY | 13 |
| J. AIRCRAFT TURNING CAPABILITY | 11 |
| K. EXTERNAL STORES PROBLEMS | 9 |
| L. ENEMY DEFENSES (SAMs) | 7 |
| M. INTRAFLIGHT POSITION INFORMATION | 7 |

*The three subcategories overlap.

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(S) It must be emphasized in considering the R&D problems listed, that the frequency of occurrence of a given problem per se is not a measure of its importance relative to other problems and is not an indication of the relative significance

of that problem in any given event. For example, voice communications problems and weapon reliability occurred with equal frequency, but the importance of weapon reliability to the outcome of the battle would normally be greater than that of communications.

Enemy Position and Direction Information

(S) This problem identifies the pilot's need for real-time information on the presence, position, and direction of movement of enemy aircraft in the vicinity. The panels identified the general problem from certain specific problems highlighted in the data, all of which directly affected the outcome of the events. The need for effective early warning was evident. In some cases early warning was not available at all, and in actual combat, generalized MIG warnings were ineffective. Warnings which indicated MIGs in the area, (the area geo-ref MIG-call technique, and the bulls-eye MIG-call technique) did not provide the continuing information needed by the intercept pilot to make immediate tactical decisions. The combat conditions in which the enemy succeeded in arriving undetected in the rear quadrant clearly pointed out the need for warning. In certain events, the first indication of enemy presence was enemy tracer fire, missile smoke trail, or a wingman in distress. Additionally, there were cases where success was not achieved because visual contact with the enemy was lost and never regained.

Weapon Versatility

(S) The second most frequent R&D problem identified as a factor in the outcome of events was weapon versatility. This category includes such specific problems as the need for a short-range weapon, the requirement for an expansion of the performance of current weapons in terms of a larger envelope against maneuvering targets, and a rapid response weapon.

(S) In relation to the rapidity of combat action, the time required to aim and to activate current weapons is too long, (2 to 3 second settling time for gun sights; approximately 4 seconds required by the computer between lock-on and trigger-squeeze for the AIM-7; approximately 1 second was required for launch of the AIM-9B). This situation led the panels to identify the need for a rapid response weapon with a minimum of aiming and activating involved.

(S) The need for a short-range weapon was indicated by the highly maneuvering and close-in combat typical in SEA. The enemy appears to have exploited the sanctuary inside the minimum limits of the U.S. missile system, on the order of a half mile. The current weapons were not designed to oppose a highly maneuvering target, and therefore the missile envelopes shrink rapidly as target "g" increases. In fact, at low altitudes, against a high-g maneuvering target (well within the capability of the enemy aircraft) the launch envelopes of current U.S. missiles are so distorted that frequently it has proven impossible for U.S. fighters to achieve proper firing parameters.

(S) In order to explore more fully the short-range weapon requirement, a separate analysis of all the short-range weapon employment opportunities was undertaken by the Project members. The Project examined 29 events where the F-4 (no gun) participated in day, visual engagements, and considered the characteristics of the M-61 Gatling Gun. It was determined that there were 15 events when at least one additional enemy aircraft could have been taken under fire if the F-4 had had a short-range weapon with no larger envelope than that of the M-61; that is, in 15 of 29 events the enemy aircraft was within the firing envelope of the M-61 Gatling Gun for sufficient time for its employment. This is not intended to endorse the gun as an air-to-air weapon. Also, it is noted that the geometry of the situations which came about was undoubtedly influenced by the

fact that the F-4 did not have a gun and there is no guarantee that a gun-carrying F-4 would have experienced the same geometry (see Appendix D).

Long-Range Positive Identification of the Enemy

(S) The need for long-range positive identification of the enemy was the third most frequent problem identified by the panels. It was noted that the ability to identify bogeys was incommensurate with the ability to acquire. In some cases, the requirement for positive identification forced the U.S. fighter to pass entirely through his missile envelope i order to make the identification. Frequently, the requirement to maneuver to identify restricted the tactics available for attack. In the case of a flight of four aircraft, when the first element made the identification, the second element faced an alerted enemy, and also a delay until the first element had cleared the area.

(S) No complete record of identification passes exists for SEA; however, the problems which result from false alarms can be important. If the fighter jettisons tanks to make an identification run, and the bogey proves friendly, fuel has been needlessly lost and time on station has been reduced. If external fuel tanks are not jettisoned, there is a risk of being unable to jettison at high speed, and therefore combat is entered in a high-drag condition, and ordnance cannot be expended from certain stations.

Weapon System Reliability

(S) The panel identified R&D problems as those of weapon reliability when the failure of the weapon system to perform had a significant effect on the outcome of the engagement. The detailed analysis of the exhibited weapon performance is presented in Section III-C.

(S) The qualitative analysis panels studied gun performance

only in the case of the F-8, where there were numerous gun-firing opportunities which could not be exploited due to failure of the gun system. Missile failures, applicable to both the F-4 and F-8, occurred in the pre- and postlaunch modes, and with sufficient frequency to influence the outcome of the events. In some cases, failure of the missile permitted the enemy to escape undamaged.

### Communication Problems

(S) Several types of voice communication problems were noted. Major problems were inter- and intra-flight communication breakdown due to crowded channels. Onboard communication equipment failure was relatively infrequent. Very few cases were noted of breakdown in communication between front and back seat in the F-4. At some times in combat as many as 56 aircraft were operating on the same primary attack frequency. During periods of high combat activity saturation of a channel precluded the flight leader's capability of calling his flight to a different frequency.

### Aircraft Rearward Visibility

(S) The rearward visibility in the aircraft was identified as an important R&D problem. In 17 events considered the lack of rear visibility affected the outcome in an unfavorable manner. The enemy's weapon systems and tactics favor a rear-quadrant attack, an occurrence which emphasizes the need for improved rearward visibility. This problem is highlighted by the detailed discussion in Section III-C.

### AI Radar Problems

(S) The R&D problems with the AI radar were concerned with its two basic functions -- its use in acquisition, and its use in fire control. The AI radar problem noted in its acquisition role is its inability to discriminate targets at lower altitudes because of ground clutter, and its inability

to search a wide area. This latter problem is especially critical in an environment where there is no friendly GCI. The predominant problem with AI radar in the fire control role was, again, the inability to discriminate against ground clutter in the low altitudes and the inability to operate in look-down situations. The secondary problems in the fire control role included: the inability to maintain continuous tracking of acquired targets, and the inability of the radar to perform area search while maintaining lock-on.

Aircraft Deceleration Capability

(S) An inadequate aircraft deceleration capability was noted in some 13 events. This problem is related to the weapons capability since it is necessary that range be opened to permit missile launch within envelope, and therefore aircraft deceleration may also be considered a weapons system problem.

Man-Machine Compatibility

(S) The man-machine compatibility problem area was identified in 13 events. This problem had its basis in several factors which affected the outcome of the events. Often the pilot's attention was distracted from the enemy by the other duties which had to be performed such as keeping visual contact with SAM, AAA, and/or a radar presentation. Instances were also identified where the lack of crew training in air combat maneuvering and tactics affected the outcome. In some cases, the lack of training hampered effective communication between frontseat and backseat crew members in the F-4.

(S) A meaningful facet of the man-machine compatibility problem concerned the armament. Particularly in the case of the IR missile, little or no information is available to the pilot for the assessment of proper missile launch parameters. This was also true to a lesser extent for the radar missile,

since the mechanized launch zones do not take into account target maneuvers. In addition, the pilot has no indications from the weapon system to permit accurate assessment, prior to launch, of the target onto which the missile is locked. Problems of this nature were identified several times by the panels.

(S) Another contributing factor to man-machine compatibility problems was the switchology necessary to set up weapons and jettison ordnance. Although not investigated by the panels, the Project recognized from its investigations that the F-105 armament system was also characterized by this problem. The seat restraint harness was identified in two events as restricting the pilot's movement within the cockpit.

Aircraft Turning Capabilities

(S) Some aspects of aircraft performance were identified as assets in that they permitted tactics that assisted positioning to fire. Deficiency in turn capability, however, was a factor affecting the outcome of 11 events. This occurred despite other aircraft performance capabilities which could have permitted tactical advantage (e.g., F-4 climb vs. MIG-17). These other capabilities could not be employed due to other aspects of the combat situation (e.g., SAM, weather). The turning capability of the F-4, including the pilot's ability to control the aircraft in a turn, was deficient against the MIG-17 aircraft. Although the F-4 could turn with the MIG-21 below approximately 15,000 feet, there was no evidence that this performance was adequate for the F-4 to attain position to fire on the MIG-21.

External Stores Problems

(S) The R&D problems categorized as "external stores" were identified in 9 events and could be classed in two categories. The first was a reliability problem evidenced by malfunctions in the tank jettison system which precluded tank release. The

second category relates to those aircraft which accelerated to combat speed on bogey sightings, and thereby exceeded the speed at which stores (primarily the centerline external fuel tank) could be jettisoned. The extra drag of the external store affected the performance of the F-4 to the extent that the inadvertent tank retention was considered a factor affecting the outcome of the 9 events. Another factor was the inability of the F-4 to expend the forward two AIM-7s, as a result of the centerline store failure to jettison.

Enemy Defenses

(S) The R&D problem categorized as enemy defenses was associated with the limitations placed on U.S. fighter operation in a SAM environment. Some battles were terminated prematurely when enemy aircraft entered areas protected by SAMs, causing U.S. aircraft to break off. It was noted that SAMs place constraints on U.S. fighters which could not be readily measured by the panels in that the altitudes of the CAP and escort missions were influenced by the SAM environment.

Intraflight Position Information

(S) The final item which became evident in 7 events was intraflight position information. The factors which emphasized this problem arose when friendly aircraft did not attack due to imprecise knowledge of the position of other flight members. Two of the events in which this occurred were at night and came about although there was positive, friendly GCI. In one daylight event, lack of position information resulted in a mid-air collision. This problem is, of course, related to, but goes beyond, that of cockpit visibility.

# V. INTEGRATION OF ANALYSES

## A. INTRODUCTION

(C) Two independent analyses of the collected data were performed as part of the RED BARON study; a quantitative analysis of the various phases of each engagement and a qualitative analysis of individual engagements as a whole. While the events were subdivided into various combat phases and selected parameters quantified, there were many aspects of importance that did not lend themselves to this approach. To insure that these factors be considered fully, each event was studied in its entirety. The relationship of the analyses can be described as a matrix in which one dimension represents the various phases of each event and the second dimension represents the individual events. This is illustrated in Table V-1.

Table V-1 (S). INTEGRATION OF QUANTITATIVE AND QUALITATIVE ANALYSES (U)

| Event 1 | Event 2 | Event 3 | -- | Event N |
|---|---|---|---|---|
| Acquisition and Identification | Acquisition and Identification | Acquisition and Identification | -- | Acquisition and Identification |
| Attack | Attack | Attack | -- | Attack |
| Firing/Damage | Firing/Damage | Firing/Damage | -- | Firing/Damage |
| Termination | Termination | Termination | -- | Termination |

Legend

Quantitative Analysis

Qualitative Analysis

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[redacted]

(C) The Qualitative Analysis Panels examined each event separately as an entity identifying the factors which influenced the outcome of each event. From a composite of these factors the research and development implications were determined. Those factors that affected the outcome favorably were classified as "Assets" and those that exposed system deficiencies were identified as "R&D Problems." Although the qualitative analysis identified factors with research and development implications for each event, their overall relative importance could not be determined directly because these factors varied in importance from event to event.

(C) The quantitative analyses examined the air-to-air events by separate phases of combat actions, quantifying the key parameters and analyzing them across the spectrum of all events. Thus, the expected frequency of various combat situations could be determined, permitting an evaluation of U.S. weapons system effectiveness in reacting under these conditions. However, this approach has several inherent limitations:

- It cannot take into account those factors not readily quantifiable.
- It does not provide perspective for the interaction of the various phases of individual events.
- It does not identify directly the research and development implications.

(C) This quantitative approach may be likened to a sub-optimizing process whereby a segment of the process is viewed in detail but in isolation and without considering the relation to the whole and interaction with other segments. While this can be a powerful analytical tool, it is important to recognize that erroneous conclusions may be reached, unless great care is exercised to consider the effects within the overall context of the problem.

(U) The results of the two approaches complemented each other and both were utilized to arrive at the study conclusions.

[redacted]

Table V-2 (S). INTERRELATIONSHIP OF QUALITATIVE AND QUANTITATIVE ANALYSES (U)

| R&D Problems Identified Through Qualitative Analysis / Quantitative Analysis Significant Findings | Enemy Position Direction Information A | Weapon Versatility: Short Range Weapon $B_1$ | Weapon Versatility: Expanded Weapon Pref Envelope $B_2$ | Weapon Versatility: Snap-shot Weapon $B_3$ | Long-Range I.D. C | Reliable Weapon Weapon D | Voice Communication E | Rear Visibility F | AI Radar G | Aircraft Deceleration H | Man-Machine Compatibility I | Turn Radius J | External Stores K | SAM L | Intrafit Position Ind M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Acquisition** | | | | | | | | | | | | | | | |
| Mostly visual | D | I | | | I | | | D | D | | | | | | |
| Uniform clock distribution | D | | D | D | | | | D | | | | | | | |
| Close range | D | D | D | D | | | | | I | | | | | | |
| ID simultaneous with acquisition | D | D | I | D | | | | | | | | | | | |
| **Attack** | | | | | | | | | | | | | | | |
| First firing significance | D | D | I | D | D | D | | D | D | | | I | | | |
| Rear quadrant danger | D | | I | | | | | D | I | | | I | | | |
| **Firing** | | | | | | | | | | | | | | | |
| Gun effectiveness | | I | | D | | D | | | | | D | | | | |
| Gun sights | | I | I | D | | | | | | | D | | | | |
| Missile effectiveness | | | D | D | | | | | | | | | | | |
| Boresight | | | | | | | | | D | | D | | | | |
| Out-of-Envelope | | D | D | | | | | | | D | | | | | |
| System failures | | | | D | | D | | | D | | D | | D | | |
| **Termination** | | | | | | | | | | | | | | | |
| No Targets | D | | | | | | | D | D | | | | | | |
| Fuel | | | | | | | | | | | | | | | |
| Mission | | | | | | | | | | | | | | | |
| Other | | | | | | | | | | | | | I | D | |

D - Direct Support; I - Inferred Support

(S) The interrelation between the two independent analyses methods employed can best be visualized as a matrix which is presented in Table V-2. The R&D problems identified through the Qualitative Analysis Panel deliberations of each air-to-air event and discussed in detail in Section IV, are listed as one dimension. The significant findings of the quantitative analysis efforts, which examined specific phases of combat for all events, are listed as the other dimension. Whenever quantitative analysis results supported the panel findings directly a "D" appears in the table in the appropriate row and column. An "I" appears in the table wherever a quantitative analysis result supports an R&D problem through inference. Table V-2 may also be employed as an index to identify sections of the report which present relative and supporting data concerning a given R&D area or combat phase. The following discussion summarizes the reasons for the entries in the matrix.

## B. ATTACK PHASE

(S) The analysis of the attack phase demonstrated that enemy success in achieving a position to fire was almost entirely dependent upon the ability to maneuver into a rear quadrant attacking position before detection. Conversely, whenever U.S. aircrews acquired the enemy aircraft before the attack maneuver was completed, U.S. aircraft negated the maneuver 95 percent of the time. The requirement for real time information on the position of enemy aircraft is apparent from these two results.

(S) In the events analyzed the U.S. aircraft were primarily on CAP or escort missions. On this type of mission the primary aircrew function is to search for enemy aircraft. Despite the search, enemy aircraft attained a position in the rear quadrant before detection in approximately one-fourth of the encounters. This indicates that the unaided eyeball is an inadequate mechanism for detection of enemy aircraft in a hostile GCI environment. At low altitudes, haze conditions over North Vietnam often limit visual capability.

(S) The AI radar was inadequate for supplementing visual search because of its limited field of view and degraded performance due to ground return (as discussed in Section IV).

(S) The relative frequency of rear-quadrant attacks emphasizes the R&D problem area of rearward visibility. In close-in, dog-fight situations, a fighter is hampered by a blind spot in his field of view.

(S) The number of very short-range and short-duration acquisitions under combat conditions in SEA indicates that there were opportunities to employ a short-range, snap-shot weapon system, had one been available.

(S) The analysis of the attack phase indicated the advantage of attaining a position to fire first. As the weapons envelope increases, the probability of attaining a position to fire first increases.

(S) The analysis of the attack phase revealed that only 27 percent of U.S. first attacks were successful. This result combined with the results of the firing analysis indicate that unreliability of the weapon systems was one of the major contributors to the number of unsuccessful attacks.

## C. ACQUISITION PHASE

(S) Acquisitions of enemy aircraft during the period of the study were primarily visual at close range, and in all quadrants. A method of determining enemy position and direction information at longer ranges would have enabled greater preparedness for aerial combat. At these short ranges, two-thirds of the identifications occurred simultaneously with acquisition. The data suggest that a moderate increase in acquisition ranges would result in improved ID ranges within limits of visibility and human vision. Further increase in acquisition and IL range will require supplementary sensor equipment.

