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REPORT OF SECRETARY OF DEFENSE

HAROLD BROWN

TO THE CONGRESS

ON THE

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CHAPTER 4

POLICY FOR FORCES I: STRATEGIC NUCLEAR

(U) The backbone of American military power is our strategic nuclear arsenal--the missiles, submarines, and bombers that can deliver nuclear warheads and bombs to the farthest corners of the world. The unimaginable destructive potential of these weapons gives them a special place in the hierarchy of military power and confers extraordinary responsibilities on those who exercise control over them. It is useful, therefore, to begin our discussion of strategic nuclear forces with a quick review and reminder of the likely effects of a nuclear war, for the prevention of such a war is the primary mission of these weapons.

(U) An all-out nuclear war between the United States and the Soviet Union would involve the use of most of the approximately 15,000 strategic nuclear warheads and bombs the two countries possess. Because the damage done by such an exchange would be unprecedented in scale, indeed indescribable, it is perhaps easier to begin to appreciate the destructive potential of nuclear weapons by looking first at the effects of the use of one typical nuclear weapon--a one megaton warhead, the equivalent of 1,000,000 tons of TNT. As a recent study by the Congressional Office of Technology Assessment points out, if a single such warhead were detonated on a major American city, the effects would include the following:

-- all reinforced concrete structures within a radius of .8 miles would be completely destroyed, as would all small woodframe and brick residences within 3 miles, and all lightly constructed commercial buildings and typical residences within 4.4 miles;

-- virtually everyone within a radius of 1.7 miles would be killed instantaneously, as would more than half of those within 2.7 miles--totalling about a quarter of a million immediate fatalities;

-- anywhere up to 200,000 additional people would eventually die from severe burns; and

-- several hundred thousand others would be injured, including tens of thousands of serious burn victims.

(U) Moving from this highly unlikely one warhead-one city scenario to even so-called limited nuclear strikes (and it remains my belief that a "limited" exchange is unlikely to remain limited), the deadly statistics rise correspondingly. Depending on specific conditions (wind, weather, height of burst, number and type of weapons used), a Soviet attack on our ICBM silos alone could produce anywhere from 2 million to 22 million fatalities within 30 days.

(U) For massive nuclear exchanges involving military and economic targets in the United States and the Soviet Union, fatality estimates range from a low of

20-55 million up to a high of 155-165 million in the United States, and from a low of 23-34 million up to a high of 64-100 million in the Soviet Union. Beyond this, secondary and indirect disruptions of the societies attacked, and longer-term fallout and other consequences to areas outside those attacked, would amplify the damage.

(U) Deterring nuclear war--making that unlikely possibility even more remote--is therefore our highest national security priority. Pursuing this objective requires us to give the most serious and careful attention to our strategic doctrine and plans, the forces themselves, and the process of strategic arms control. Let me discuss each in turn.

I. THE COUNTERVAILING STRATEGY

(U) A significant achievement in 1980 was the codification of our evolving strategic doctrine, in the form of Presidential Directive No. 59. In my Report last year, I discussed the objectives and the principal elements of this countervailing strategy, and in August 1980, after P.D. 59 had been signed by President Carter, I elaborated it in some detail in a major policy address. Because of its importance, however, the countervailing strategy warrants special attention in this Report as well.

(U) Two basic points should underlie any discussion of the countervailing strategy. The first is that, because it is a strategy of deterrence, the countervailing strategy is designed with the Soviets in mind. Not only must we have the forces, doctrine, and will to retaliate if attacked, we must convince the Soviets, in advance, that we do. Because it is designed to deter the Soviets, our strategic doctrine must take account of what we know about Soviet perspectives on these issues, for, by definition, deterrence requires shaping Soviet assessments about the risks of war--assessments they will make using their models, not ours. We must confront these views and take them into account in our planning. We may, and we do, think our models are more accurate, but theirs are the reality deterrence drives us to consider.

(U) Several Soviet perspectives are relevant to the formulation of our deterrent strategy. First, Soviet military doctrine appears to contemplate the possibility of a relatively prolonged nuclear war. Second, there is evidence that they regard military forces as the obvious first targets in a nuclear exchange, not general industrial and economic capacity. Third, the Soviet leadership clearly places a high value on preservation of the regime and on the survival and continued effectiveness of the instruments of state power and control--a value at least as high as that they place on any losses to the general population, short of those involved in a general nuclear war. Fourth, in some contexts, certain elements of Soviet leadership seem to consider Soviet victory in a nuclear war to be at least a theoretical possibility.

(U) All this does not mean that the Soviets are unaware of the destruction a nuclear war would bring to the Soviet Union; in fact, they are explicit on that point. Nor does this mean that we cannot deter, for clearly we can and we do.

(U) The second basic point is that, because the world is constantly changing, our strategy evolves slowly, almost continually, over time to adapt to changes in U.S. technology and military capabilities, as well as Soviet technology, military capabilities, and strategic doctrine. A strategic doctrine that served well when the United States had only a few dozen nuclear weapons and the Soviets none would hardly serve as well unchanged in a world in which we have about 9,000 strategic warheads and they have about 7,000. As the strategic balance has shifted from overwhelming U.S. superiority to essential equivalence, and as ICBM accuracies have steadily improved to the point that hard target kill probabilities are quite high, our doctrine must adapt itself to these new realities.

(U) This does not mean that the objective of our doctrine changes; on the contrary, deterrence remains, as it always has been, our basic goal. Our countervailing strategy today is a natural evolution of the conceptual foundations built over a generation by men like Robert McNamara and James Schlesinger.

(U) The United States has never--at least since nuclear weapons were available in significant numbers--had a strategic doctrine based simply and solely on reflexive, massive attacks on Soviet cities and populations. Previous administrations, going back almost 20 years, recognized the inadequacy as a deterrent of a targeting doctrine that would give us too narrow a range of options. Although for programming purposes, strategic forces were sometimes measured in terms of ability to strike a set of industrial targets, we have always planned both more selectively (for options limiting urban-industrial damage) and more comprehensively (for a wide range of civilian and military targets). The unquestioned Soviet attainment of strategic parity has put the final nail in the coffin of what we long knew was dead--the notion that we could adequately deter the Soviets solely by threatening massive retaliation against their cities.

(U) This Administration's systematic contributions to the evolution of strategic doctrine began in the summer of 1977, when President Carter ordered a comprehensive review of U.S. strategic policy to ensure its continued viability and deterrent effect in an era of strategic nuclear parity. Over the next 18 months, civilian and military experts conducted an extensive review, covering a wide range of issues, including U.S. and Soviet capabilities, vulnerabilities, and doctrine. As soon as the report was ready, implementation began. The broad set of principles this review yielded constitute the essence of the countervailing strategy. I outlined these in my FY 1981 Defense Report and reviewed them at the NATO Nuclear Planning Group meeting in Norway in June 1980. Three years after he ordered the initial review, President Carter signed the implementing directive--P.D. 59--formally codifying the countervailing strategy and giving guidance for the continuing evolution of U.S. planning, targeting, and systems acquisition. In September 1980, Secretary of State Muskie and I testified on the countervailing strategy and P.D. 59 before the Senate Foreign Relations Committee. Again, in November of 1980, I engaged in extensive and intensive discussions of the countervailing strategy with our NATO Allies, this time at the fall Nuclear Planning Group meeting.