(S) The need for improved rearward visibility is indicated by the several instances recorded in the data where pilots first became aware of MIGs by observing enemy fire from the rear. Although the structure in present fighter aircraft restricts rearward visibility, by employing special formations and maneuvering, the pilots in SEA have achieved 25 percent of their acquisitions in the rear quadrant.

(S) When acquisitions resulted in combat, the parameters of acquisition again supported R&D problem areas identified by the qualitative analysis. The short range at acquisition (median of two miles) caused external stores problems, such as difficulty in jettisoning of external tanks at high speed and inability to fire certain ordnance with external stores aboard. In addition, the short-range visual acquisitions at all bearings around the fighter aircraft (and with resultant short-range identification) frequently precluded firing of missiles on the first pass at the enemy. This supports the R&D requirement for an improved weapon, which may include a short-range weapon, or an expanded weapon envelope of present weapons, or a snap-shot weapon requiring almost no warmup or preparation time.

## D. FIRING PHASE, DAMAGE PHASE

(U) Because of the many differences in the two firing modes, gun systems will be discussed independently of missile systems.

### Gun System Results

(S) The results of the analysis of gun firing attempts directly confirm three problem areas isolated by the panels and indirectly support two additional problems.

Weapon Reliability. (S) The F-8 was the only gun-carrying aircraft considered by the panels. Twenty-eight percent of these gun-firing attempts resulted in a weapon failure.

For comparison, the value for the F-105s was 14 percent. While the failure ratio is not a direct measure of reliability, it directly supported need for improved reliability of gun systems in general and the Mk 12 in particular.

Snapshot Weapon. (S) Those aircraft with gun systems had a weapon which responded almost instantaneously to the squeeze of the trigger, a snapshot weapon. However, even this fast response system required several seconds for the proper use of a computing sight. In this environment, even two seconds is often too long to wait. The alternative was to fire in a noncomputing mode which required the pilot to estimate lead.

Man-Machine. (S) The gun system results give direct evidence of the effects of man-machine incompatibilities which exist in the current weapon systems. While the panels considered only the F-4/F-8 events, the F-105 events also revealed similar problems. The case in point concerns the F-105 gunsight which required awkward switching from the air-to-ground to the air-to-air mode for proper usage of the gunsight.

Short-Range Weapons. (S) The gun firing results do not directly support the short-range weapon R&D problem since the problem area was not present as such when guns were carried. However, an estimate of the potential use of a short-range weapon may be interpreted from these results.

Expanded Weapon Envelope. (S) The need for an expanded envelope applies more directly to missile systems. However, it was noted that the F-8 gunsight computed an incorrect lead angle when the aircraft pulled more than 3 g's, thus reducing the effective envelope of the Mk 12 system.

Missile System Results

(S) The results of the analysis of missile firing attempts directly confirm eight problem areas isolated by the panels. These areas are:

[redacted]

Weapon Reliability. (S) While the ratio of missile system failures to firing attempts is not a direct measure of system reliability, this ratio does support the panel's conclusion that there is a need for an increase in ordnance reliability.

Expanded Weapon Envelope. (S) While an expanded envelope includes an increased maximum range, its primary implication is a reduced minimum range and a broader angular coverage. An appreciation for the effect on missile performance by an increase in weapon envelope may be obtained by comparing the results for the AIM-9B and the AIM-9D (SIDEWINDER). Other modifications were made but the major change was the increase in missile envelope. (See Appendix B for typical envelope geometries.) While no direct cause and effect relationship can be proven, the data strongly suggest that the AIM-9D success is due to its larger envelope.

Short-Range Weapon, Deceleration Capability. (S) Five percent of the missile attempts were fired at less than minimum range. While the inclusion of an additional short-range weapon or an improved deceleration capability would not eliminate this problem relative to present missiles, it would provide the pilot with an alternative to the present fire/don't fire dichotomy.

Snapshot Weapon. (S) The lead time required when firing missiles varies from the two or three seconds required for the SIDEWINDER to the six to eight seconds required for the SPARROW. One reason for using the SPARROW boresight firing mode was the fact that it eliminated the time required to obtain a radar lock-on.

AI Radar. (S) The missile firing results reflect the need for an improved air intercept radar. First, in several instances a degraded mode was selected over full system mode because ground return precluded radar lock-on. Sixty-five firing attempts in this degraded mode (boresight) resulted in



[redacted]

one hit. Second, 17 percent of the AIM-7E missiles, successfully fired within envelope, broke lock.

Man-Machine. (S) The missile firing phase provides several man-machine problem areas which are enumerated in the data.

- Personnel errors, such as firing an AIM-7 with the radar in search, or switches in the head-on mode when firing from the target's rear, as well as the out-of-envelope firings reveal the need for improved training or simplified switchology.
- The percentage of missiles fired out-of-envelope indicates a need for additional training and/or an improved in-envelope indicator.[1]
- The degree of variation allowed is much less in the bore-sight mode of firing since the radar does not have automatic tracking and must be aimed by moving the aircraft. Aircraft maneuvers pull the radar illumination off the target with the resulting loss of AIM-7 guidance information.

External Stores. (S) In a few events, an AIM-7 missile could not be launched because of the interference of external stores. These cases are included in Launch Failures category.

## E. TERMINATION

(U) An examination of the termination phase of the air-to-air engagement indicated support for the following R&D problems identified through the qualitative analyses.

(S) The most frequent reason for termination -- losing contact with the enemy (32 percent) -- supports the need to know

[1](U) Although the AIM-7 weapon system indicates minimum and maximum firing ranges, the computations only relate to a nonmaneuvering target. In general, when the IR missiles are launched, no envelope information is available except as estimated by the pilot. The AIM-9 system does not indicate proper firing conditions except for the tone which signifies that the missile has locked on to some target and provides no range data. The F-4 system will indicate maximum and minimum ranges for the AIM-9 and AIM-4D if the radar is locked on the target (which is not usually the case), however, again only for a nominal 1 g (nonmaneuvering) target.

enemy position and direction information. The termination occurred because U.S. aircrews were unable to regain contact, due in part also to lack of visibility and radar search capability.

(S) The second most frequent reason for termination -- fuel limits (23 percent) -- was caused in part by the necessity of U.S. aircraft to use fuel to make an identification of friendly aircraft. Therefore, a need for longer range identification is indirectly supported by this result.

(S) Two categories of termination which occurred with small frequency support other of the R&D problems. One case of termination due to lack of usable ordnance was caused by the failure of external stores to jettison. Those terminations due to SAM defenses directly support the need to extend the capability for operating in a SAM environment.

# Appendix A

## THE NORTH VIETNAMESE AIR DEFENSE ENVIRONMENT

## THE NORTH VIETNAMESE AIR DEFENSE ENVIRONMENT

(C) There have been a number of recent studies[1] covering various aspects of the air war in North Vietnam (NVN) and these have included a detailed examination of the air defense environment. A brief summary of this environment is included to describe the conditions under which the air-to-air fighters operated.

(SNF) The NVN air defense system has developed from a rudimentary system in 1964 to a relatively complex, up-to-date, and formidable system in 1967. The weapons employed as part of the air defense system can be classified into three major groups: (1) ground-based guns, (2) surface-to-air missiles, and (3) fighter aircraft.

(S) Ground-based guns in NVN range from small arms and automatic weapons to antiaircraft artillery (AAA) consisting of light AAA (37mm and 57mm guns) and medium AAA (85mm and 100mm guns). Considering the effective range and altitude coverage capabilities of these weapons, only the light and medium AAA weapons offer a serious threat to fighter aircraft on CAP missions. Pertinent characteristics of ground guns are shown in Table A-1.

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[1] (U) a. JCS Air Operations Study Group -- Joint Chiefs of Staff, Factors Affecting Combat Air Operations and Aircraft Losses in Southeast Asia (U), November 1966, TOP SECRET/NOFORN.

b. Night Song Study Group -- Joint Chiefs of Staff, Night Song Study Report (U), Volumes I and II, 30 March 1967, TOP SECRET/NOFORN.

c. WSEG/IDA Study -- Analysis of Combat Aircraft Losses in Southeast Asia (U), IDA Report R-140, WSEG Report 128, dated April 1968.



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Table A-1 (S). SUMMARY OF GROUND GUN CHARACTERISTICS[a] (U)

| Weapon | Estimated Maximum Effective AAA Range[b] (feet) | Practical Rate of Fire (Rounds per Minute per Gun) |
|---|---|---|
| 12.7mm heavy machine gun | 3,300 | 80 |
| 14.5mm heavy machine gun | 4,600 | 150 |
| 37mm gun | 5,600 | 80 |
| 57mm gun (S-60) | 13,100[c]<br>19,700[d] | 70 |
| 85mm gun | 27,500 | 15-20 |
| 100mm gun | 39,000 | 15 |

[a]Data obtained from DIA publication ST-CS-07-2-67-INT, Anti-Aircraft Gun Systems - Eurasian Communist Countries (U), 1 May 1967, SECRET/NOFORN.

[b]As defined by DIA.

[c]On-carriage fire control.

[d]Off-carriage fire control.

(S) It should be noted that the estimated maximum effective range shown in Table A-1 is not the absolute maximum distance the projectile can travel but represents the range within which the trajectory of the projectile can be predicted with sufficient certainty to have an appreciable kill probability, as estimated by DIA.

(SNF) The AAA environment encountered in NVN has been extremely dense, particularly in portions of Route Package V and in Route Packages VIA and VIB. Figure A-1 shows the major areas of concentration of AAA weapons in NVN as of October 1967. The buildup of light and medium AAA guns in NVN is shown in Figure A-2. By the end of July 1967, there were over 5600

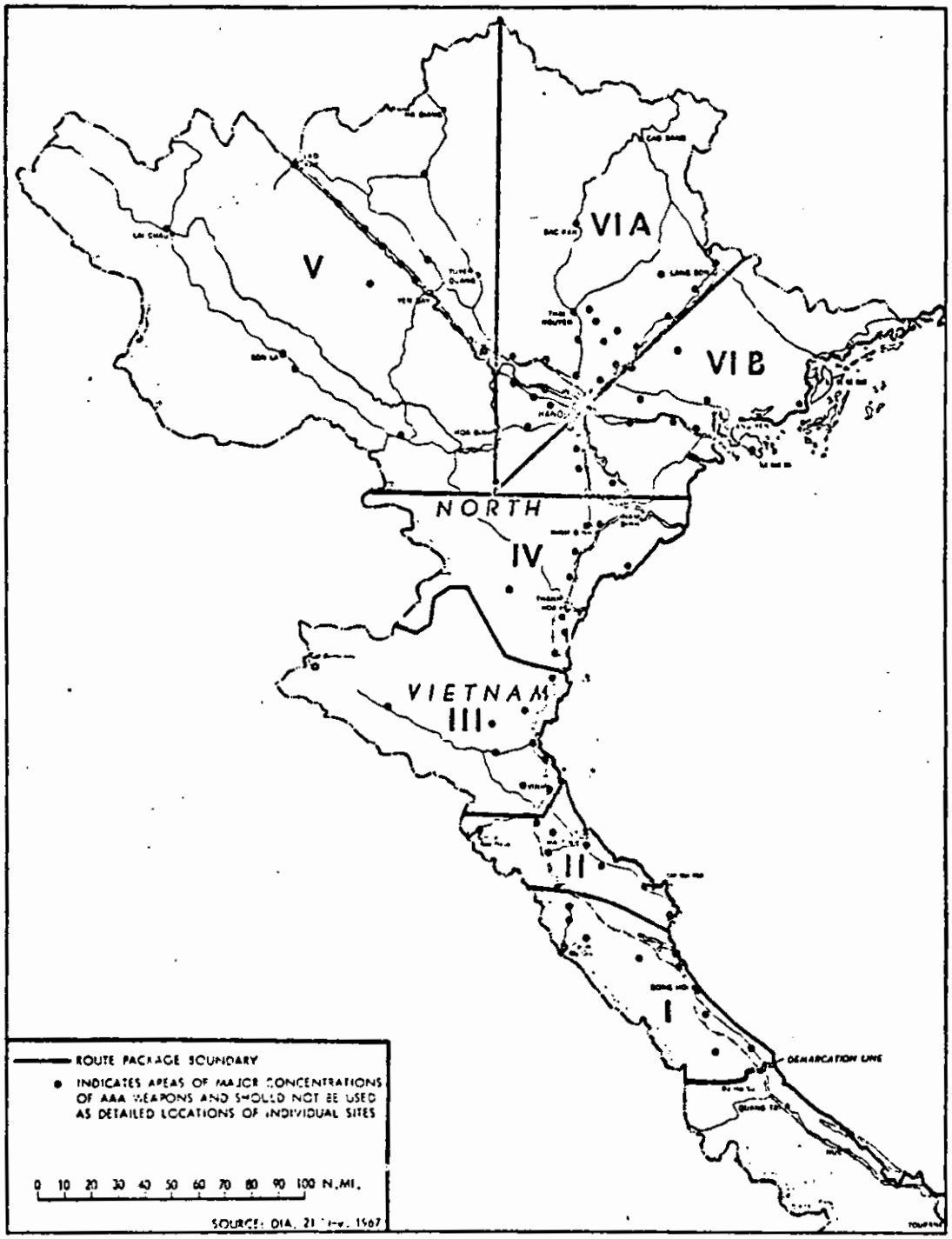


FIGURE A1 ( SNF ). Major Areas of Concentration of AAA Weapons in NVN ( U )

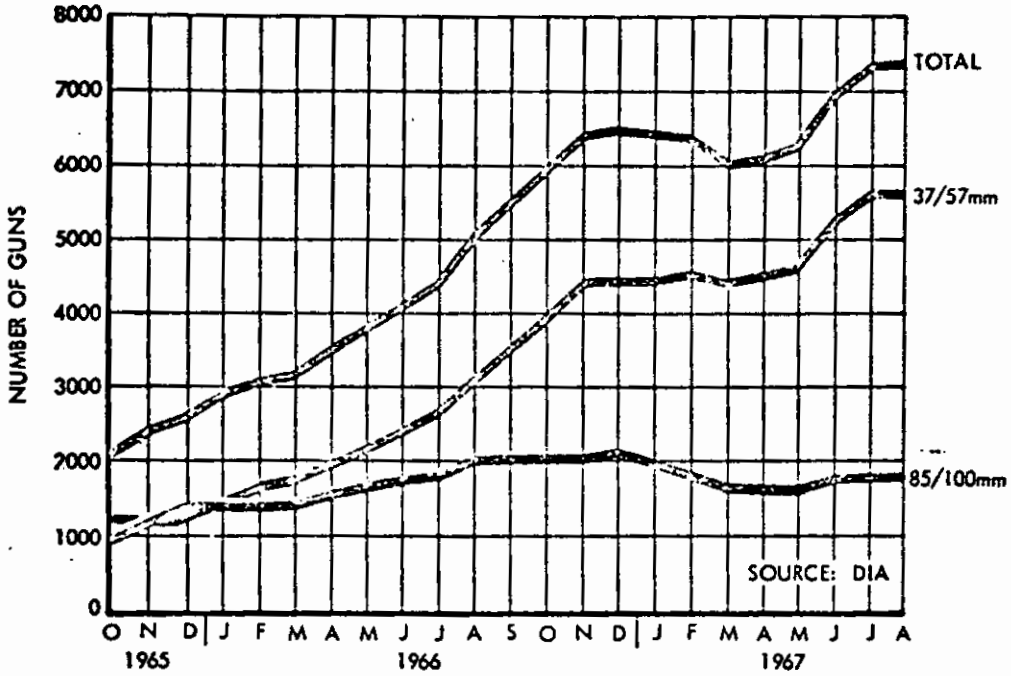


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FIGURE A2 ( SNF ). Estimated North Vietnamese Antiaircraft Artillery Strength

37mm/57mm and over 1700 85mm/100mm guns deployed in NVN. This great concentration of guns has been largely responsible for fixing strike force penetration altitudes above 15,000 feet (particularly during 1967 after extensive deployment of on-board ECM to defeat SAMs), thus influencing the altitudes of the fighters which are to protect this strike force.

(S) A major component of the NVN air defense system is represented by SAMs. The SAM system used in NVN is the SA-2 controlled by the FANSONG B radar. A typical active missile site consists of one FANSONG radar controlling six missile launchers. Each site is normally assigned 12 missiles; 6 are kept on launchers and 6 are held in reserve on transporters in a nearby hold area. An acquisition radar is normally stationed near the outer perimeter of the site and furnishes early warning data.

(S) The capability of the SA-2 system complements those of the various AAA guns. For the altitude bands of interest (1,000-

30,000 feet) the minimum range for engagement is approximately 5 n mi and extends out to approximately 17 n mi. This complements the 100mm gun which has an estimated maximum effective range of 39,500 feet (approximately 6.5 n mi).