(U) Our countervailing strategy--designed to provide effective deterrence--tells the world that no potential adversary of the United States could ever conclude that the fruits of his aggression would be worth his own costs. This is true

whatever the level of conflict contemplated. To the Soviet Union, our strategy makes clear that no course of aggression by them that led to use of nuclear weapons, on any scale of attack and at any stage of conflict, could lead to victory, however they may define victory. Besides our power to devastate the full target system of the USSR, the United States would have the option for more selective, lesser retaliatory attacks that would exact a prohibitively high price from the things the Soviet leadership prizes most--political and military control, nuclear and conventional military force, and the economic base needed to sustain a war.

(U) Thus, the countervailing strategy is designed to be fully consistent with NATO's strategy of flexible response by providing options for appropriate response to aggression at whatever level it might occur. The essence of the countervailing strategy is to convince the Soviets that they will be successfully opposed at any level of aggression they choose, and that no plausible outcome at any level of conflict could represent "success" for them by any reasonable definition of success.

(U) Five basic elements of our force employment policy serve to achieve the objectives of the countervailing strategy.

A. Flexibility

(U) Our planning must provide a continuum of options, ranging from use of small numbers of strategic and/or theater nuclear weapons aimed at narrowly defined targets, to employment of large portions of our nuclear forces against a broad spectrum of targets. In addition to pre-planned targeting options, we are developing an ability to design other employment plans--in particular, smaller scale plans--on short notice in response to changing circumstances.

(U) In theory, such flexibility also enhances the possibility of being able to control escalation of what begins as a limited nuclear exchange. I want to emphasize once again two points I have made repeatedly and publicly. First, I remain highly skeptical that escalation of a limited nuclear exchange can be controlled, or that it can be stopped short of an all-out, massive exchange. Second, even given that belief, I am convinced that we must do everything we can to make such escalation control possible, that opting out of this effort and consciously resigning ourselves to the inevitability of such escalation is a serious abdication of the awesome responsibilities nuclear weapons, and the unbelievable damage their uncontrolled use would create, thrust upon us. Having said that, let me proceed to the second element, which is escalation control.

B. Escalation Control

(U) Plans for the controlled use of nuclear weapons, along with other appropriate military and political actions, should enable us to provide leverage for a negotiated termination of the fighting. At an early stage in the conflict, we must convince the enemy that further escalation will not result in achievement of his objectives, that it will not mean "success," but rather additional costs. To do this, we must leave the enemy with sufficient highly-valued military, economic, and political resources still surviving but still clearly at risk, so that he has a strong incentive to seek an end to the conflict.

C. Survivability and Endurance

(U) The key to escalation control is the survivability and endurance of our nuclear forces and the supporting communications, command and control, and intelligence (C^3I) capabilities. The supporting C^3I is critical to effective deterrence, and we have begun to pay considerably more attention to these issues than in the past. We must ensure that the United States is not placed in a "use or lose" situation, one that might lead to unwarranted escalation of the conflict. That is a central reason why, while the Soviets cannot ignore our capability to launch our retaliatory forces before an attack reaches its targets, we cannot afford to rely on "launch on warning" as the long-term solution to ICBM vulnerability. That is why the new MX missile should be deployed in a survivable basing mode, not in highly vulnerable fixed silos, and that is why we spend considerable sums of money to ensure the continued survivability of our ballistic missile submarine fleet. Survivability and endurance are essential pre-requisites to an ability to adapt the employment of nuclear forces to the entire range of potentially rapidly changing and perhaps unanticipated situations and to tailor them for the appropriate responses in those situations. And, without adequate survivability and endurance, it would be impossible for us to keep substantial forces in reserve.

D. Targeting Objectives

(U) In order to meet our requirements for flexibility and escalation control, we must have the ability to destroy elements of four general categories of Soviet targets.

1. Strategic Nuclear Forces

(U) The Soviet Union should entertain no illusion that by attacking our strategic nuclear forces, it could significantly reduce the damage it would suffer. Nonetheless, the state of the strategic balance after an initial exchange--measured both in absolute terms and in relation to the balance prior to the exchange--could be an important factor in the decision by one side to initiate a nuclear exchange. Thus, it is important--for the sake of deterrence--to be able to deny to the potential aggressor a fundamental and favorable shift in the strategic balance as a result of a nuclear exchange.

2. Other Military Forces

(U) "Counterforce" covers much more than central strategic systems. We have for many years planned options to destroy the full range of Soviet (and, as appropriate, non-Soviet Warsaw Pact) military power, conventional as well as nuclear. Because the Soviets may define victory in part in terms of the overall post-war military balance, we will give special attention, in implementing the countervailing strategy, to more effective and more flexible targeting of the full range of military capabilities, so as to strengthen deterrence.

3. Leadership and Control

(U) We must, and we do, include options to target organs of Soviet political and military leadership and control. As I indicated earlier, the regime

constituted by these centers is valued highly by the Soviet leadership. A clear U.S. ability to destroy them poses a marked challenge to the essence of the Soviet system and thus contributes to deterrence. At the same time, of course, we recognize the role that a surviving supreme command could and would play in the termination of hostilities, and can envisage many scenarios in which destruction of them would be inadvisable and contrary to our own best interests. Perhaps the obvious is worth emphasizing: possession of a capability is not tantamount to exercising it.

4. Industrial and Economic Base

(U) The countervailing strategy by no means implies that we do not--or no longer--recognize the ultimate deterrent effect of being able to threaten the full Soviet target structure, including the industrial and economic base. These targets are highly valued by the Soviets, and we must ensure that the potential loss of them is an ever-present factor in the Soviet calculus regarding nuclear war. Let me also emphasize that while, as a matter of policy, we do not target civilian population per se, heavy civilian fatalities and other casualties would inevitably occur in attacking the Soviet industrial and economic base, which is co-located with the Soviet urban population. I should add that Soviet civilian casualties would also be large in more focussed attacks (not unlike the U.S. civilian casualty estimates cited earlier for Soviet attacks on our ICBM silos); indeed, they could be described as limited only in the sense that they would be significantly less than those resulting from an all-out attack.

E. Reserve Forces

(U) Our planning must provide for the designation and employment of adequate, survivable, and enduring reserve forces and the supporting C^3I systems both during and after a protracted conflict. At a minimum, we will preserve such a dedicated force of strategic weapon systems.

* * *

(U) Because there has been considerable misunderstanding and misinterpretation of the countervailing strategy and of P.D. 59, it is worth restating what the countervailing strategy is not.

-- It is not a new strategic doctrine; it is not a radical departure from U.S. strategic policy over the past decade or so. It is a refinement, a re-codification of previous statements of our strategic policy. It is the same essential strategic doctrine, restated more clearly and related more directly to current and prospective conditions and capabilities--U.S. and Soviet.

-- It does not assume, or assert, that we can "win" a limited nuclear war, nor does it pretend or intend to enable us to do so. It does seek to convince the Soviets that they could not win such a war, and thus to deter them from starting one.