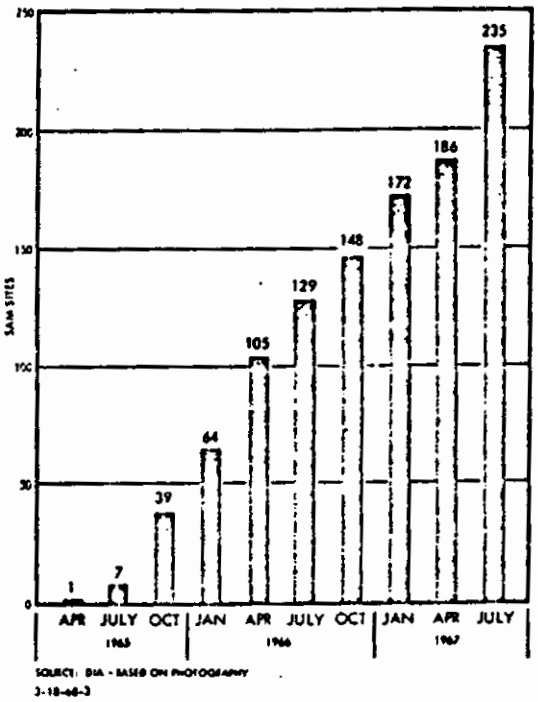


FIGURE A3 (SNF). Prepared SAM Sites in NVN (U)

(SNF) The SA-2 was initially used in combat in July 1965. Since that time, the number of prepared sites has steadily increased to a level of 235 at the end of July, as shown in Figure A-3. These sites are not all occupied; in fact, the approximately 25 SAM battalions[1] move between these sites on a scheduled (but nonpredictable) basis. In late 1967, there has been a tendency to concentrate these in the Hanoi-Haiphong area. Typically 16 to 18 of the 20 most active sites in a given month have been located within 20 miles of Hanoi. In addition, some SAM sites have been strategically located near the DMZ and Route Package V. The concentration and location of SAM sites has played a definite part in restricting the tactics that were employed by fighter pilots during MIG encounters.

(SNF) The enemy fighter inventory, consisting of various versions of the MIG-17 and MIG-21, has remained relatively constant during the past two years, as shown in Figure A-4. Since early 1967, when North Vietnamese airfields were first bombed, a large part of the MIG-17 inventory has been stationed out of

[1](U) One battalion occupies one site.

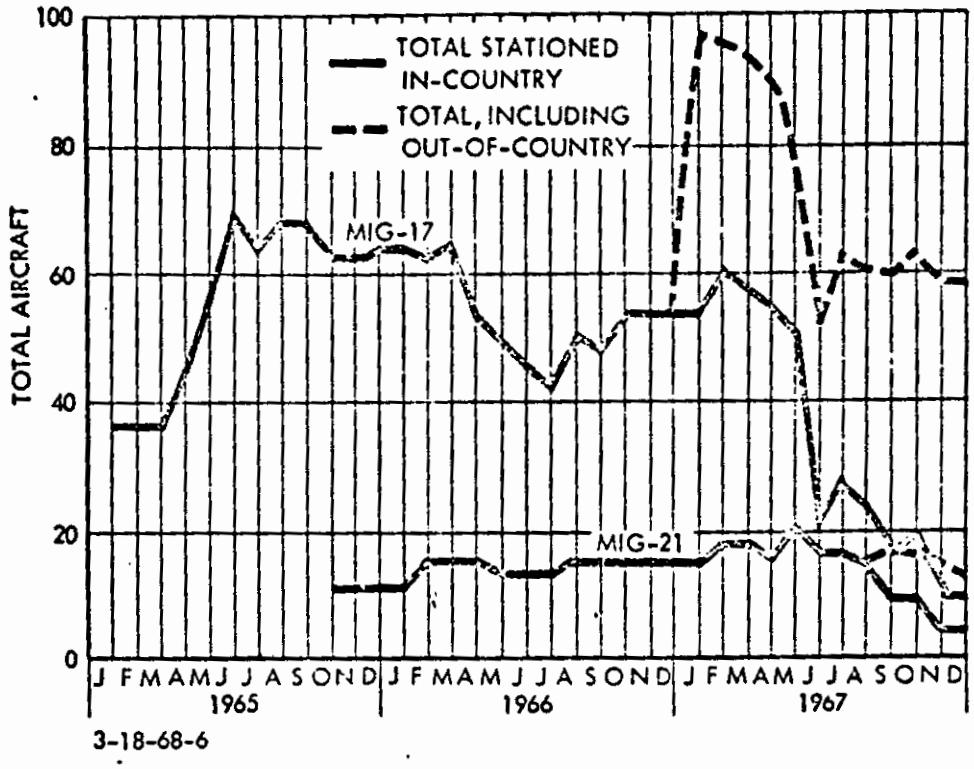


FIGURE A4 (SNF). MIG Order of Battle (U)

the country. Similarly, 50 to 60 percent of the MIG-21 force has been moved out of the country since September 1967. As discussed in the MIG-tactics section, during late 1967 a change in NVN GCI procedure has been observed in that they control fewer aircraft in a very selective manner. As a result, they have been more effective. Thus, fewer aircraft need to be kept stationed in NVN. A description of enemy aircraft and rdnance is given in Appendix B.

(S) The command and control of the air defense system, although a manual system, has been achieving a reasonable degree of sophistication, as evidenced by the simultaneous employment

of AAA, SAMs, and MIGs in an integrated fashion. This represents a significant change from the early days of the air war when presence of MIGs would indicate an absence of SAMs and vice versa. U.S. aircraft are faced with SAM and AAA defenses as soon as they penetrate the coast line from the east or cross the Red River from the west, indicating coordination between radar surveillance and weapon system selection and command. Furthermore, MIG interceptors contact U.S. aircraft during cloudy as well as clear weather and approach in a manner indicative of radar-initiated intercept.

(S) The Radar Order of Battle (ROB) in NVN consists of a diversified surveillance-radar net and weapon-control radars. The surveillance net is employed for early warning, tracking, and the control of interceptor aircraft. The weapon control radars control the operation of AAA and SAM batteries. As of early August 1967, over 400 radar sets have been identified[1] in NVN including over 200 early warning/GCI radars, 175 AAA fire control radars, and approximately 25 FANSONG B missile control radars. The early warning coverage and EW/GCI radar locations are shown in Figure A-5. Locations[2] of AAA and missile fire control radars are shown in Figures A-6 and A-7. The figures point out the heavy concentration of weapon-control radars in the Hanoi-Haiphong target complex. The radar deployment, in terms of number of equipments and wide frequency diversity, is particularly impressive.

(S) In a concurrent IDA/WSEG study,[3] the U.S. electronic countermeasures (ECM) effort in NVN has been analyzed. ECM is extensively employed by the U.S. to degrade the effectiveness of the NVN radar surveillance net and weapon control radars.

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[1] (U) Source: Defense Intelligence Agency, 26 July 1967.

[2] (U) These are locations on a particular date (9 August 1967) and vary with time.

[3] (U) Op.cit.

[redacted]

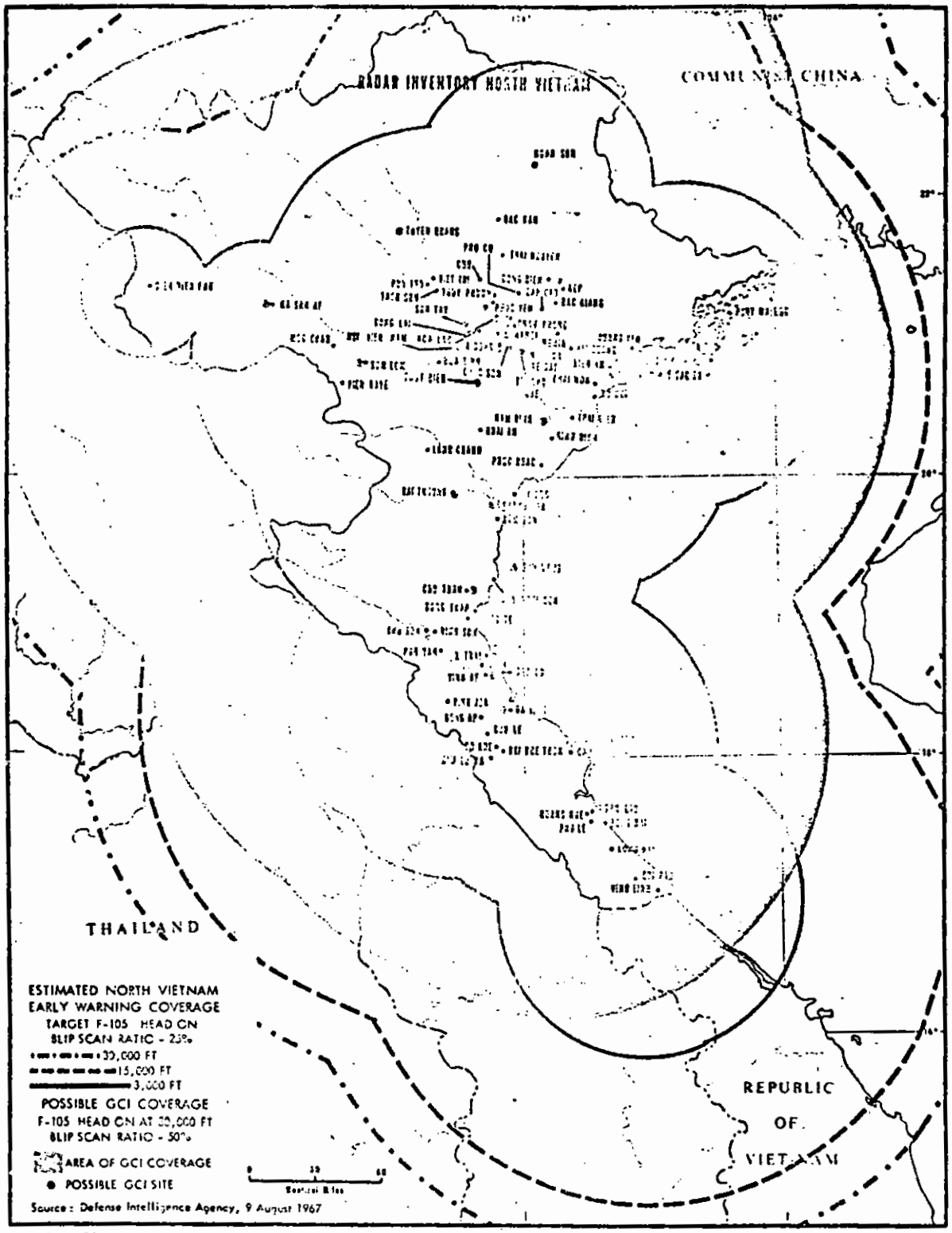


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FIGURE A5 (S). Radar Inventory North Vietnam (U)

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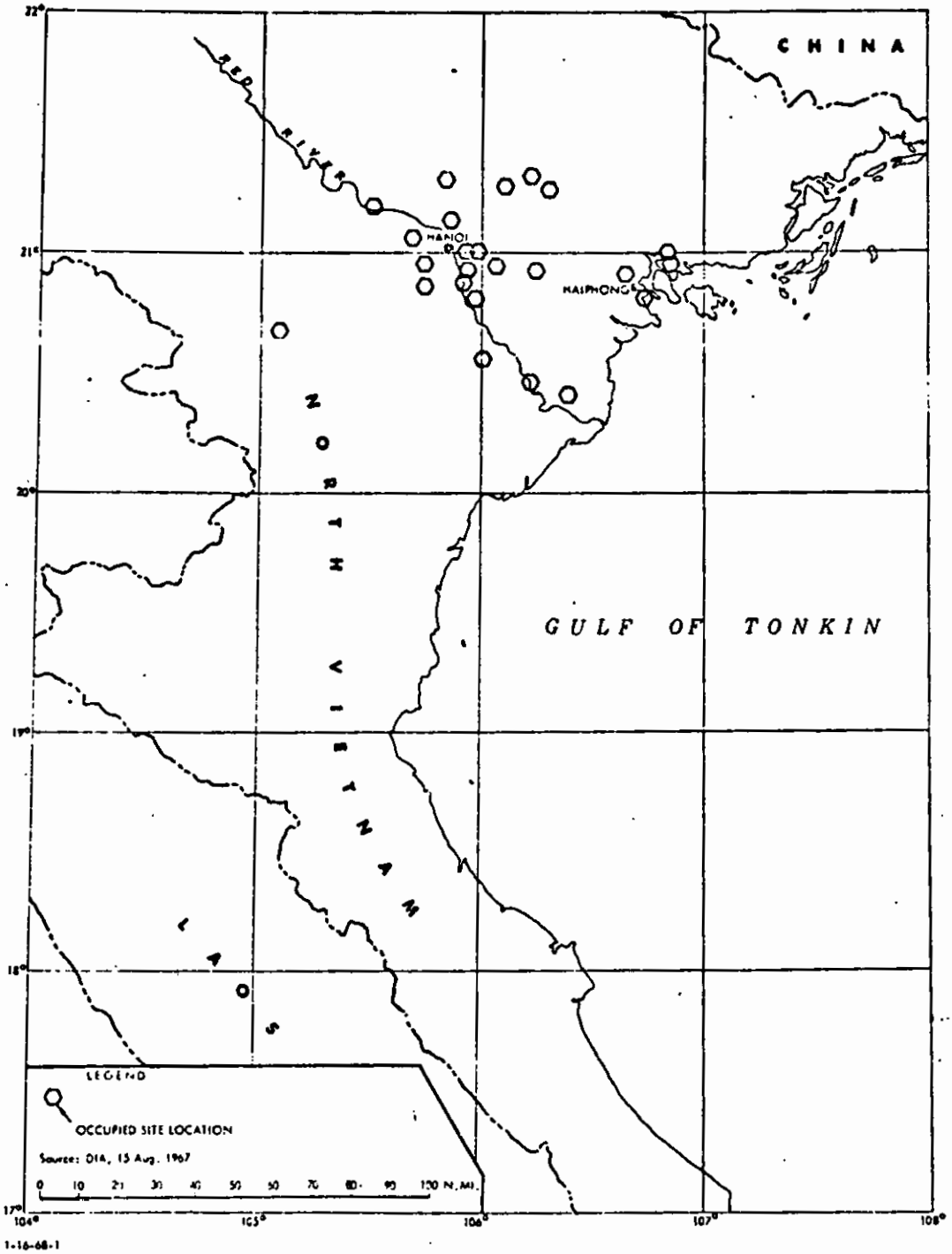


FIGURE A6 (S). NVN Missile Control Radars, August 1967 (U)

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[redacted]

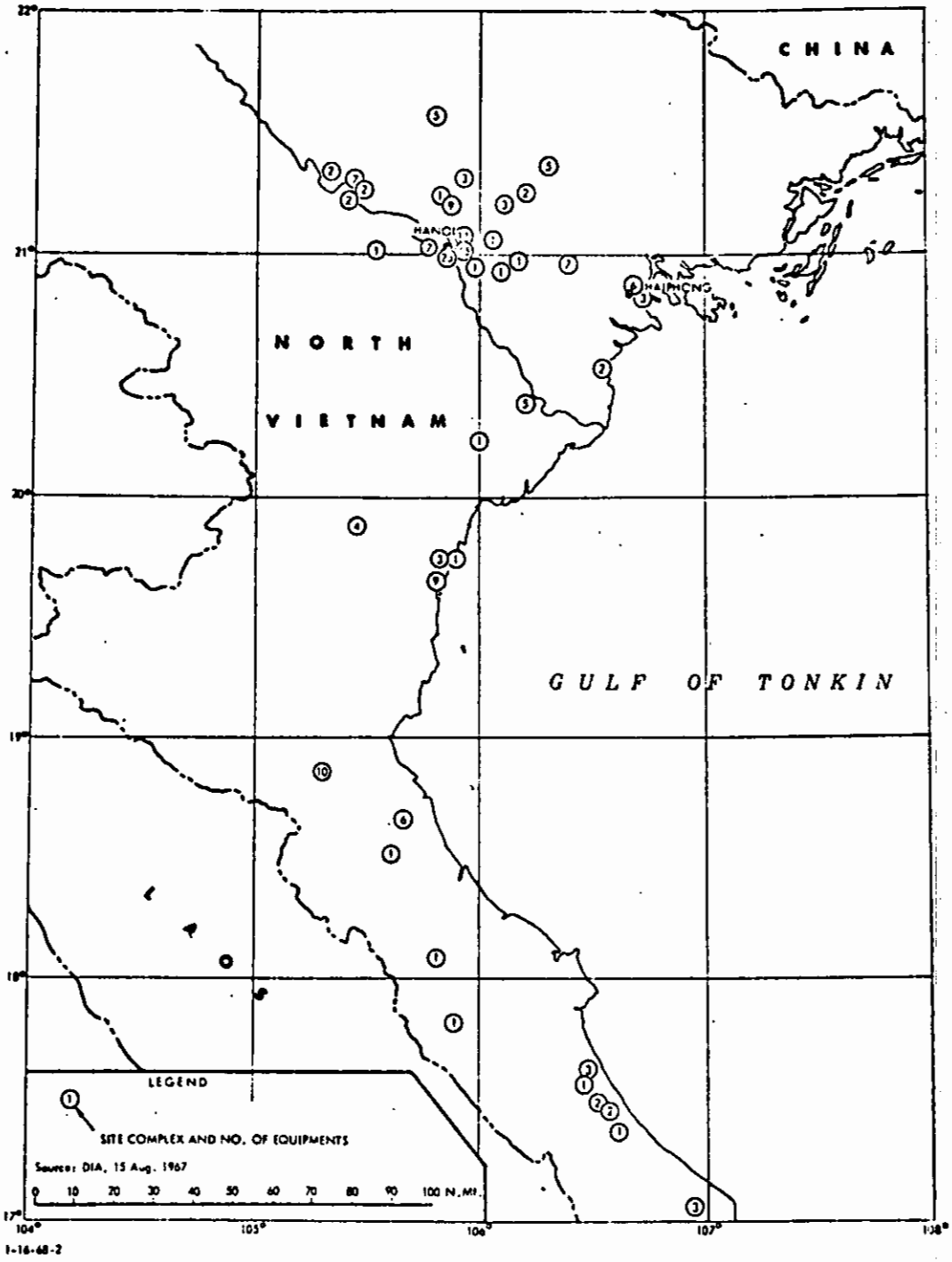


FIGURE A7 (S). NVN AAA Fire Control Radars (U)

[redacted]

ECM operations in NVN are of two types: standoff jamming and self-protecting jamming. Standoff jamming, using special-purpose aircraft (e.g., EB-66, EA-3B, and EA-1F) in orbits outside of the high threat zone, is directed at the air defense environment and is intended to protect penetrating U.S. forces by denying the enemy efficient use of his radar sensors. Self-protective jamming, on the other hand, is carried on board the penetrator and is designed to protect the penetrator against the terminal defenses, i.e., the SAM and radar controlled AAA.