-- It does not even assume, or assert, that a nuclear war could remain limited. I have made clear my view that such a prospect is highly unlikely. It does, however, prepare us to respond to a limited Soviet nuclear attack in ways other than automatic, immediate, massive retaliation.

-- It does not assume that a nuclear war will in fact be protracted over many weeks or even months. It does, however, take into account evidence of Soviet thinking along those lines, in order to convince them that such a course, whatever its probability, could not lead to Soviet victory.

-- It does not call for substituting primarily military for primarily civilian targets. It does recognize the importance of military and civilian targets. It does provide for increasing the number and variety of options available to the President, covering the full range of military and civilian targets, so that he can respond appropriately and effectively to any kind of an attack, at any level.

-- It is not inconsistent with future progress in arms control. In fact, it does emphasize many features--survivability, crisis stability, deterrence--that are among the core objectives of arms control. It does not require larger strategic arsenals; it does demand more flexibility and better control over strategic nuclear forces, whatever their size.

-- Lastly, it is not a first strike strategy. Nothing in the policy contemplates that nuclear war can be a deliberate instrument for achieving our national security goals, because it cannot be. The premise, the objective, the core of our strategic doctrine remains unchanged--deterrence. The countervailing strategy, by specifying what we would do in response to any level of Soviet attack, serves to deter any such attack in the first place.

II. CONTRIBUTING OBJECTIVES

(U) In order for the deterrent our countervailing strategy provides to remain credible in the face of changing conditions, we must also ensure that the overall capability of our strategic nuclear forces is never allowed to become inferior--in appearance or in fact--to that of our Soviet adversary. Maintenance of a strategic balance characterized by essentially equivalent forces strengthens deterrence by dispelling any illusion on either side that the outcome of a nuclear war could be advantageous. To this extent, equivalent forces contribute to stability by reducing any temptation to use nuclear weapons for pre-emptive or coercive aggression. For these reasons, we pursue essential equivalence and stability as objectives in their own right, inasmuch as both conditions reduce the likelihood of nuclear war.

A. Essential Equivalence

(U) It is inevitable that comparisons will be made of the strategic forces of the United States and of the Soviet Union--made by the two nuclear giants themselves and by others. In view of the vast and many differences in geography, technological advancement, bureaucratic organization, historical experience, and military doctrine that have influenced the development of the two strategic

arsenals, such comparisons do not lend themselves to mathematical precision. There are no simple formulas for the analyst to use to determine precisely, for example, how much aggregate ICBM throwweight for one side is "equivalent to" a given level of accuracy in cruise missiles for the other side. Nonetheless, a variety of measures are used in attempts to evaluate the overall balance between the two forces, and I will discuss a number of those shortly.

(U) Aggregate comparisons have been made over the years. Today, such comparisons lead me to the conclusion that while the era of U.S. superiority is long past, parity--not U.S. inferiority--has replaced it, and the United States and the Soviet Union are roughly equal in strategic nuclear power. In the past, I have defined this "essential equivalence" as the maintenance of four conditions:

1. Soviet strategic nuclear forces do not become usable instruments of political leverage, diplomatic coercion, or military advantage;

2. nuclear stability, especially in a crisis, is maintained;

3. any advantages in strategic force characteristics enjoyed by the Soviets are offset by U.S. advantages in other characteristics; and

4. the U.S. strategic posture is not in fact, and is not seen as, inferior in performance to that of the Soviet Union.

These four conditions still constitute a valid description of essential equivalence, and, using those four conditions, I conclude that the strategic nuclear forces of our two countries remain "essentially equivalent."

(U) The last condition highlights what theorists of international politics have long held: that perceptions can be as important as realities in the international arena. That is why the overall strategic balance is important both militarily and politically. Indeed, in some sense, the political advantages of being seen as the superior strategic power are more real and more usable than the military advantages of in fact being superior in one measure or another. Thus, those who emphasize one specific index of strategic power, out of the many that can legitimately be used, often do a disservice, in helping to create a misperception of the actual state of the overall balance--a misperception that can have serious political consequences.

(U) In fact, essential equivalence is relatively insensitive to minor changes in specific indices of strategic power, because the two nuclear arsenals are so vast that minor variations have even smaller consequences, both militarily and politically. This is not to say that the major, long-term, overall trends are insignificant, or that we could afford to be sanguine were they all moving in the direction of the Soviets. On the contrary, because many trends have been and are moving in the Soviets' favor, we have committed ourselves to a substantial, long-term, but carefully planned modernization, tailored to American strengths and Soviet weaknesses, of all three legs of our strategic triad--in order to maintain essential equivalence.

B. Stability

(U) One of the conditions of essential equivalence, stability is itself one of the factors contributing to deterrence. Indeed, several times in my discussion of the countervailing strategy I referred to stability in that context--as helping to strengthen deterrence.

(U) We are committed to strengthening stability in several major ways--by increasing the survivability and endurance of our strategic forces, by improving both our strategic intelligence capabilities (for warning of Soviet attack or even Soviet preparations for attack) and our strategic C^3 capabilities (for safe and secure operation of our nuclear forces), and by negotiating equitable and verifiable arms control agreements. It is also important to ensure that the Soviets do not hold any perception that our national leadership might be vulnerable to a decapitating preemptive attack. P.D. 58 addresses improvements in the continuity of government, and is thus closely linked to P.D. 59. Over the long term, we must hedge against any Soviet "break-throughs" that could suddenly and substantially alter the strategic balance. Our effort to do so is two-pronged: improving our intelligence capabilities regarding Soviet developments and maintaining our own technological advantages in those areas most important to us.

(U) Thus, both in times of crisis and over the long-haul, we seek to reduce the incentives and the opportunities for Soviet advances that could shatter deterrence. Overall, our strategic nuclear forces are at least as capable of surviving an attack and of retaliating as Soviet forces, so conditions of both essential equivalence and stability presently exist. Our strategic programs are designed to maintain essential equivalence and stability in the future.

III. STRATEGIC NUCLEAR FORCES

A. The Soviet Threat

1. Strategic Offensive Forces

(U) The momentum of Soviet strategic growth continues, although because of SALT limits, there has been very little change over the past year in terms of numbers of strategic launchers. But the Soviets' major modernization programs portend enhanced capabilities over the next decade in all three components of their strategic forces--ICBMs, SLBMs, and bombers.

(S) The Soviet ICBM force currently consists of [redacted] SS-11s, [redacted] SS-13s, [redacted] SS-17s, [redacted] SS-18s, and [redacted] SS-19s--the last three types are mostly equipped with multiple, independently-targetable reentry vehicles (MIRVs). The Soviets are expected to complete their current ICBM modernization program (SS-17, SS-18, and SS-19) during 1981, with the deployment of the remaining planned SS-18s (see Chart 4-1), [redacted] there is no doubt that completion of this program will give the Soviets a sufficient number of accurate warheads to pose a serious threat to our fixed silo ICBM force.

(SFRD)

CHART 4-1

SOVIET MIRVed ICBMs

MISSILE	SS-17	SS-18	SS-19
MISSILES DEPLOYED	[redacted]		
MODs	MOD	MOD	MOD
# OF MODs	1 2	1 2 3	1 2
WARHEADS	4 1	1 8/10 1	6 1
[redacted]			
MAX RANGE (km)*	10,000		9,600
LAUNCH MODE	COLD COLD	COLD COLD COLD	HOT HOT
FUEL	LIQUID LIQUID	LIQUID LIQUID LIQUID	LIQUID LIQUID
[redacted]			

(S) We do not expect the completion of this generation to mark the end of Soviet ICBM modernization. We have already identified [redacted] follow-on types or modifications of existing types, [redacted] the Soviets [redacted] other than the SS-16, which has already been developed but not deployed. (Its deployment or further testing and production would be banned under the terms of the SALT II Treaty.)

(S) The Soviet ballistic missile submarine force currently consists of [redacted] SS-N-6 missiles on YANKEE class submarines, [redacted] SS-N-6s on a GOLF [redacted] Class submarine, [redacted] SS-N-8s on DELTA I and II class SSBNs, [redacted] SS-N-8s on GOLF and HOTEL classes, and [redacted] MIRVed SS-N-18s on the DELTA III class. (There are also [redacted] SS-N-5s on HOTEL submarines, and [redacted] launchers of the experimental SS-NX-17 on a YANKEE submarine.) Modernization of the Soviet submarine-launched ballistic missile force also continues with both new submarines and new missiles. New Soviet SLBM systems will be qualitatively superior to those they replace--they will probably be more accurate and have greater throw-weight, and the new TYPHOON SLBM (the SS-NX-20) almost certainly will be MIRVed.

(S) Consistent with the terms of the SALT I Interim Agreement, the Soviets have continued to dismantle older YANKEE class submarines (five, so far) to accommodate the introduction of the newer DELTA class boats. [redacted] The newest Soviet SSBN, the TYPHOON, the first of which was launched recently, is the largest they have built and carries 20 launch tubes.

(S) The new SS-NX-20, expected to be deployed in the TYPHOON SSBN [redacted] It is possible that the Soviets will also develop follow-on SLBMs as replacements for the SS-N-6, the SS-N-8, and the SS-N-18.

(S) The Long-Range Aviation (LRA) operational force of long-range bombers consists of 49 BISON bombers (soon to be phased out of the inventory) and 100 BEAR bombers and ASM carriers, plus [redacted] Soviet Naval Aviation (SNA) ASW aircraft. We have been expecting the Soviets to develop a new long-range bomber for several years [redacted]

(U) In addition, the Soviet LRA force of bombers includes about 65-70 BACKFIRES, about 320 BADGERS, and about 140 BLINDERS. With continued deployment of more BACKFIREs to Long-Range Aviation (and to Soviet Naval Aviation units as well), this component of the Soviet bomber force is becoming larger and more capable. (These peripheral attack bombers are also referred to in Chapters 5 and 6).

2. Strategic Defensive Forces

(S) The Soviet ABM system will apparently be upgraded. Probably in preparation for installation of a new system, half of the 64 launchers have been dismantled at the one site (Moscow) they are permitted under the ABM Treaty. ABM research and development continues [redacted] this activity is consistent with the 1972 ABM Treaty, and we anticipate that they will modernize the Moscow defense system, also in ways consistent with Treaty limits.

(S) In the area of air defense, the Soviets appear to be making significant improvements--including a look-down/shoot-down interceptor, the new [redacted] surface-to-air missile system [redacted] enhanced air surveillance control systems, and [redacted] an AWACS with look-down capability. Taken together, these systems, when operational, will pose significant challenges to the penetrating capability of our current bomber force.

3. Civil Defense

(U) During the past year, new evidence and analysis have shed more light on the Soviet civil defense program. The Soviet civil defense is a large, ongoing program focused primarily on (1) protecting from the effects of military attacks: the leadership, the work force at key economic facilities, and the general population, in that order; (2) facilitating the continuity of economic activity during war; and (3) enhancing the capability for recovery from the effects of war. Some aspects of Soviet civil defense activity have been marked by bureaucratic difficulties and public apathy, but on the whole there has been a general trend of improvement in almost all facets of the civil defense program over the past decade.

(U) Shelters are available for around 10 percent of the residents in Soviet cities with populations of 25,000 or more. The vast majority of the Soviet urban population would, therefore, have to be evacuated to receive any protection. With adequate warning time, the Soviets plan to evacuate to areas outside large cities those people not required to support essential activities. At key economic facilities, the work force on duty would be protected by shelters, while the off-duty personnel would be dispersed to zones within commuting distance outside the city. There is little evidence to suggest a comprehensive program to harden or disperse economic production installations themselves. The effectiveness of this program as a whole is, in my view, highly questionable; its most dangerous aspect is that the Soviet leadership might believe it effective, and behave accordingly.

(U) As noted last year, the Soviet civil leadership personnel would also relocate from their hardened urban command posts to alternate exurban facilities. There are blast shelters within and outside cities sufficient to accommodate the majority of Soviet leaders at all levels of government.

B. Other Nuclear Capabilities

(U) The United Kingdom continues to maintain four RESOLUTION-class SSBNs, armed with 64 POLARIS A-3 missiles. The British government has decided to modernize the U.K. nuclear deterrent, while continuing Britain's commitment to a strong conventional defense. In July 1980, the United States and the United Kingdom announced agreement for UK purchase of the U.S. TRIDENT I submarine ballistic missile system for use in the new SSBNs which the United Kingdom plans to construct as replacements for its existing missile submarine-launched force. This method of implementing the UK decision on its deterent forces is a further example of our continued close defense cooperation on both nuclear and conventional forces, which enhances the security not only of the United States and the United Kingdom, but of our allies and the world generally.

(U) France has four REDOUBTABLE-class SSBNs, which will have 64 M-2 or M-20 missiles, and plans to deploy two more SSBNs and modernize her SLBMs with the M-4 system, which has some limited MIRV capability. Modernization of her fixed land-based IRBMs also is underway. In addition, France has announced her intention to develop mobile IRBMs and possibly air-launched cruise missiles.

(S) The People's Republic of China currently deploys three types of liquid-fuel ballistic missiles: [redacted] MRBMs (the CSS-1 with a range of [redacted] kilometers); [redacted] IRBMS (the CSS-2 with a range of [redacted] kilometers); and [redacted] multi-stage ICBMs (the CSS-3 with a maximum range of 7,000 kilometers). We also believe that one or two CSS-4 ICBMs with a [redacted] range [redacted] operational. The Chinese, in addition, have [redacted] TU-16 (BADGER) and [redacted] TW-4 (BULL) medium-range bombers with an operational radius of about 3,000 kilometers. There is little progress to report on the PRC's SLBM program, although work probably still continues on a nuclear-powered submarine and a solid fuel missile to go with it.

C. U.S. Capabilities and Programs

1. Strategic Offensive Forces

(U) Our strategic offensive forces are a carefully balanced mix of intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and bombers. All three legs are being modernized.

(U) Our ICBM force currently consists of:

-- 54 single-warhead TITAN IIs (two of which are out of commission);

-- 450 single-warhead MINUTEMAN IIs; and

-- 550 MIRVed MINUTEMAN IIIs, a total of 300 of which will eventually be equipped with the MK12A warhead.