(S) It was concluded in the referenced study that although jamming can prevent successful tracking of flights by specific radars, the combined radar net is generally capable of maintaining an accurate track of penetrating flights. Thus, successful GCI operations are well within the capability of the NVN air defense system, as evidenced by typical MIG approach profiles. These profiles are described in the MIG tactics section.

(SNF) Typical NVN reaction[1] to the U.S. standoff jamming effort was to concentrate radar activities in bands not jammed at a particular time; also they frequently changed frequencies in order to evade the jamming. An effective ECCM employed by NVN was the activation of two BAR LOCK radars, one near Haiphong with early warning coverage well out over the Gulf of Tonkin and one in the western part of Route Package V with EW/GCI coverage at least 90 n mi into Laos. This effectively covered refueling tracks and Yankee Station. This action may have reflected an NVN evaluation of:

- The value of a precise long-range early warning and surveillance capability to their air defense system,
- The effectiveness of EB-66 standoff jamming against the lower frequency radars,
- The relative invulnerability of the high-powered multibeam BAR LOCK radar to side-lobe jamming.

[1] (S) Air Force Special Communications Center, Electronic Warfare Evaluation Summary-SEA (S), issued monthly, SECRET/NOFORN.

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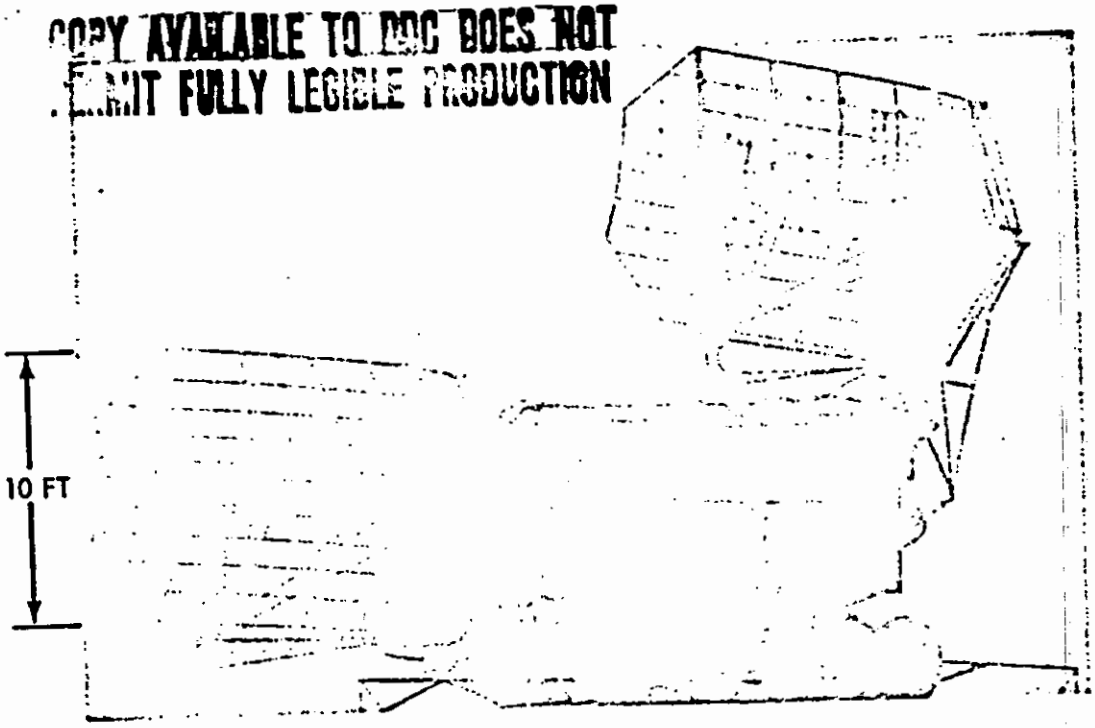
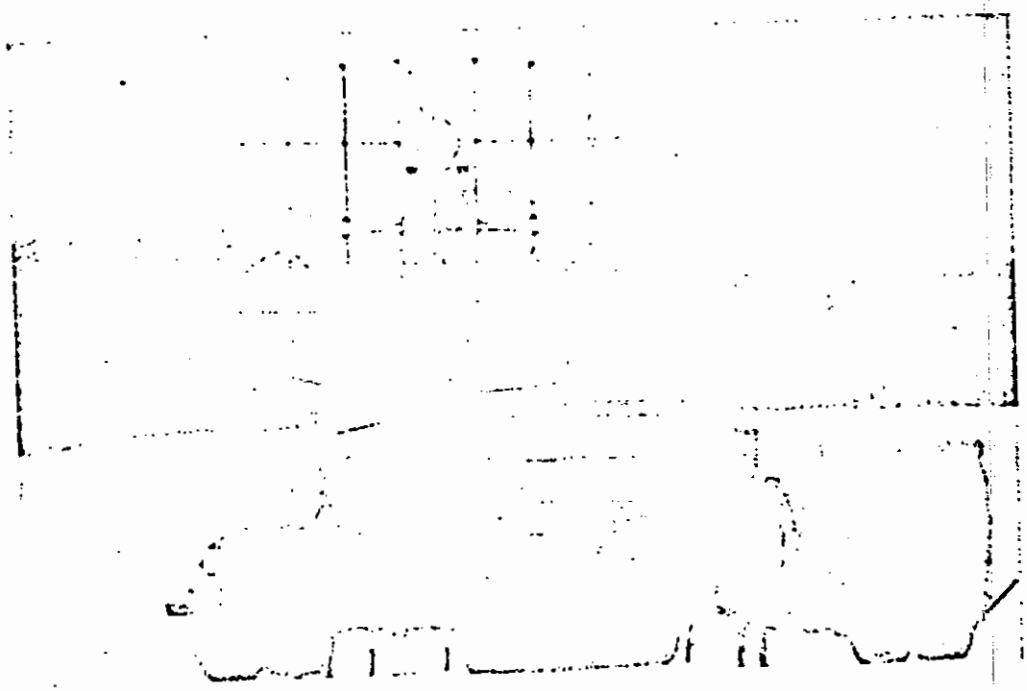



BAR LOCK



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FLAT FACE

FIGURE A8 (S). FLAT FACE and BAR LOCK Radars (U)

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[redacted]

(S) Destroying these radars is very difficult since they are highly mobile and difficult to locate and target. For example, the BAR LOCK/BIG BAR type of radar is estimated[1] to require approximately 8 hours to become operational after moving on site. The truck-mounted FLAT FACE radar, which is used as a gap filler, can be put in operation in about 10 minutes. Photographs of these two radars are shown in Figure A-8.

[1] (U) Radar (Handbook)-Eurasian Communist Countries, Vol. II, DIA Document No. ST-HB-05-01-66 INT, 1 June 1966, SECRET.

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# Appendix B

## AIRCRAFT AND ORDNANCE



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## I. INTRODUCTION

(U) The purpose of this appendix is to describe the various air-to-air weapons used during the study period. The description of ordnance types is not meant to be exhaustive; however, those operating characteristics which are pertinent to the analysis are briefly covered. The general characteristics of the aircraft types most commonly involved in air-to-air combat are also given.

## II. GUN SYSTEMS

(U) The characteristics of the various gun systems employed in the air-to-air battles in Southeast Asia are presented in Table B-1, for both U.S. and enemy.

(S) The weight shown for each gun is the individual weapon weight and is not that of the total installation. By a comparison of the firing rate and the number of rounds carried, it is evident that the F-4 gun systems have potentially twice the firing time as that of enemy gun systems.

(S) The M-61, when employed in the F-4C and F-4D aircraft, is carried externally in a pod. This installation is called the SUU-16/A or SUU-23, with the major difference being that the SUU-23 pod uses internal aircraft power instead of a ram air turbine. The maximum effective range for all of the guns is about 3000 feet.

(S) For proper aiming of the gun systems, particularly at the longer ranges (>1000 feet) a sight is necessary to direct

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Table B-1 (S). GUN SYSTEM (U)

| Gun System | | Gun Weight lbs | Muzzle Velocity Ft/Sec | Firing Rate Rounds per Minute | Installation Aircraft Type | Number of Guns | Rounds per Gun |
|---|---|---|---|---|---|---|---|
| Mk-12 | 20mm | 101 | 3200 | 1000 | F-8 | 4 | 100 |
| M-61 | 20mm | 260 | 3200 | 6000 | F-105 | 1 | 1029 |
| | | | | | F-4C | 1 | 1200 |
| | | | | | F-4D | 1 | 1200 |
| NR-23[a] | 23mm | 83 | 2250 | 800 | MIG-17 | 2 | 80 |
| NR-37[a] | 37mm | 232 | 2250 | 400 | MIG-17 | 1 | 40 |
| NR-30 | 30mm | 151 | 3200 | 700 | MIG-21C | 1 | 60 |

[a]The MIG-17 carries both guns simultaneously.

4-29-68-5

the aimpoint in order to compensate for the bullet flight path. However, several seconds (2-3) are necessary for the sight computations to be conducted and smooth tracking of the target is required for this time period. The gun firing delay is short, however. The response time of the SUU-16 pod, from trigger pull until the first round has left the barrel is 0.2 second. Within 0.4 second the gun has achieved full firing rate.

(S) The F-4C was initially armed with the M-61 cannon for air-to-air use in May 1967, installed externally as the SUU-16/A gun pod. However, a lead-computing sight was not available for target tracking. The F-4D, when armed with the M-61, utilizes the SUU-23 pod and is equipped with a computing sight.

(S) All F-8s are armed with the Mk-12 cannon system and all F-105 aircraft carry an internally mounted M-61 cannon. Both aircraft have a computing sight. The F-8 sight, however, computes insufficient lead over 3g.

[redacted]

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## III. AIR-TO-AIR MISSILES

(S) The major characteristics of the missile ordnance that has been employed in SEA are given in Table B-2. The missile side views are shown to the same scale. Some additional pertinent characteristics of each missile type are discussed below.

### A. SPARROW AIM-7D AND E

(S) The AIM-7 SPARROW was the only U.S. radar guided missile used, and it existed in two major variants, the AIM-7D and AIM-7E, both of which were carried by the F-4 aircraft. The AIM-7D was the earlier variant used until early 1966, after which it was retired from combat use. The major difference between the D and E models was that the AIM-7D could only be fired at targets for which the closing velocity was greater than 300 ft/sec (about 150 knots), while that of the AIM-7E is minus 300 knots (i.e., opening). In addition, the AIM-7D generally had less maximum range than the AIM-7E.

(S) Because it experienced a much greater number of combat firings than the AIM-7D, the remaining discussion will be confined to the AIM-7E. Since the AIM-7 employs a semiactive guidance system, the target must be illuminated by the radar antenna of the attacking aircraft until missile intercept. To maintain radar illumination the aircraft must be pointed to within 60° of the target. If the missile is fired when the radar is in the boresight mode (antenna caged[1] to the aircraft centerline) then the launch aircraft must be pointed exactly at the target.

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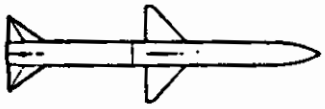
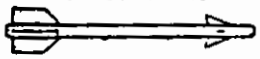
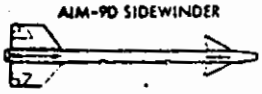
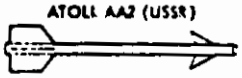
[1](U) Aligned and fixed

[redacted]

[redacted]

## Table B2 (S). MISSILE ORDNANCE (U)

| PLANFORM | GUIDANCE TYPE | WEIGHT (lbs) | WARHEAD WEIGHT (RADIUS OF ROD) | FUZE |
|---|---|---|---|---|
| AIM-7D SPARROW  | SEMI-ACTIVE RADAR | 402 | 65 LB ROD/26 FT | PROX AND CONTACT |
| AIM-7E SPARROW | SEMI-ACTIVE RADAR | 490 | 71 LB ROD/28 FT | PROX AND CONTACT |
| AIM-9B SIDEWINDER  | IR | 164 | 25 LB BLAST FRAG | PROX AND CONTACT |
| AIM-9D SIDEWINDER  | IR | 186 | 25 LB ROD/17 FT | PROX AND CONTACT |
| AIM-4D FALCON | IR | 134 | 7 LB BLAST | CONTACT ONLY |
| ATOLL AA2 (USSR)  | IR | 160 | BLAST FRAG | PROX AND CONTACT |
| ALKALI AA1 (USSR) | BEAM RIDER | 180 | 35 LB | PROX AND CONTACT |

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[redacted]

(S) The AIM-7E has the following sequence of ever degrading modes of operation.

- (1) The first is full system lock where both range and angle tracking of the target are provided to the missile as well as closing velocity. In this case, if interlocks are "in" the missile cannot be fired unless the launch parameters satisfy computed firing envelopes.
- (2) This mode is the same as No. 1 except interlocks are "out;" that is, the missile may be fired at any time, even though the system does not indicate that the proper launch conditions have been satisfied (launch within computed parameters and aim-dot within allowable steering error circle).

(S) In all remaining modes, the system operates as if the interlocks were "out."

(S) Modes 3, 4 and 5 are categorized as boresight firings. In these, the radar antenna is caged to the centerline of the aircraft and illumination to the target is provided by the pilot sighting on the target with a fixed pipper. The radar antenna is then pointed at the target.

- (3) A system lock may be achieved under boresight conditions so that while angle track is not being provided (the antenna remains caged) closing velocity and range can be fed to the missile.
- (4) Boresight firing can be accomplished with the target aspect switch (when it is installed). In this type of firing, although the missile does not receive the true closing velocity and range information, the target aspect switch permits a false closing velocity to be fed to the missile and the missile speed gate will then search for the target return over a narrow band about the input closing velocity.
- (5) Boresight launch with missile speed gate in wide sweep. This means that the missile speed gate is sweeping over the entire spectrum of possible target return. This was the most frequent mode of boresight firing during the study period.
- (6) Launch of the missile while the radar is in the search mode. In this situation, the missile is launched while the radar is in its normal search pattern; that is, sweeping back and forth. This is

obviously not a boresight firing and under these conditions the missile cannot achieve guidance and is purely a ballistic rocket.

(S) While boresight firings were not successful, the use of the radar antenna caged in boresight to achieve acquisition and lock was extremely useful in combat. With the antenna caged in boresight, the target return appeared on the scope in a predictable manner (particularly in a maneuvering environment), therefore enhancing acquisition.

(S) In some of the late model F-4s automatic switching has been provided to go from boresight to full system, and in this situation, upon achieving a lock onto the target with the radar locked in the boresight mode, the system will automatically switch to a full track. On the F-4 models covered during the period of the RED BARON study, this automatic feature was not available and a switch had to be activated by the backseater in order to go from the boresight lock on to a full system situation; that is, go from either modes 3, 4 or 5 to either 1 or 2. Frequently, during this operation, the system would break lock.

(S) All air-to-air combat is predicated on actions and reactions which are dependent on the enemy actions. In a maneuvering situation the only method of determining enemy actions was visual. This is true for the employment of all weapons under discussion and the crew of the launching aircraft is likely to experience considerable difficulty keeping the target in sight during hard maneuvering close-in combat. This is specifically mentioned in the case of the AIM-7 to emphasize that although there can be radar inputs, visual contact must still be maintained. Also, if the radar gimbal angles were exceeded, visual contact was necessary for reacquisition.