(U) Our major ICBM modernization effort is the MX program. In the atter half of this decade, the MX, with its mobile basing mode, will fulfill our ighest strategic modernization priority: to reduce ICBM vulnerability. Equipped ith either the MK12A or (if necessary) an improved reentry vehicle, and based in a ery much more survivable mode, the MX will give us a land-based retaliatory orce that poses a formidable challenge to Soviet targetters and provides flexible econd-strike capabilities consistent with the range of options subsumed by our ountervailing strategy. The initial operational capability (IOC) for MX is cheduled for July 1986 and full operational capability (FOC) by the end of 1989.

(U) The basing scheme is key to MX's contribution to deterrence, or it is the basing scheme that determines the degree of survivability or vulnerbility. When this Administration came into office, many concepts were being tudied, but there was no workable MX basing scheme that gave high confidence of ignificantly reducing the vulnerability most experts agreed was inevitable for ixed-silo ICBMs. That has been the difficult part of the MX program, and providng survivability remains the most important task, not the design of the missile tself. Our solution--the horizontal basing mode consisting of 4,600 shelters for 00 missiles and launchers with connecting roadways--evolved over the past several ears as we reviewed more than 30 alternative proposals. I am convinced that the cheme we have selected meets the essential criteria--survivability, cost-effectiveess, environmental considerations, and verifiability. Each of these criteria is mportant. Most of them are discussed in the programmatic description of MX Section II, Chapter 1).

(U) But the last criterion has been the subject of some debate onnected with views of SALT II. In this context, verifiability means that the oviets, by relying on national technical means alone--and without regard either or the openness of our society or the possibility of clandestine data gathering--an determine the number of launchers deployed. We have chosen to employ this xacting standard--and fulfillment in no way compromises operational capability--ot as a favor to the USSR and certainly not because we believe they must rely

wholly on national technical means. Rather, we have judged that if--or rather, when--the Soviets move to a mobile ICBM scheme, our security interests will be far better served if we can confront them, in a SALT environment, with not only a requirement of verifiability, but a demonstration that this requirement can be met. Were the Soviets to go mobile with no obligation or concern regarding verifiability, the strategic challenge generated by the possible uncertainties of such a system could be considerably increased.

(U) Our SLBM forces currently consist of the following:

-- 80 POLARIS A-3 missiles on the 5 POLARIS submarines remaining in active service as SSBNs;

-- 320 POSEIDON C-3 missiles on 20 POSEIDON submarines;

-- 96 TRIDENT C-4 missiles on 6 POSEIDON submarines; and

-- 96 TRIDENT C-4 missiles for 6 POSEIDON submarines currently undergoing or scheduled to undergo conversion.

(U) Both the TRIDENT missile and the TRIDENT submarine programs enhance the survivability of our ballistic missile submarine force. The missile's longer range enables the submarine carrying it to hide in a far wider area of the ocean, while still remaining within range of its assigned targets. The TRIDENT submarine itself is quieter and can stay at sea longer than its predecessors. Taken together, these advantages will compound the already serious challenges that confront Soviet anti-submarine warfare planners. Especially now, in a period of increasing ICBM vulnerability, there should be no doubts about the paramount importance of preserving for the future the high degree of survivability our SSBN fleet has always enjoyed.

(U) The backfitting of the newer, longer-range TRIDENT C-4 (or TRIDENT I) missile onto a large portion of our POSEIDON submarine force is continuing and is fully on schedule; six ships have been backfitted, and another six are scheduled to be by the end of FY 1982. The first of the powerful TRIDENT submarines--the USS OHIO--is now expected to go on sea trials this year. The second--the USS MICHIGAN--was launched in 1980.

(U) Consistent with the terms of the SALT I Interim Agreement, we dismantled the 32 launchers on two previously deactivated POLARIS submarines, in order to compensate for the new TRIDENT submarine's 24 launchers. The remaining eight POLARIS ships are planned to be converted to an attack submarine role (the five remaining in active service as SSBNs and three already decommissioned as SSBNs). We will, however, retain (at least until September 1981) the option to keep three of the POLARIS submarines as SSBNs for several more years.

(U) Current SLBMs lack the accuracy necessary for use against hardened targets, and will not use the full throw-weight potential of the TRIDENT submarine launch tubes. We are continuing research and development on a follow-on SLBM to provide higher accuracy, and keeping open the option for a larger missile to provide more payload and/or greater range. In about a year's time, a decision can be made on whether to move into full-scale development of this missile.

(U) The third leg of the TRIAD currently consists of:

-- 347 B-52 long-range bombers, organized in 20 operational and three training squadrons;

-- 65 FB-111 medium-range bombers organized in four operational squadrons and one training squadron; and

-- 615 KC-135 tanker aircraft in 32 active, one training, and 16 reserve component squadrons.

To enhance the ability of our bomber forces to strike their assigned targets, we are fully engaged in a program to equip all 172 B-52Gs for air-launched cruise missiles (ALCMs).

(U) Shortly after coming into office, I made a decision to proceed with full-scale development of a long-range ALCM. Last year, after an intensive fly-off competition between two competing models, we announced the selection of the Boeing AGM-86B for ALCM production. The results of that concentrated effort demonstrate once again the pathbreaking contributions American technology can make to our military capabilities. The ALCM is a weapon that is difficult to detect, difficult to track, and difficult to attack. It will ensure the continued effectiveness of our bomber force against Soviet air defenses well into the 1990s.

(U) We are also continuing with options to enhance the future potential of the bomber leg of the TRIAD. We are looking at various ALCM technology improvements to ensure the survivability and effectivness of the ALCM in the future. We have underway a vigorous study examining future bomber alternatives, including B-1 and FB-111 derivatives, and new high technology aircraft based on low observable technology, which we are convinced offers great promise for a future manned bomber. We are continuing to study options for a new penetrating bomber. We must keep in mind that in the decade of the 1990s and beyond, the difference between "penetrating" and "stand-off" really means, for all strategic and most general purpose use, the difference between long-range stand-off and short-range stand-off missiles. The stand-off bomber would avoid area defenses; the penetrating bomber would avoid terminal defenses.

(U) But a future bomber must be considered not only in the role of a strategic penetrator, but also in the broader context of worldwide force projection and cruise missile carrier missions. These missions involve varying demands on performance (e.g., the strategic mission is most demanding in terms of penetration capability), and schedule (e.g., the B-52 can function as a cruise missile carrier for some time to come). The decision on an appropriate development program

for a long-range combat aircraft must be based on assessment of the most critical performance needs, schedule, and the compatibility of the available supporting technology.

2. Strategic Defense

(U) It remains our policy to provide on a timely basis adequate strategic and tactical warning of an aerospace attack on North America, as well as accurate assessments of the size, scope, and objectives of such an attack.

(U) The Anti-Ballistic Missile Treaty of 1972 remains in force, to the benefit of strategic stability and deterrence. In 1976, our one ABM site (which we would have been permitted to operate under the terms of the Treaty) was deactivated on the grounds of limited effectiveness. Its Perimeter Acquisition Radar is being operated by the Air Force in an early warning and attack characterization role. At the same time, we are actively pursuing research, fully consistent with the terms of the Treaty, on ballistic missile defense. Primary emphasis in ballistic missile defense research and development is on the demonstration of a point defense capability for hardened strategic targets such as ICBMs, and on the development of concepts for interception and non-nuclear destruction of hostile ICBMs outside the earth's atmosphere.