(S) A problem experienced by the AIM-7 is that the AN/APA-157 computer only gives the proper firing solution for targets under nominal 1 g flight. Therefore, against maneuvering targets, the computed launch envelopes are not an accurate

[redacted]

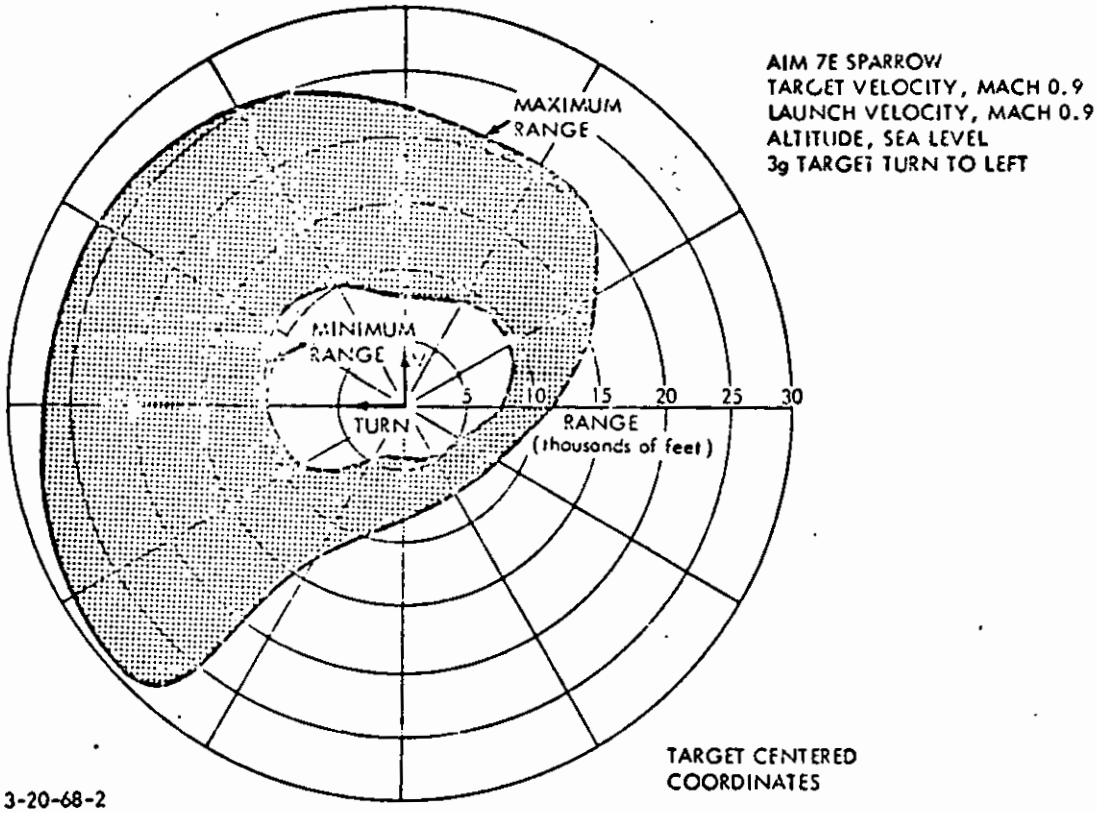


FIGURE B1 (S). AIM 7E Missile Launch Envelope (U)

indication of whether or not the aircraft has achieved satisfactory launch conditions. Figure B-1 gives an AIM-7E launch envelope[1] The envelope is shown in target centered coordinates and is for a cospeed attack at sea level against a target

[1] (U) The launch envelopes shown are the kinematic launch boundaries and assume that the missile has been launched under specified initial conditions (velocity, altitude, range and bearing from the target). The boundary so defined represents those conditions wherein an intercept is possible. Joint USN/USAF Project for Investigation of AIM-7 Missiles Against Maneuvering Target, Final Report O/V 49, CONOPTEVFOR 3930-O/V-49 Ser 00101, 1 August 1966, SECRET.

[redacted]

turning at 3 g. The area represented gives the permissible azimuth-range combination for launching the missile.

(S) The minimum range for the AIM-7E is a complex interaction of the time to arm and the satisfaction of certain guidance inputs. The AIM-7 missile is the only one which does not have a lock before launch. The missile speed gate must be locked on the target for at least two seconds before the fuze is enabled; lock can occur about one second after launch. Therefore, about three seconds are required after launch for proper fuze activation. A better consideration of the minimum range would be the total time from system lock on (when the attack display appears on the scope) until the missile is completely armed. About four seconds are required after the attack presentation appears before all information has been fed to the missile. Trigger squeeze before that time has elapsed can mean that the missile will not achieve proper guidance. From the time that the trigger is squeezed, about 1.25 seconds elapses before the missile leaves the aircraft. Therefore, from attack presentation to missile launch can take as much as five seconds. This delay, of course, is not normally included in the launch envelope presentation. However, since the times involved are relatively long at nominal closing velocities, the minimum range can be significantly altered by the inclusion of these time delays. These delays were excessive for some of the situations which developed in the air-to-air combat in Southeast Asia.

(S) When fired in the boresight mode, the required four second time delay between lock and trigger squeeze is not present (since no lock is achieved). However, in this mode the missile speed gate searches for the target return over the entire range of closing velocities. Therefore, the missile requires a longer time in which to achieve a lock. Because of the additional time it takes to search for the target, and the fact that due to the frequency of ground return, the missile will frequently lock on to this instead of the target return, the boresight mode firings have severe limitations.

[redacted]

## B. SIDEWINDER AIM-9B

(S) The AIM-9B is an infrared (IR) homing missile. It was used by the USAF on the F-4C aircraft in addition to the AIM-7 armament. Until December 1966 it was sporadically carried on F-105 aircraft. After that date, it was standard practice to carry some in each flight. The USN uses AIM-9B on both the F-4B and F-8 aircraft.

(S) This infrared missile uses a simple aiming system and is sighted by the pilot through a fixed pipper. There is some latitude of aiming error since the field of view of this missile is 2.5° and the seeker is caged to the missile centerline. Due to the pointing requirement, the launch aircraft must fly a pursuit course at firing. This, coupled with an IR seeker, requires a stern quarter attack. When locked on to the target, an audio tone is received by the pilot. The tone, however, is not indicative of the missile launch envelope.

(S) The missile leaves the launch rails about one second after trigger squeeze and the trigger must remain depressed throughout this entire time.

(S) Due to the size of the launch envelope (restricted in part by the 25° half angle gimbal limit of the seeker) severe launch restrictions are present against maneuvering targets. Because the launch envelope for the AIM-9B is roughly a cone extending from the tail of the target, the envelope swings to the outside of the target's turn as it maneuvers. If the target maneuvers strenuously, the launch envelope may disappear completely. It should be noted that in aerial combat to be on the outside of a turn is unfavorable to the attacker.

(S) A launch envelope for the AIM-9B against a 3 g target is shown in Figure B-2.[1] The minimum range is due to the safety

[1] (U) NAVAIRSYSCOM, "Air-Launched Missile Bulletin 32, Attachment 1," 7 October 1966, SECRET.

[redacted]

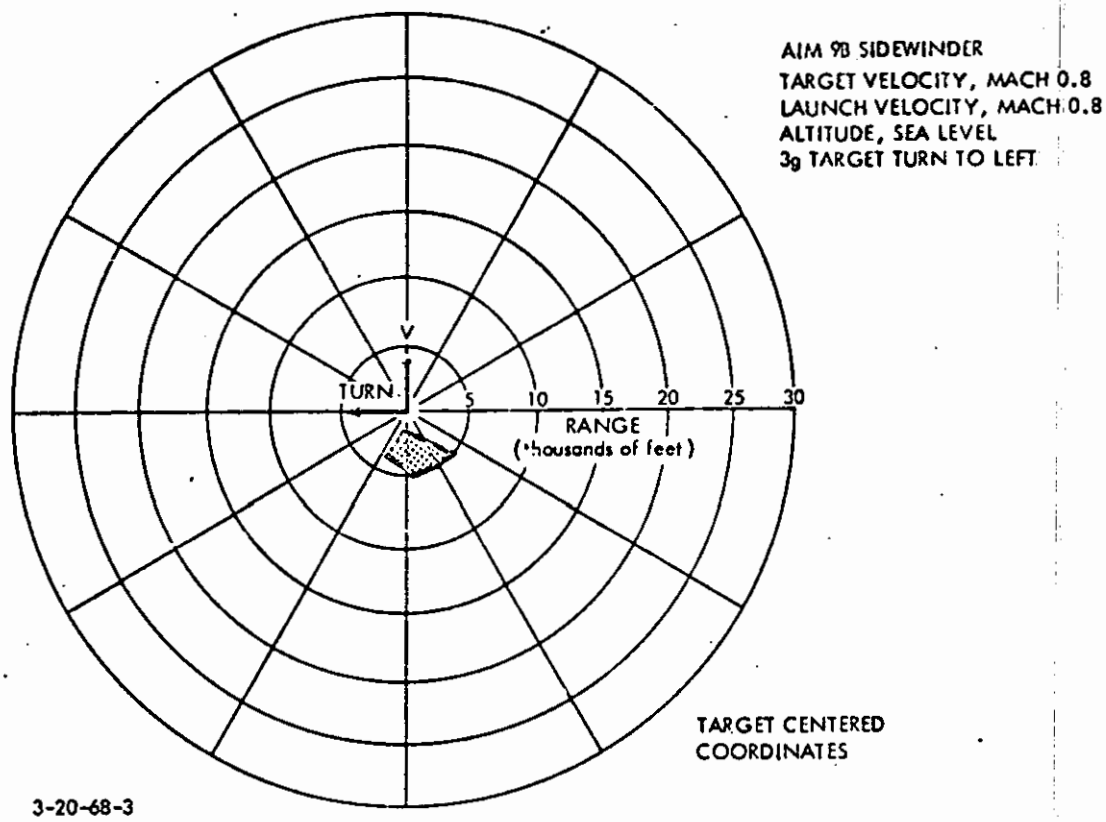


FIGURE B2 (S). AIM 9B Missile Launch Envelope (U)

and arm, and the proximity fuze does not arm until motor burn out (two seconds after launch). The seeker of the AIM-9B detects IR radiation in the 1.8-2.7 micron band and therefore can receive unwanted IR radiation from the clouds and ground.

## C. SIDEWINDER AIM-9D

(S) The AIM-9D is a much different missile than the AIM-9B, although they both use IR homing for guidance. The AIM-9D has a greatly enlarged launch envelope and performance capability, as well as a different warhead. The IR seeker is cooled for added sensitivity, and senses IR radiation in the 2.7-3.7 micron band. The gimbal limits of the seeker have been increased to 40 degrees.

[redacted]

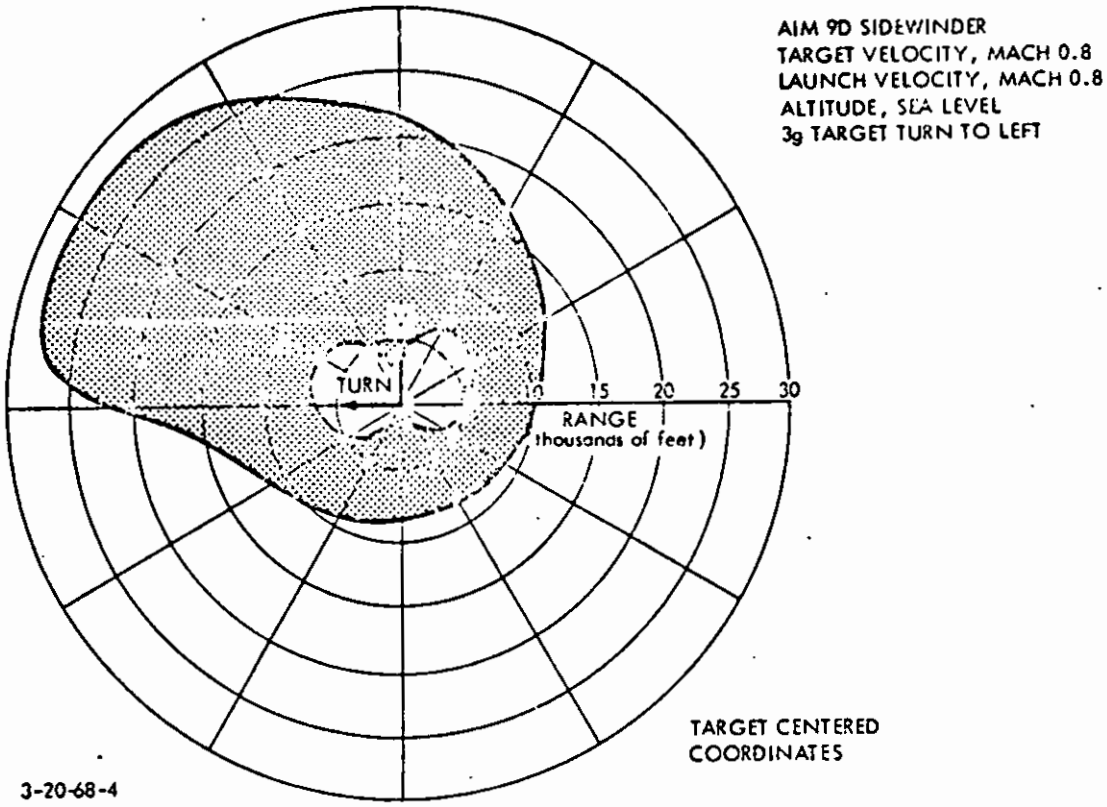


FIGURE B3 (S). AIM 9D Missile Launch Envelope (U)

(S) The launch sequence is similar to the AIM-9B with an audio tone indicative of the missile lock onto a target. Due to the sensitivity of the seeker, however, there is some launch capability from all aspects of the target if the target is emitting sufficient IR radiation.

(S) An approximate launch envelope against a 3 g target is shown in Figure B-3.[1] While a considerable head-on intercept capability is shown, this assumes a suitable IR source, which may not be available against some types of targets.

[1](U) NOTS, "AIM-4D/AIM-9D Comparison Report," August 1964, SECRET.

[redacted]

[redacted]

[redacted]

(S) The AIM-9D is only used by the USN and is carried on both F-4B and F-8 aircraft.

## D. FALCON AIM-4D

(S) The AIM-4D was introduced into the theater with the arrival of F-4D aircraft in June 1967. Although it is an IR homing missile, its operation is more complex than that of the SIDEWINDER.

(S) The optimum launch situation is in conjunction with a radar lock on the target. In this case the missile IR seeker is slaved to the AI radar (unlike that of the SIDEWINDER which is caged in boresight), and the missile can then be fired with lead as computed by the fire control system. In general, the rapidly changing combat situation precludes this mode of operation.

(S) Firing with lead but without radar lock can be accomplished by uncaging the missile IR seeker and allowing it to track the target. This mode of firing requires locking on to the target with the missile seeker caged, and then verifying lock on by a change of audio tone as the trigger is squeezed. Once the lock is verified, the seeker can be uncaged and lead pulled as estimated by the pilot. Even this mode had limited utility in the SEA combat environment experienced over the period of the study.

(S) The missile can also be fired much like the SIDEWINDER, with the seeker caged on the aircraft on a pure pursuit course. However, since the missile is not fired with lead, the performance envelope shrinks.

(S) Figure B-4[1] shows launch envelopes for the AIM-4D both with and without lead against a maneuvering target. The larger

[1](U) Unpublished performance curve from Analytic Services, Inc., June 1967, SECRET.



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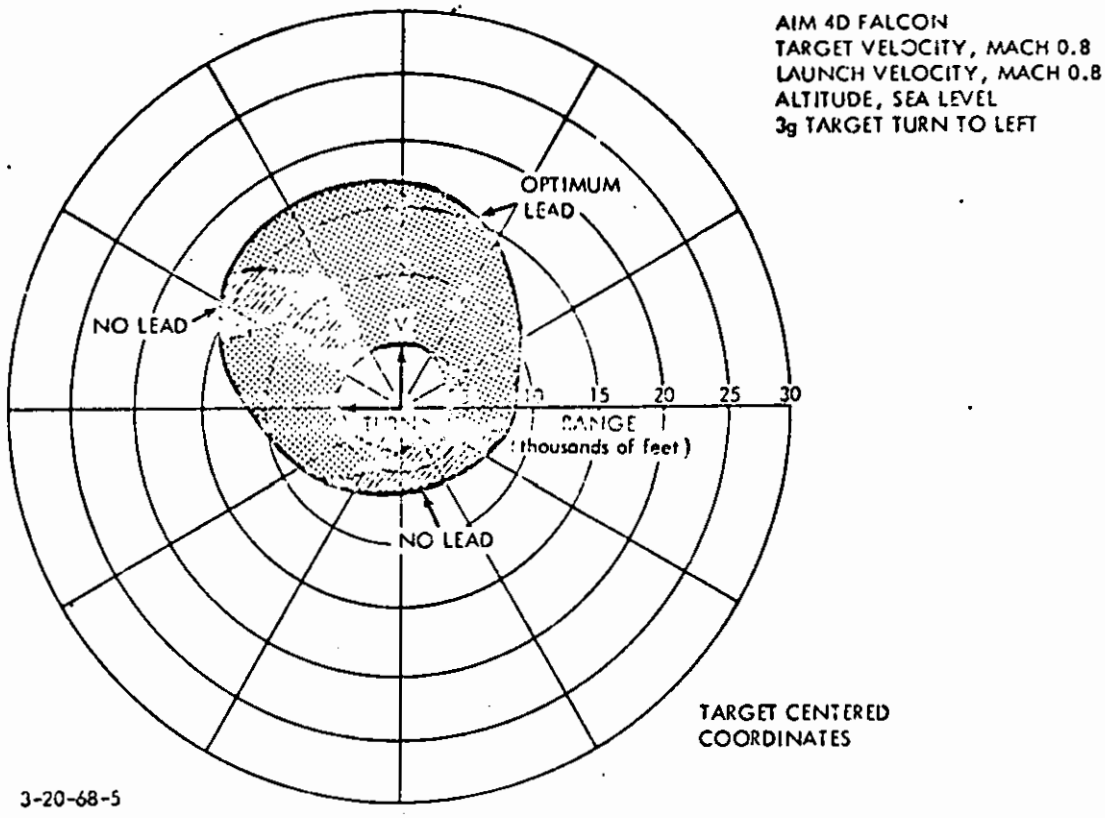


FIGURE B4 (S). AIM 4D Missile Launch Envelope (U)

envelope is for firing with proper lead while the smaller two areas at the nose and tail of the target represent the launch envelope when the missile is fired with minimum lead. The missile arms when motor burn out occurs after 1.4 second of flight. Also, full guidance does not occur until that time. The AIM-4D has no proximity fuze and therefore must hit the target to detonate the warhead.