(U) Also, it continues to be our policy to work jointly with Canada to maintain an air defense system capable of providing tactical warning and attack characterization. The interceptor force assigned to these missions also provides a limited defense capability and would be employed to control access to North American airspace. In time of crisis, these interceptors could be augmented by CONUS-based air assets capable of performing the air defense mission.

(U) In the area of civil defense, DoD retains policy oversight responsibilities for the population protection and nuclear attack preparedness programs administered by the Federal Emergency Management Agency.

(U) As for space defense, the United States would prefer not to engage in an uncontrolled competition in anti-satellite (ASAT) capabilities. It is our view that, because both the United States and the Soviet Union rely heavily on satellites for a number of military and civilian services, the interests of both countries would be better served by concluding an equitable and verifiable agreement limiting anti-satellite capabilities. To this end, we have engaged in several negotiating sessions with the Soviets over the past several years, but we have not been able to conclude a mutually satisfactory agreement.

(U) In the meantime, while the negotiations are in abeyance and the Soviets continue work on their already-tested ASAT system, the United States is committed to a vigorous ASAT research and development program of its own.

3. Strategic Command, Control, and Communications

(U) Our strategic command, control and communications (C^3) systems must provide the National Command Authorities (NCA) with flexible operational

control of the strategic forces at all levels of conflict, during or after an enemy attack. This means we need survivable tactical warning and assessment of an enemy attack, survivable command centers for decision-making and direction of the strategic forces, and survivable communications to transmit retaliatory orders to the forces. Strategic C^3 must also facilitate termination of nuclear conflict, and thus includes the capacity to communicate with adversaries. Our countervailing strategy requires that strategic C^3 be able not only to support assured retaliation after an initial surprise attack, but also to provide some capability to conduct a more controlled exchange and to manage our strategic reserve forces throughout a nuclear war of some duration. The survivability, flexibility, and endurance of these C^3 systems should be equal to that of our strategic forces.

(U) To this end, we will continue to improve our ground-based radars and space-based sensors for strategic surveillance and warning. We plan to improve our airborne command posts and take other steps so as to enhance survivable decision-making and direction of the strategic forces. And we will reduce the vulnerability of our strategic communications to physical attack, jamming, and nuclear effects, so that we can reliably transmit orders to our forces in a nuclear war.

(S) Our program emphasizes enhancing the survivability of our tactical warning systems, strategic command centers, and communications. We must be certain that needed C^3 capabilities survive the first strike and endure for as long as our strategic forces. Furthermore, for flexible employment of our strategic forces, our C^3I systems must be able to monitor the status of our own and enemy forces. Our programmed C^3 improvements also contribute to endurance and flexibility, and we need to emphasize these attributes more heavily in the future.

D. The Strategic Balance

(U) As I said earlier in this Chapter, comparisons are commonly made of the strategic capabilities of the United States and the Soviet Union--both in terms of the overall balance and in terms of a wide variety of specific indices. As is customary, this Annual Report includes such assessments. Essential equivalence, as indicated earlier, still characterizes the overall balance.

(U) Beyond the qualitative determination of essential equivalence, a number of quantitative measures are also used to compare strategic capabilities; these fall into two general categories--static and dynamic. The former includes numerical measures of particular force characteristics or capabilities such as number of launchers, number of weapons, megatonnage, throw-weight, and hard-target kill capability. The latter involves analyses of hypothetical scenarios to measure the potential effectiveness of each strategic force against its likely set of designated targets. As methodological tools, both types of measures have advantages and disadvantages.

(U) The static measures focus on very specific attributes, isolating them from "real world" factors inherent in any actual attack situation. At the same time, these measures are simple to calculate and to understand, relatively few in number, and fairly straightforward. They are a convenient short-hand way to transcribe very large, very complex realities, and they may also be very important as far as perceptions of the balance are concerned.

(U) The dynamic measures, on the other hand, are more valuable to the professional analyst, because they permit more sophisticated analysis that addresses force capabilities, not merely characteristics. But, they too are limited; they are "scenario-driven," that is, their validity and meaningfulness are a function of how realistic and how probable is the scenario chosen to derive the statistics. And, they usually show only one of many possible scenarios. Like the static measures, they cannot incorporate real, important, yet hard-to-quantify factors such as leadership, motivation, C^3, training, and maintenance.

(U) In looking at strategic comparisons, it is important to remember that the two nuclear arsenals are so vast and so diverse that no single quantitative measure can evaluate their overall capabilities. Each measure depicts one aspect of the strategic relationship--more or less accurately, more or less fully.

(S) TABLE 4-1

U.S. AND SOVIET STRATEGIC FORCE LEVELS

	1 JANUARY 1980		1 JANUARY 1981	
	U.S.	USSR	U.S.	USSR
OFFENSIVE OPERATIONAL ICBM LAUNCHERS 1/2/	1,054	1,398	1,054	1,398
OPERATIONAL SLBM LAUNCHERS 1/3/	656	950	576	950
LONG-RANGE BOMBERS (TAI) 4/ OPERATIONAL 5/ OTHERS 6/	348 225	156	347 223	156
FORCE LOADINGS 7/ WEAPONS	9,200	[redacted]	9,000	[redacted]
DEFENSIVE 8/ AIR DEFENSE SURVEILLANCE RADARS INTERCEPTOR AIRCRAFT (TAI) SAM LAUNCHERS ABM DEFENSE LAUNCHERS	88 327 0 0	7,000 [redacted] 64	91 312 0 0	7,000 [redacted] 32

[redacted]

1/ INCLUDES ON-LINE MISSILE LAUNCHERS AS WELL AS THOSE IN CONSTRUCTION, IN OVERHAUL, REPAIR, CONVERSION, AND MODERNIZATION

2/ DOES NOT INCLUDE TEST AND TRAINING LAUNCHERS OR 18 LAUNCHERS OF FRACTIONAL ORBITAL MISSILES AT TYURA TAM TEST RANGE

3/ INCLUDES LAUNCHERS ON ALL NUCLEAR-POWERED SUBMARINES AND, FOR THE SOVIETS, OPERATIONAL LAUNCHERS FOR MODERN SLBMs ON G-CLASS DIESEL SUBMARINES [redacted] THAT ARE NOT ACCOUNTABLE UNDER SALT ARE EXCLUDED. ALSO EXCLUDED ARE 48 SALT-ACCOUNTABLE LAUNCHERS ON 3 POLARIS SUBMARINES NOW USED AS ATTACK SUBMARINES.

4/ 1981 FIGURES EXCLUDE FOR THE U.S., 66 FB-111s; FOR THE USSR [redacted] BACKFIRES [redacted] BISON TANKERS, BEAR ASW AIRCRAFT, AND BEAR RECONNAISSANCE AIRCRAFT.

5/ INCLUDES DEPLOYED, STRIKE-CONFIGURED AIRCRAFT ONLY.