(S) The IR seeker of the AIM-4D is cooled and is sensitive in the 3.8-5.4 micron band. The seeker has a field of view of 6.5 degrees and gimbal limits of 48 degrees.

(S) The AIM-4D suffers from an operational restriction due to the limited amount of coolant available to any missile.

The coolant flow is continuous and, once activated, cannot be stopped. The AIM-4D requires three seconds to be brought to ready state from total quiesence. It then can be fired in an additional one second, during a succeeding two-minute interval. Once the two-minute period is exceeded, the missile is effectively dead.

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## IV. ENEMY MISSILES

(S) MIG aircraft have been observed firing missiles, unguided rockets and guns. Both MIG-17 and MIG-21 aircraft have fired missiles although it was not possible to determine the missile type in all cases. Air-to-air rockets, carried in external pods, have been fired by both MIG-17 and MIG-21 aircraft.

(S) The enemy missile types observed over the period of the study were:

- AA-1 ALKALAI - radar beam rider
- AA-2 ATOLL - IR homing

(S) The AA-1 ALKALAI launch envelope is shown in Figure B-5.[1] The launch envelope of the AA-2 ATOLL is similar to that of the AIM-9B since the ATOLL is a direct copy of that missile.

## V. AIRCRAFT

(S) The major aircraft types involved in SEA air-to-air combat are shown in Figures B-6 and B-7. The drawings are to scale. There are several variants of each type, but their external configurations are almost identical. The most obvious external difference is that displayed between the various FISHBED C (or E) and FISHBED D since the latter is equipped with a large centerbody in the intake, housing AI radar, which enlarges the fuselage nose.

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[1](U) USAF, Foreign Technology Division, "FRESCO (MIG-17) Weapons System," FTD-CS-09-5-67, 18 July 1967, SECRET.

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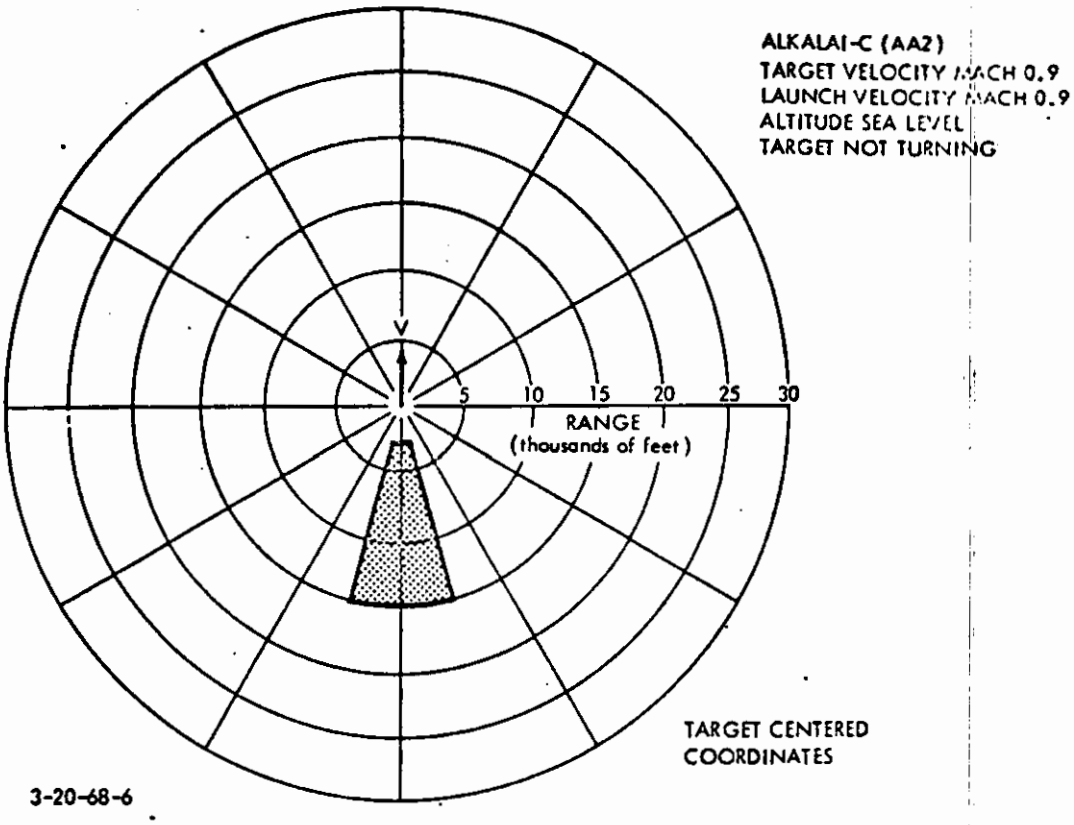


FIGURE B5 (S). ALKALAI Missile Launch Envelope (U)

(U) The figures also show the following characteristics:

- Maximum gross weight (pounds)
- Normal air-to-air ordnance carried (less frequently carried additions in parentheses)
- Maximum Mach at altitude
- Maximum velocity at sea level (knots)
- Ratio of maximum sea level static thrust to combat weight (T/W)
- Ratio of combat weight to wing area (W/S)

(S) The F-4 exists in three major variants, the F-4B, used by the USN, and the F-4C and D used by the USAF. The F-4B has a slightly different radar and the backseat, unlike that of the F-4C and D, is not configured with flight controls.



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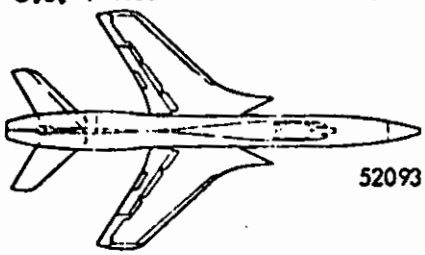
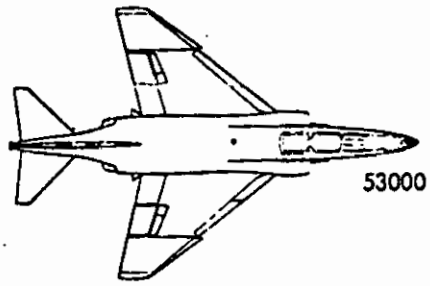
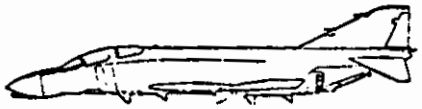
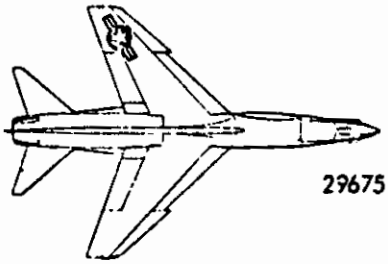
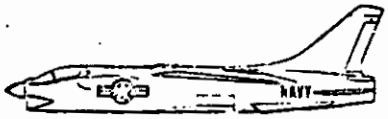
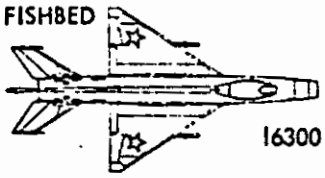
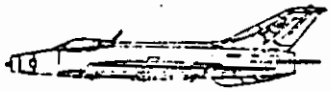
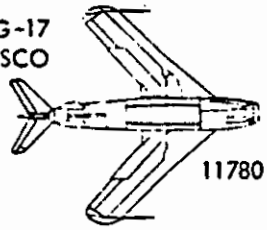
| | GROSS WEIGHT | AIR TO AIR ORDNANCE |
|---|---|---|
| U.S. F-105D  | 52093 | 1 SIDEWINDER<br>1029 ROUNDS |
| U.S. F-4  | 53000 |  4 AIM-9<br>4 AIM-7<br>(SUU-16 POD, 1200 ROUNDS) |
| U.S. F-8  | 29675 |  2 AIM-9<br>400 ROUNDS |
| NVN MIG-21 FISHBED  | 16300 |  2 ATOLL<br>123 ROUNDS |
| NVN MIG-17 FRESCO  | 11780 | 200 ROUNDS<br>(2 ATOLL) |

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FIGURE B6 (S). Aircraft Characteristics (U)

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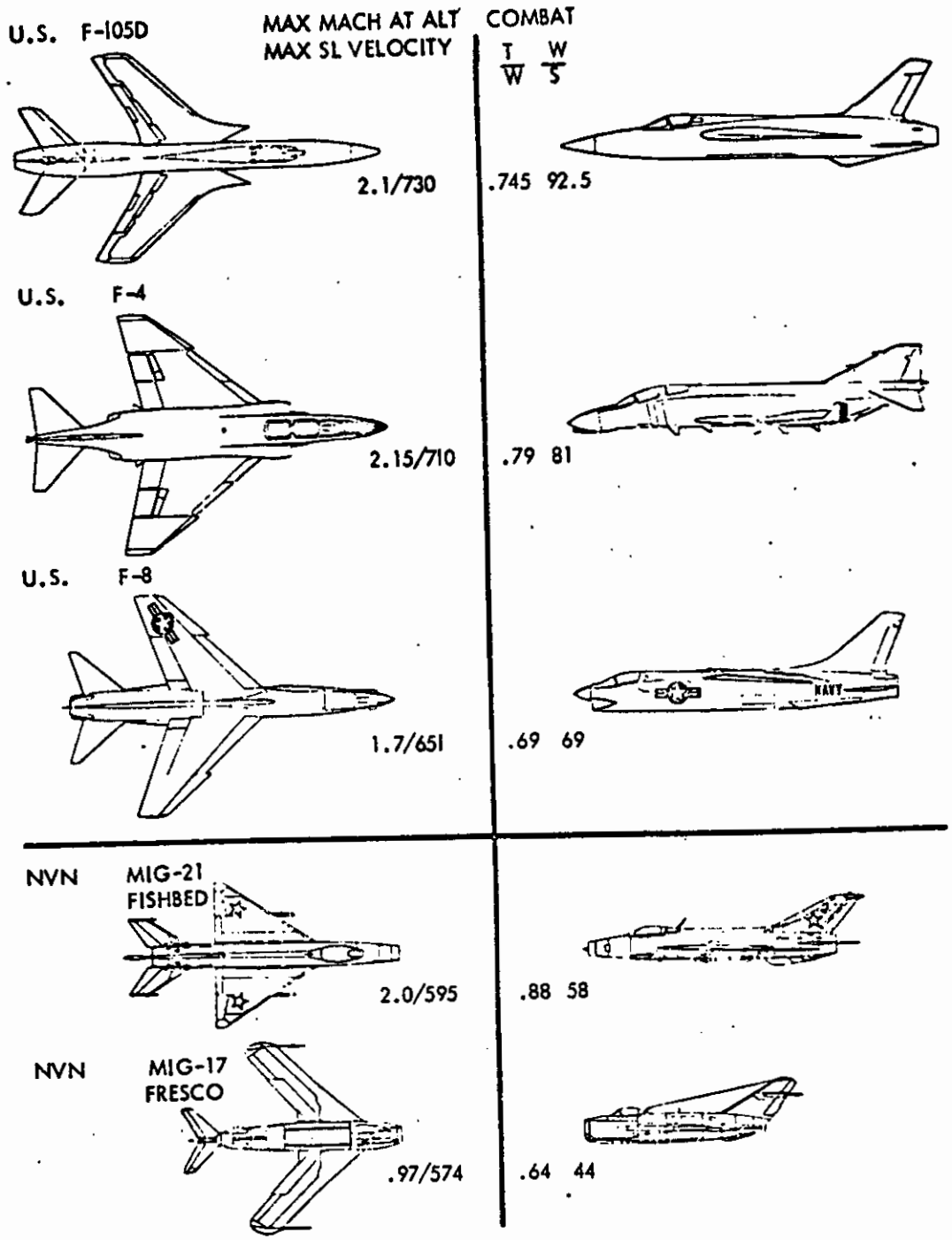


FIGURE B7 (S). Aircraft Characteristics (U)



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(S) The majority of F-105 aircraft involved with MIGs were the F-105D. The other variant was the two-seat F-105F, configured to locate SAM sites.

(S) During the early period of the war (1965), USAF F-4 aircraft were painted with light grey tops and white bottoms. The F-105 aircraft were silver. By 1966, however, all USAF fighters were camouflaged with tan and two shades of green on upper surfaces and white underneath. Except for a few aircraft which were camouflaged for only a short period of time, all USN aircraft exhibited the standard grey color on upper surfaces and white underneath.

(S) MIG-17 aircraft were initially either silver or a dull grey except for a few isolated contacts which were painted odd colors. Later in the war the MIG-17s were encountered with camouflage paint schemes. The MIG-21s, except for a few rare cases, have been silver, either natural or painted.

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# Appendix C

## THE DATA DEFINITION AND COLLECTION PROGRAM

[redacted]

## I. INTRODUCTION

(U) This appendix is included:

- To afford perspective as to the precision, limitations, and usefulness of the data used in the project; and
- To document the somewhat unique experience of the RED BARON Project, for its value to other projects in the future.

(U) The appendix contains a description of the rationale and methodology used in defining and acquiring the needed data and explains, in detail, the data collection techniques, which involved primarily the interviewing of air combat participants.

## II. BACKGROUND - GOALS AND LIMITATIONS

(C) In pursuit of the basic task, which was to "analyze air-to-air encounters...," the goal formulated for the data definition/collection effort was to obtain sufficient data to enable reconstruction of the encounters in appropriate detail with maximum accuracy and completeness.

(C) The scope and detail of the necessary data were not simply defined, for they had to meet the needs of the R&D community, and yet recognize the limitations of the available data. The primary limitation had to do, of course, with human ability to sense and recall. There were no real-time recording devices in U.S. aircraft, and therefore, with few exceptions (such as taped communications and photographs), all data had to be recalled by participants and observers.



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(C) There was also the question of adequacy for project use of the data reported from Southeast Asia via the standard reporting system. By September 1966, when the RED BARON Project was organized, WSEG/IDA had accumulated some significant experience with regard to the SEA air war and its R&D aspects. Field Representatives, both military and civilian, had been carrying out detailed R&D-oriented studies in the combat theater for more than a year. They had dealt at length with all levels of command from CINCPAC down to the smallest operating unit. Various study documents on the air war had been published and other studies were being conducted.[1] Important points which stood out in these documents and which were clear in the minds of the Field Representatives had to do with the inadequacy for R&D purposes of combat data being reported through the standard reporting systems. Indeed, data inadequacy provided the need for existence of Field Representatives.

(C) Most of the combat reporting systems, and appropriately so, were operationally rather than R&D oriented and did not have the detail or completeness needed by the R&D community. The few R&D-directed reports were generally incomplete, and there were always events which, due to the press of the situation in the combat theater, were never reported at all, or were reported inaccurately. The tremendous reporting burden already imposed upon the operating forces and the existing orientation of reporting personnel precluded meaningful emphasis on the initiation of reports of real value to the R&D scientists.

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[1](U) Published were: WSEG Report 90, Preliminary Analysis of Combat Air Operations in Southeast Asia (U), TOP SECRET, Nov. 1965; WSEG Report 101, Requirements of Defense R&D Agencies for Data from Combat Air Operations in Southeast Asia (U), SECRET, Aug. 1966, WSEG Report 103, "Interdiction of the Ho Chi Minh Trail (U)," SECRET NOFORN, Aug. 1966; numerous and various staff studies associated with these reports. In preparation was WSEG Report 109, Analysis of Combat Air Losses in Southeast Asia (U), SECRET, Feb. 1967, and related Staff Studies notably 133, 134, and 135.

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## III. APPROACH

### Data Definition

(U) To determine what constituted a meaningful reconstruction of an air-to-air encounter, the project conducted extensive study and wide liaison with that part of the R&D community concerned with components of the fighter weapons, including commercial contractors and government laboratories. Appropriate major contractors were invited to WSEG/IDA to brief the Project on their current and future activities as well as on their problems in obtaining combat data for their studies. Also, visits were made by the Project members to various government and contractors' installations. The government and government-associated R&D installations visited included NADC, Johnsville; NOL, Corona; NOTS, China Lake; RAND Corporation; APL, The Johns Hopkins University.

(U) Various military commands were visited in the process of defining data needs and to further the Project's education in air-to-air combat, including in the continental United States - Office of the Chief of Naval Operations, USAF Air Staff; Naval Air Systems Command; USAF Systems Command; COMNAVAIRPAC; COMFAIRMIRAMAR; USAF Tactical Fighter Weapons Center, Nellis Air Force Base.

(U) From this data-definition program evolved a detailed list of data needs of the R&D community which the Project wanted to fill in reconstructing an air-to-air encounter. These data items are reproduced as Table C-1. It should be emphasized that they did not form the basis for a questionnaire or any such rigid device for data collection. The items were, rather, a checklist for the completeness of the data.

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## Table C-1 (U). GUIDELINE FOR RECONSTRUCTION OF AN AIR-TO-AIR ENCOUNTER (U)

### OVERALL MISSION

1. Location and identification of support aircraft, surface craft.
2. Location and identification of other mission aircraft.
3. Armament carried.
4. External store configuration, including tanks, pylons.
5. Number of rounds of machine-gun ammunition.
6. Mission plan, purpose, route.
7. ECM equipment on board (energized).
8. Checkouts performed on weapons systems and equipment prior to take-off with results.
9. Take-off time.
10. Times of planned events.
11. Camouflage on aircraft.

### PRIOR TO ENGAGEMENT

1. Weather, enroute and on station.
2. Equipment malfunctions prior to engagement.
3. Readiness condition of weapons systems (warm-up, etc.).
4. Deviations from mission plan. Reasons for deviation.
5. Inbound refueling.
6. Radar scale and search pattern.
7. Communication from/to other aircraft or surface craft.
8. Aircraft flight condition (altitude, Mach, maneuvers, attitudes, etc.).
9. Active avionics equipment used (e.g., radar, TACAN, etc.).

### INITIATION OF ENGAGEMENT
(Detection, Threat Evaluation and Identification)

1. Manner of engagement initiation, including which crew member made first sighting.
2. Location of engagement, and point in mission.
3. Number of enemy identified initially and their formation.
4. Position of each friendly aircraft at time of detection.
5. Relative position of each enemy aircraft with respect to U.S. aircraft (target angle, elevation, etc.).
6. Apparent ground control of enemy and signs indicating.
7. Course, altitude, speed and range of each contact.
8. Initial plan of action and why undertaken.
9. Fuel state.
10. Armament load.
11. Jettison of stores.
12. Other aircraft directed under the plan.
13. Range of initial contact, and aids used, (radar or visual). Range scale of radar.
14. Range of initial identification.
15. Any IFF assistance in identification.
16. Assistance from surface forces, support aircraft throughout engagement.
17. Initial radar contact (sighting at maximum range of equipment or at some shorter range).
18. Method of positive identification, recognition problems, and camouflage.
19. Rules of engagement (e.g., ID requirements) and any effect on tactics.
20. Enemy detection of U.S. aircraft, and range of detection.
21. Measure used to estimate relative speed or absolute speed of target (radar, or other).
22. Communications among pilot, RIO, and other aircraft.
23. Attention of backseater (looking outside, at scope).
24. Electronic warning.
25. Effect of early warning on engagement.
26. Enemy tactics.
27. MIG warning, if received, and from whom.
28. Description of enemy aircraft type(s):
    - Model (e.g., FARMER E).
    - External store configuration.
    - Armament, missiles, (number, type, location, air-to-air rocket pods). Location on
    - Description of vehicle (markings, configuration).
    - Afterburner operation.

4-11-68-21 (1 of 2)



[redacted]

[redacted]

# Table C-1 (U). (Continued)

## MANEUVER TO FIRE WEAPONS

1. Time, place, and range of lock-on (continuous and interrupted)
2. Decision to attack or not to attack.
3. Support provided by other air or surface sources.
4. Plan and intended tactics.
5. Effect of weather on tactics.
6. Enemy tactic and maneuvers.
7. Use of mutual support position of wingman.
8. Relative position, clock code bearing of enemy aircraft and method of determining distances (radar, visual).
9. Changes in aircraft store condition (stores, tank, configuration).
10. Description of maneuvers for each aircraft.
11. Mach number (indicated) attempted and held.
12. "G" levels pulled during maneuvers. (Possible power limitations) Duration of maneuver. (Buffeting).
13. Altitudes during the maneuvers.
14. Use of afterburner. (duration, adequacy of AB modulation control).
15. Firing by enemy (type and hits).
16. Changes in maneuvering (e.g., hole in tail).
17. Backseater assistance.
18. Effect on enemy of no GCI control.
19. Attempts to get into firing envelope.

## EXPENDITURE OF ORDNANCE

1. First firing (U.S. or enemy).
2. Ordnance expended (U.S. enemy), range, attitude, target angle "g"s, maneuver involved at time of firing, weapon closest point of approach.
3. Firing envelope (ready light on missile, position in envelope).
4. Airspeed (indicated Mach) and position of each aircraft.
5. Prefiring checks complete.
6. Duration of trigger down.
7. Countermeasures used (by enemy and U.S.) against firing.
8. Cessation of firing, plan of firing.
9. Direction of the attack (by whom).
10. Communication among backseater, pilot, and other aircraft, and communication problems.
11. Hits on enemy (where? With what?).
12. Gun aiming (Did gunsight give proper lead?)
13. Visual loss of target during gun set up.
14. Weapons performance (Did weapon guide? - Was there a lock-on? How long before firing was lock-on obtained? Did weather degrade any weapon system?).
15. SIDEWINDER tone at firing.
16. Duration of gun burst.
17. Equipment or weapons malfunctions.
18. Actions of enemy aircraft after hit/fire, what color, smoke, explosions, pieces leaving aircraft, pilot eject, damage mechanism?).
19. Confirmation of kill.

## TERMINATION OF ENGAGEMENT
(Egress and postflight inspection)

1. Termination of engagement (enemy, friendly).
2. Reason for termination (disengagement).
3. Initial mission accomplishment.
4. Fuel state at end of engagement.
5. Location at end of engagement.
6. Location of other aircraft in the area.
7. Aircraft configuration at end (weapons remaining, store).
8. Number of rounds left.
9. Reidentification of flight.
10. Postflight checks performed, and status of systems.

4-11-68-21 (2 of 2)

[redacted]

**Data Collection**

(C) The very detailed information which the Project wished to collect and the shortcomings of the standard reporting systems, necessitated some unique data collection effort. In addition to all possible documentation on air-to-air encounters, it was determined that the primary source of data for the Project would be those individuals themselves involved in air-to-air events. The Project determined to actively interview those participants and obtain firsthand accounts by which to reconstruct the mission in detail.

(C) The Data Collection Program then involved several interrelated procedures:

- Identification of air-to-air encounters and the participants.
- Continuing definition of specific data needs and resolution of needs with the limitations in acquiring data.
- Collection of appropriate documentary information on Southeast Asia air-to-air encounters.
- Development of optimum interview techniques.
- Location of participants and arrangements for interviewing them.

These operations were not necessarily sequential and they were continued throughout the Data Collection Phase.

(C) Encounters were identified through a search of existing documentation, various formally and informally maintained "box scores" and other files, and early information was gained from the Office of the Chief of Naval Operations and the USAF Air Staff. Additional basic documentation came from the USAF Tactical Fighter Weapons Center, CINCPACFLT, CINCPACAF, COMNAVAIRPAC, and the Commander, 7th Air Force. It was quickly determined that the various "box scores" did not agree. This was attributed to a variance in definition of what constituted an air-to-air encounter/engagement and possibly administrative or communications failures within the commands.

(C) Additionally, early in the study, the CNO and the Chief of Staff, USAF, were advised of Project RED BARON and requested to provide reference to appropriate documentation. Numerous replies were received from various offices within the Services. Gradually, sources of documented information were increased until they included: standard reporting system (OPREPs, COACT, Navy 3480-4 Reports, Guided Missile Performance Reports); various reports of associated studies made by OEG representatives and other analytical groups; letters from aircrewmen who could not be interviewed; various records kept at all levels of command; gun-camera films, tapes of communications made by aircrewmen; and miscellaneous message traffic among military commands.

(C) Identification of participants was a particular problem since there was no existing mechanism for providing this information. With relatively few exceptions, names of participants were not included in standard reports. However, names were gradually acquired through informal communications with USN and USAF aircrewmen and, as the interview program proceeded, other persons were identified by the interviewees.

(U) There were potential problems involved with the interview program. The problems were related to such considerations as the human ability to recall stressful incidents and the effect of elapsed time between the event and the attempt to recount it. Also large numbers of people throughout the world had to be interviewed, great quantities of interview data had to be reduced, and time and manpower had to be considered.

(U) Considerable time and effort were devoted to developing interview techniques. At an early point in the Project IDA psychologists, H. W. Sinaiko and W. Richard Kite, were called in as consultants. They continued to work with the Project through the phase of development of interview procedures. An interview program was designed which would allow

the greatest number of interviews, while maximizing the quality, depth, and scope of information obtained from each interview.

(U) The basic interview concept stressed unhurried informality, anonymity of the interviewee, a chronological approach to the entire flight in question (not just the air-to-air encounter period of it), and use of visual aids (maps, sketches, airplane models) to reconstruct events.

(U) A systematic program was developed to interview a maximum number of participants in the combat theater and throughout CONUS and Europe. Since there was little chance to control the elapsed time between event and interview, the elapsed time varied from a few days to more than one year.

(U) The efficiency of the interview effort was approached in various ways. Several levels of encounter were defined according to complexity and intensity,[1] and the basic interview procedure was somewhat expanded or abbreviated according to the level of encounter and the knowledge of the interviewee. Data formats were devised which attempted to facilitate the recording (and subsequent reduction) of information while stimulating the memory of the interviewee.

(U) In all, ten persons were trained as interviewers. Because of the specialized techniques developed for and by the Project and the type of data desired, considerable effort was required in training proficient debriefers. At the start, various test interviews were conducted, their results evaluated, and improvements made before a large scale program was undertaken. Minor changes in procedure were made throughout the program.

(U) Although the Project wanted to interview a maximum number of aircrewmen, the overriding aim was coverage of the

[1](U) Sighting only (visual or radar); either side taking hostile or evasive action; expenditure of ordnance by either side; loss or damage by either side.

largest number of the more meaningful class of encounters. Consequently, where a choice had to be made as to whom to interview, breadth of coverage and type of encounter were the primary considerations. For comprehensiveness, attempts were also made to interview all participants of each encounter. Where it was possible to communicate with a participant but not practical or possible to interview him, he was contacted by mail.

## IV. THE INTERVIEW PROCEDURE

(U) Although small changes evolved and flexibility was introduced to accommodate individual situations, the basic interview procedure remained largely constant after the early test cases. The interviews sought to reconstruct the events in as much detail and as accurately as possible, and to include the items of information formulated by the Project (as presented in Table C-1). This listing was used as a guide for discussion, not as a rigid set of requirements or as a questionnaire from which specific questions should be asked. Early experience and study by the Project had shown that the interrogation should allow the subject to tell his story as he lived it, and for the interviewer to occasionally interject questions of interest.

(U) An important aim of the interviews was to identify why certain aspects of the events occurred in the manner described. It was felt that the most value in identifying R&D lessons learned lay in answering the why questions. If the reconstruction provided good answers to the items in Table C-1 the reasons why many parts of the event occurred as they did should be identified.

(U) Ideally, the interviewee was given advance notice and a general idea of what would be discussed. The interview team consisted of two persons, one a military aircrewman with a significant amount of flying experience and the other a military officer or civilian. The team would meet with one crewman at a time in a closed room, with minimum distraction, and with what was intended to be more than ample time allotted for

the meeting. The team attempted to create an air of relaxed informality.

(U) The interview that followed was permitted to vary somewhat in detail depending on the complexity of the encounter and knowledge of the interviewee, but the basic procedure was always used. This consisted of some explanation to the aircrewman, a narrative account of the event by the aircrewman, a detailed sketch of flight paths with accompanying notes, a final review of the whole encounter and a period in which the aircrewman was encouraged to comment in general on the event and related subjects.

(U) The interviewee was given an explanation of the study, how it came about, what it hoped to accomplish, and what his role was to be. To encourage frank and honest answers, it was emphasized that the interviewee's name would not appear in print and that, in general, attempts would be made to preserve his anonymity. The complete interview procedure was explained in detail.

(U) The aircrewman was then asked to give his background and an uninterrupted narrative of the encounter in question. He was asked to start from planning for the mission and to discuss all aspects of the flight through its return to base. He was given examples of the kind of detail desired. Early in the project it became standard practice for the interviewers to use a tape recorder for the narrative phase with the interviewee's consent, of course, and his understanding that he could erase anything he wished from the tape. He was assured that the tape was used only to gain complete, accurate information from the meeting and that its use was limited to the project.

(U) Following the aircrewman's narrative of the entire mission, the event was again reconstructed with careful attempts to record all situations and circumstances in very great detail.

(U) In this detailed phase, depending on the intensity and complexity of the encounter, some type of sketch of the action was made. The detailed sketch covered not only the air-to-air encounter itself, but also ingress and egress. For the sketch, a transparent paper overlay was placed on a large scale map[1] and the paths of the various aircraft known to have been present were traced relative to known geographical points, to the best of the interviewees' knowledge or estimation. This was done as a plan view. The third dimension to the picture was introduced by means of a keyed time-sequence versus altitude plot at the top of the overlay. A copy of this overlay is shown as Figure C-1. The horizontal and vertical lines represent a 5 mile square on a 1:125,000 scale -- the scale of the charts used.

(U) The use of the map as a background in attempting to retrace flight paths was intended to stimulate the aircrewman's recall. The introduction of geographical references, including terrain features sought to reduce some of the abstraction involved in reproducing flight paths. Although controlled experiments were not conducted, aircrewman reaction to the interview techniques suggests that real benefits were gained by the use of the map background.

(U) Early in the study it became clear that the air-to-air combatant rarely had an accurate concept of the time duration of events or phases of the combat. He was better able to recall the sequence of events. Therefore, time was reconstructed in terms of a time sequence. This procedure allowed the interviewer to "stop the action" at a point where something significant was occurring and try to elicit a detailed account of the scene at that instant -- the location and altitude of each participant, status of the interviewee's aircraft in the way of speed, g's, fuel state, avionics modes; action by the

[1](U) Special reprints of JOG(A) charts were made to a 1:125,000 scale by the U.S. Navy Hydrographic Office.