6/ INCLUDES, FOR U.S., B-52s USED FOR MISCELLANEOUS PURPOSES AND THOSE IN RESERVE, MOTHBALLS OR STORAGE, AND 4 B-1 PROTOTYPES; FOR THE USSR: BEARS AND BISONS USED FOR TEST, TRAINING, AND R&D.

7/ TOTAL FORCE LOADINGS REFLECT THOSE INDEPENDENTLY-TARGETABLE WEAPONS ASSOCIATED WITH THE TOTAL OPERATIONAL ICBMs, SLBMs, AND LONG-RANGE BOMBERS.

8/ EXCLUDES RADARS AND LAUNCHERS AT TEST SITES OR OUTSIDE NORTH AMERICA

9/ THESE LAUNCHERS ACCOMMODATE ABOUT [redacted] SAM INTERCEPTORS. SOME OF THE LAUNCHERS HAVE MULTIPLE RAILS. [redacted]

(S) More important, however, are the future trends. The following analysis, which incorporates static and dynamic measures (with, of course, the inherent strengths and weaknesses of both), highlights several critical aspects of the strategic balance. It is a multi-faceted analysis covering a number of possible conditions and scenarios--a world with SALT II (or equivalent) limits and a world without them, day-to-day alert and generated alert postures, as well as both pre-exchange and post-exchange comparisons.

(U) The following assumptions are built into the graphs in Chart 4-3 and the accompanying analysis:

-- (S) Both the "under SALT II" and the "without SALT II" cases use "moderate" estimates of Soviet forces [redacted] The former case assumes a new 10-RV Soviet ICBM, because it provides more capability against MX, [redacted] The uncertainties in these Soviet estimates are substantial for the later years, so caution should be used in interpreting the results of analyses using these estimates.

-- (U) The "without SALT II" cases assume only a relatively modest U.S. reaction that expands MX and retains all older systems. Our reaction could well involve a more extensive program with attendant still greater costs and probably some delay in fully offsetting larger Soviet efforts. These "without SALT II" cases therefore can perhaps best be regarded as an indication of the dangers of an inadequate U.S. response to a much larger Soviet program.

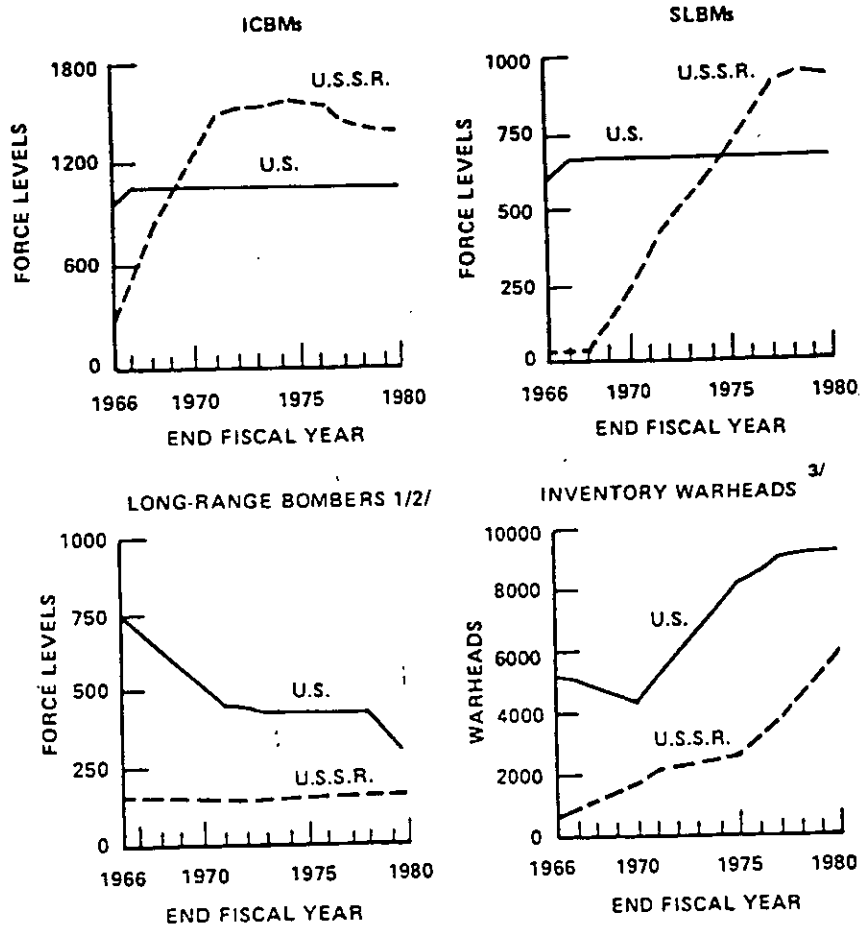
-- (S) The day-to-day alert scenario is widely considered to be the most severe situation for U.S. forces, although a protracted war scenario would also severely stress our forces, but in different ways. On day-to-day alert, almost all ICBMs, and about 30 percent of the on-line bomber forces are assumed to be available; over two-thirds of the on-line SSBNs are at sea and survivable. Soviet ICBM availability rates on day-to-day alert are slightly lower, and in peacetime, their SSBN and bomber rates are much lower than ours. The analysis, however, is conservative in that it assumes that, for a surprise Soviet first strike, their SLBMs and bombers could increase alert levels and disperse [redacted] without providing sufficient strategic warning to change the U.S. alert posture.

-- (S) A generated alert situation with high availability rates for strategic forces could result from strategic warning, for example, growing out of a major conflict between NATO and the Warsaw Pact. The analysis assumes that in this case both sides would have nearly all their on-line strategic forces available. Such high rates [redacted] would not be sustainable for an indefinite period of time, because force elements would periodically need to go off alert for repair, refit, resupply, or crew change. There is little historical data on the achievability and sustainability of higher alert rates [redacted]

(U) With this digression as background, and keeping in mind that we build our strategic forces in order to accomplish certain missions and not with an eye towards how they will look stacked up against Soviet forces in a chart or table, let us turn to several standard static measures of the balance. Table 4-1 compares U.S. and Soviet strategic force levels, this year and last, and reveals very few changes. Chart 4-2 illustrates changes over time in four standard strategic measures--numbers of ICBM launchers, SLBM launchers, heavy bombers, and nuclear warheads.

(U) CHART 4-2

CHANGES IN U.S./U.S.S.R. STRATEGIC LEVELS



1/ FB-111 and BACKFIRE are excluded
2/ Excludes approximately 220 B-52s in deep storage
3/ Based on force loading estimates

-- (U) The pre-exchange graphs show the ratio of online U.S. and Soviet forces before the attack in terms of warheads; equivalent megatons (EMT), which measures the capability to destroy area targets; and hard target kill (HTK), which measures the capability to destroy hard point targets.