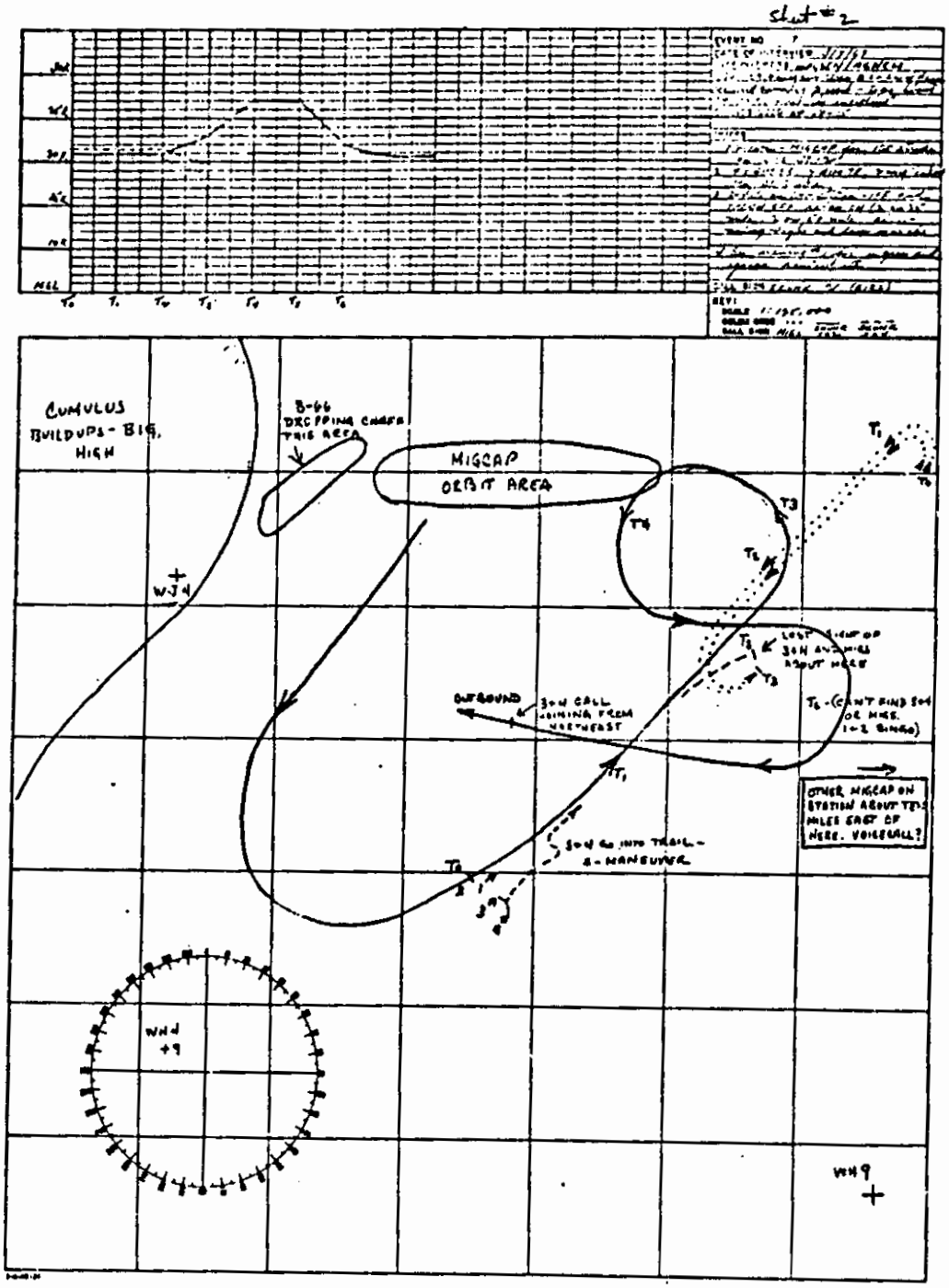


FIGURE C1 (U). Event Record Form (U)

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RED BARON
INTERVIEW NOTES

Event No. 7
Interview Date 3/7/67
By WALDEN / AGNEW
Voice Call SKUNK Y (GIBS)

| Time | Own Aircraft | | Friendly Aircraft | Communications | Enemy Actions | Remarks |
|---|---|---|---|---|---|---|
| | Status | Action | | | | |
| To | [illegible] 92 MSH FUEL ~ 9,000 [illegible] | LEAD ~ Y INCREASE POWER TO FULL MIL + JETTISON TANKS | "X + "Y 1000' UP 2000' OUT BACK 90° | "Y CALLS BOGIES<br>LEAD TO FLIGHT ~ 1+2 [illegible] 90 & GO INTO TRAIL JETTISON TANKS | SEEM TO BE IN TIGHT TURN TO LEFT. | "Y HAS TWO BOGIES ON RADAR AT 12 O'CLOCK LEVEL 20 MILES. |

PAGE 1 OF 1

FIGURE C2 (U).

UNCLASSIFIED

individual and his reasons therefor; communications which took place; enemy actions; etc. After such a stop the description would continue until the next significant event occurred at which point the action would again be stopped. These stops correspond to the "T" (of "Time") marks in events and pictures. While one team member worked with the aircrewman in making the sketch, the other kept notes on a specially designed note pad, a sample page of which is presented in Figure C-2.

(U) Upon completion of this step-by-step, detailed reconstruction the interviewers asked specific questions from the checklist about points which had not been covered.

(U) Finally, the interviewee was encouraged to comment on the whole range of considerations which might be of interest to the study -- comments derived from his experience in the specific encounter as well as from his overall experience. The interviews lasted from a few minutes to several hours, depending on the significance and complexity of the encounter and on the knowledge of the interviewee.

[redacted]

## V. GENERAL COMMENTS ON DATA

(C) The Project identified 413 air-to-air events that occurred prior to 1 August 1967. Participants in 227 of these events were interviewed, with a total of 418 interviews conducted.[1] In addition, 37 written accounts of events were received. In general, priority in conducting interviews was given to the more complex encounters. Events for which no interviews were conducted were usually sightings only, with no R&D significance.

(U) The 37 written accounts, referred to above, were letters from aircrewmen who could not readily be interviewed and who were contacted by mail. These letters contributed very little to the information on any given event and in some cases introduced confusion. In general, this was an unsuccessful technique for gathering data.

(C) The most important question that can be asked about the RED BARON data has to do with validity, i.e., how close do the final event reconstructions used for analysis compare with what actually happened? There is nothing approximating laboratory control or measurement about the SEA air war and, therefore, no precise answer to this question can ever be given. There are some meaningful things to be said on the subject, however:

- Real-time recorded information was at a minimum (there were a few communications tapes and films).

[1](U) If an individual was interviewed in connection with two or more different encounters, this would be considered as two or more interviews.

[redacted]

[redacted]

Practically all basic data depended upon the human ability to sense, analyze and recount.

- This fact was recognized from the beginning as of primary importance to the project and all activities -- data definition, collection, analysis -- were formulated with it in mind; that is, data requirements were continually refined in attempts to define what was reasonably achievable; the interview techniques and their step-by-step, systematic, detailed approach with words and sketches were carefully devised to give the aircrewman maximum assistance in analyzing and recalling what actually occurred and to introduce checks on the validity of the aircrewman's recounting. The final reconstruction of each encounter, by utilizing and comparing all of the sources of data, again was devised so as to enhance completeness and validity in reaching some determination and logical explanation of what really happened.
- With regard to analyzing the data, only after completion of the collection and event reconstruction phases were decisions made as to what could constitute a meaningful analysis of this kind of material.
- There were indications during the interview program that the techniques used did in fact achieve certain success in enhancing the aircrewman's analysis and recalling of his encounter. It was not unusual, in the middle of creating a step-by-step sketch of an encounter, for an aircrewman to exhibit certain surprise and state that only now could he understand what really occurred. Prior to this exercise he had had misconceptions about or gaps in his understanding of what had taken place, or things could not have happened as he stated in his post-flight debriefing.
- Many of the interviews took place weeks or months after the encounter and there is question about how the time lapse between encounter and interview influences the aircrewman's ability to recount things as he actually sensed and analyzed them. Intuitively, it might seem that the best information would be obtained by minimizing this lapse. However, there are illustrations which counter this. In an early stage of its activities, the Project was advised by its psychologist consultants of the remarkable human ability to recall the details of stressful events and not lose recall over time. Comparisons by the Project of information obtained from aircrewmen immediately after an air-to-air encounter and some weeks or months later, as well as comparison of OPREP reports with interview data substantiate,



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[redacted]

in general, this human ability. The checks on validity which came about through the interview and final reconstruction techniques substantiate to some degree the consistency and accuracy of this recall over time. Additionally, there are opinions from aircrewmen who have participated in air-to-air engagements which say that immediately following the occurrence their thoughts were quite jumbled and it took them days or weeks to understand and analyze what had occurred in this fast moving, complex situation. In summary, then, the Project cannot prove or disprove any precise statement about the effect of elapsed time on the validity of recall. On balance, there seems to be little to substantiate the intuitive notion that recall is a function of time lapse. Dates of events and interviews have been published with the data. There is a place for additional psychological study in this area.

(C) The precedure of conducting some 400 interviews and the reduction of the interview material to reconstructions of the encounters was extremely laborious and time consuming.[1] In any follow-on investigation of this type, the effort could and should be reduced -- not by the sacrifice of detail or completeness but, rather, by more efficient formatting of the material as it comes out in the interview. It is not completely clear how this might be done without loss of the unhurried, informality of the interview; however, the optimum procedure probably makes a little more use of forms by the interviewer. The effort could also have been greatly reduced had there been considerable recording equipment in our aircraft. In the absence of such equipment (and to some degree even with the existence of it) there is no substitute for the technique whereby the analyst, with a clear idea of the subject matter he wants, has a face-to-face meeting with the air battle participant. Only in this way can detailed, clear, complete, authentic information be recorded. Data retrieved from forms

[1] (U) Approximately 15 man-months were devoted to conducting interviews. Volume I represents approximately 50 man-months of work following the completion of data collection.

[redacted]

filled out by tired, disinterested aircrewmen or debriefers offer no reasonable substitute.

# Appendix D

## SHORT-RANGE WEAPON EMPLOYMENT OPPORTUNITIES

[redacted]

## I. INTRODUCTION

(U) The purpose of this analysis is to explore more completely the extent of the short-range weapon requirement identified by the RED BARON Qualitative Analysis Panels (see Section IV). The analysis quantifies the number of events where a short-range weapon employment opportunity existed for an aircraft which carried only air-to-air missiles. This procedure was based on an experienced fighter pilot's judgment in analyzing the information published in the RED BARON Report.

## II. SCOPE

(S) The data for this analysis were extracted from the F-4 events which occurred between April 1965 and 1 March 1967 as published in Volume I. The F-4 was not equipped with a short-range weapon until the SUU-16 gun pod was utilized for air-to-air armament in May 1967. Short range, for this analysis, is identified as less than minimum missile range, i.e., 2000 to 3000 ft range. The characteristics of the 20mm, M-61 Gatling Gun, were chosen to identify the short-range envelope. The characteristics of this existing weapon were selected instead of a hypothetical weapon. This should not be construed as a recommendation for any specific type of short-range weapon.

(S) The three necessary conditions for an event to be included in this analysis were:

- The U.S. aircraft involved was an F-4.
- The event contained a visual sighting of the enemy aircraft.
- There was a reasonable opportunity for U.S., enemy, or both opponent aircraft to fire ordnance during the event.

[redacted]

[redacted]

## III. DISCUSSION

(S) Investigation of the data published in Volume I identified 29 events which fulfilled the above requirements. These 29 events can be subdivided into five categories of related air-to-air missile success. The total number of events pertaining to each category is also listed.

- (1) Four events occurred where a short-range weapon opportunity was available, but there were no air-to-air missile firing attempts and no enemy aircraft were destroyed.
- (2) Five events occurred where a short-range weapon opportunity was available, but although there were air-to-air missile firing attempts in each event, no enemy aircraft were destroyed.
- (3) Six events occurred where a short-range weapon opportunity was available against enemy aircraft other than those destroyed by air-to-air missiles.
- (4) Eight events occurred where a short-range weapon opportunity was available against an enemy aircraft which was destroyed by an air-to-air missile.
- (5) Six events occurred where NO short-range weapon opportunity was available. Air-to-air missile firing attempts were made in each event and destroyed enemy aircraft in three of these six events.

(S) The 15 events listed in categories (1), (2), and (3) identify at least one additional enemy aircraft in each event which could have been placed under U.S. fire. Thus, the enemy aircraft benefited from the short-range sanctuary in front of the F-4 in approximately half of the day-visual events.

(S) These short-range weapon employment opportunities occurred in spite of the F-4 flight tactics which were designed to achieve missile firing position. It is not possible to

[redacted]

[redacted]

speculate whether fewer or less short-range firing opportunities would have occurred if the F-4 had been equipped with a short-range weapon during this study period since the enemy would have avoided this short-range area and the F-4 tactics would have been modified to exploit the additional weapons system capability. The interplay between offense and defense makes the net effect of adding short-range weapon uncertain since each tactical ploy has its tactical answer. However, if the only effect is to force the enemy to open range to avoid the short-range envelope, the enemy becomes vulnerable to the longer range missile attack.



[redacted]

[redacted]

## IV. CONCLUSIONS

(S) Enemy aircraft have had a sanctuary of approximately one-half mile in front of an F-4 fighter, which carried only AIM-7E and AIM-9B missiles. The enemy benefited from this sanctuary in half of the events studied.

## V. DATA

(U) The 29 events used in the short-range weapon study are listed below. Each event is identified with the Volume I event number. Where applicable, a time sequence mark (example: T-6) is also listed following the event number. This time mark refers to the location of the passage in Volume I which led to the identification of the short-range firing opportunities.

(S) Event 2 (T-13). Eight AIM-7 and two AIM-9 missiles were fired with one probable MIG-17 kill by an AIM-7. Short-range weapon employment opportunities were available following the high-closure rate missile attacks.

(S) Event 6 (T-11, T-5, T-9). Eight AIM-9s were fired and destroyed two MIG-17s. Both attacking aircraft closed to short range as their respective missiles destroyed the enemy aircraft.

(S) Event 9 (T-6). One AIM-7 fired for a probable kill. The U.S. aircraft then closed and passed a second enemy aircraft from six o'clock but inside of minimum missile firing range.

(S) Event 12 (aircraft commander's comment). The A/C

[redacted]

stated, "A gun would have been useful on the first ID pass because the intercept ended in good position for a gun attack, but insufficient time remained to maneuver for a missile launch before the MIGs disappeared into the clouds."

(S) Event 18 (T-3A). A close-in maneuvering engagement occurred with no missile firing opportunities. U.S. aircraft forced overshoots but the enemy aircraft stayed well inside of minimum missile firing range.

(S) Event 22 (T-6). Six missile firing attempts were made. Four AIM-9 missiles scored a probable kill against one MIG-21. The short-range weapon employment position was available to press the attack.

(S) Event 23 (T-5 & T-10). Two MIG-17 aircraft were destroyed, one by each type missile. F-4 pilots were in a circling battle where a cannon would have been a better weapon against the highly maneuvering targets.

(S) Event 26 (T-11). Four AIM-9 missiles were fired. One MIG-21 pilot ejected when a missile passed close to his aircraft. One of the U.S. aircraft closed to 500 ft behind a second MIG-21 not destroyed in this engagement.

(S) Event 27 (T-8). Two AIM-9 missiles were fired in desperation to divert a MIG attacking another flight member. Both missiles missed. The cannon would have provided a weapon for a follow-up attack with proper discrimination between the U.S. aircraft under attack and the attacking MIG.

(S) Event 28 (T-2 narrative). Three AIM-9 missiles were fired with one kill. A second MIG pilot crashed into the ground while maneuvering to avoid one of the missiles. There was an established closure rate on both of these MIG aircraft for a follow-up short-range weapon employment opportunity if necessary.

(S) Event 32 (T-4). Two AIM-9 missiles were fired, re-

sulting in one MIG kill. A second U.S. aircraft inadvertantly maneuvered to less than minimum missile firing range behind an enemy fighter not destroyed in this engagement.

(S) Event 37 (T-14A plus snapshots of T-9A, T-6B, and T-4C). Two AIM-7 missiles were fired but missed their target while one AIM-9 downed a MIG-17. There was a good gun tracking position available for a long burst from a head-on firing pass against an enemy aircraft not destroyed in this event.

(S) Event 39 (T-1 and T-2). Five AIM-9 missiles were fired destroying two MIG-21s. Two U.S. aircraft closed rapidly through the radar missile envelope to less than minimum missile firing range. Both MIG aircraft would have come under fire from a cannon sooner than from the missiles.

(S) Event 45 (T-9A, T-4A, T-7B). Six missiles were fired in a maneuvering dogfight. Good short-range weapon employment opportunities were available against additional enemy aircraft.

(S) Event 46 (T-2 and T-3). Four AIM-7 and six AIM-9 missiles were fired in this engagement with no hits. Four of the six AIM-9 missiles were fired inside of minimum missile firing range.

(S) Event 47 (T-2). The U.S. wingman sighted a MIG-21 at his four o'clock position, 800 feet out, firing at his lead. A right turn would have given the wingman an immediate short-range weapon employment opportunity.

(S) Event 56 (Narrative). A MIG-21 was in an escort formation for thirty seconds. As Number Three attempted to open range, the MIG turned away and departed. Number Three returned to escort formation. A cannon would have provided a weapon for immediate attack without opening range.

(S) Event 57 (T-10). Six missiles were fired, two AIM-7s and four AIM-9s, with no hits. Friendly lead at one time was 500 feet behind a nonmaneuvering MIG-17 attempting to open range for missile attack.

[redacted]

(S) Event 60 (T-6, 6A). Two MIG-21 aircraft were destroyed, one by each missile type. The short-range weapon employment opportunity preceded a missile firing opportunity.

(S) Event 68b (T-5 narrative plus a snapshot at T-5). Six missiles were fired. One AIM-9 destroyed a MIG-21. A good head-on firing opportunity was available.

(S) Event 68c (T-13). Sixteen missiles were fired. The 12 AIM-7 missiles fired resulted in three MIG-21 aircraft destroyed. One pilot had a choice either to continue for a short-range attack or to open range for a missile attack.

(S) Event 71 (T-11). Seven missiles were fired. Four AIM-7 SPARROW missiles resulted in two MIG-21s destroyed. There was an excellent opportunity to employ short-range weapons against an additional enemy aircraft not destroyed by a missile.

(S) Event 78 (T-4). Six U.S. missiles were fired, three radar and three IR. Both U.S. elements had MIG-17s at their 6 o'clock and were using "S" maneuvers to clear each other's tail. There were high angle-off shots available against relatively nonmaneuvering targets.

(C) The events that contained no short-range firing opportunity were Events 4, 5, 24, 25, 29, and 68a.

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Our **Programs Management Branch, DTIC-OCP**, will assist in resolving any questions you may have concerning documents to be submitted. Telephone numbers for that office are **(703) 274-6847**, or **DSN 284-6847**. The **Reference Services Branch, DTIC-BCR**, will assist in document identification, ordering and related questions. Telephone numbers for that office are **(703) 274-7633** or **DSN 284-7633**.

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