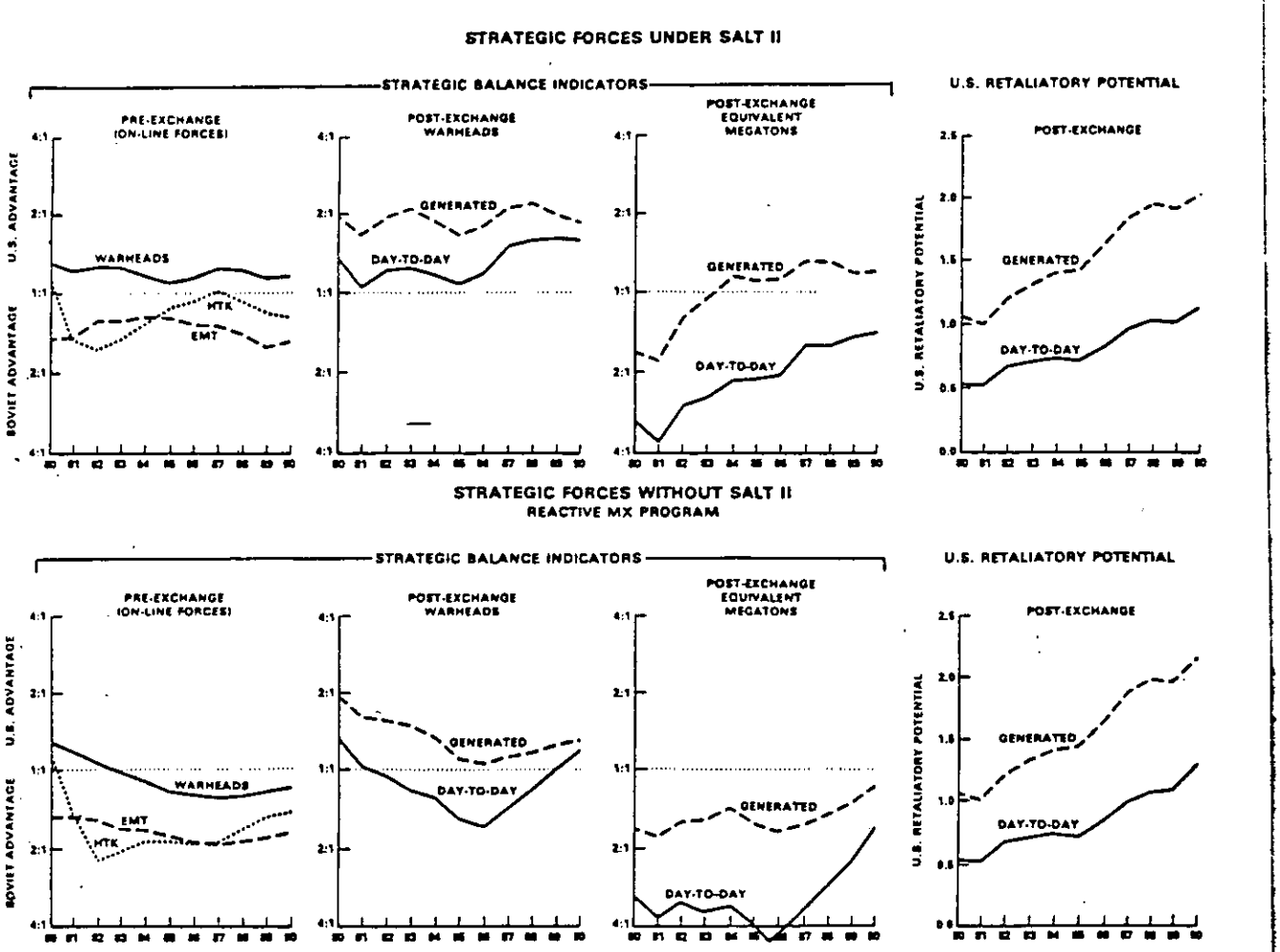
-- (U) The post-exchange graphs show the ratio of warheads and EMT that can be withheld for use after a Soviet-initiated counterforce exchange in which the strategic forces on both sides and the facilities associated with the operational control and employment of these forces are attacked. (The remaining HTK is not shown, because most of the hard targets are attacked in the counterforce exchange.) The Soviets begin with an SLBM attack on time-critical bomber bases and C^3 facilities and an ICBM strike against U.S. missile silos and shelters, SSBN bases, and supporting installations. The U.S. retaliates against Soviet bomber bases, SSBN ports, and related nuclear weapon support installations including hardened C^3 facilities, and uses most surviving ICBMs and some bombers against ICBM launch control centers and ICBM silos themselves in order to deny the Soviets the ability to withhold ICBM weapons for later use. The U.S. retaliation is assumed to occur promptly, without degradation from the Soviet attack on C^3.

-- (S) For each case, the U.S. retaliatory potential chart measures the potential of those U.S. strategic forces that remain after the counterforce exchange to attack a comprehensive set of military, leadership, war-supporting industry, and economic recovery targets in the USSR and the non-Soviet Warsaw Pact. (Damage to non-silo military targets resulting from the previous counterforce exchange is carried over into this calculation.) [redacted]

(S) (This assessment does not necessarily reflect the way in which the Soviets would use their forces in a nuclear war. [redacted] Soviet strategy, tactics, and objectives in an actual conflict. These may differ from our own. Neither does this assessment reflect the precise manner in which our own forces are targeted today. In particular, it does not reflect operational considerations that enter into the actual assignment of weapons in [redacted] attack options. Moreover, it does not account for the endurance of the forces and C^3I or many other uncertainties in their employment during a nuclear war. The weakest spots in the analysis, from the U.S. point of view, are probably the uncertain effects of damage to C^3, and the uncertainties connected with penetrability of bombers in the air defense environment of the late 1980s.)

(U) It thus should be noted that there are many assumptions in this scenario as to the nature and the effects of attack and response. Other assumptions would give different results. And there is no chart comparing forces after a Soviet attack but before a U.S. response (or after a U.S. attack but before a Soviet response). But certain general trends and conclusions are probably observable and warranted.

(U) CHART 4-3



(S) Analysis of Chart 4-3 leads to the following observations:

-- For the next few years, when the post-exchange indicators are compared with the pre-exchange indicators, both with and without SALT, a Soviet pre-emptive attack, with U.S. forces on day-to-day alert and followed by a U.S. counterforce response, would leave the Soviets with a greatly improved relative

position in EMT, but would shift warhead ratios only slightly. It would leave the United States a large residual capability against the Soviet and non-Soviet Pact military, leadership, and industrial target base. In a generated alert, with our full bomber and SLBM forces available, the warhead and EMT pictures are considerably more favorable.

-- By the latter half of the decade, our current programs, even in the day-to-day case, result in no unfavorable shift in the EMT ratio and an increase in U.S. warhead advantages--even in the no-SALT case. This results from our ALCM, MX, and TRIDENT programs. Thus, a Soviet attack would probably result in a residual balance less favorable to them than existed before. In the generated case, these favorable trends are still stronger.

-- Under SALT constraints, the overall picture is more favorable to the United States than without them. The substantial increases in Soviet force levels that are projected if SALT II limits are not observed would generally shift these balance indicators to the Soviets' advantage, even with the assumed change in planned U.S. strategic programs, i.e., augmenting the MX system substantially in response. In a no-SALT environment in which the Soviets significantly increase their forces, large and costly additional U.S. programs would be needed if we wanted to maintain something approaching the SALT-constrained balance. Further, because of the difficulty of rapidly expanding U.S. programs, we would probably not be able to reverse such shifts until the latter part of the decade regardless of which such programs we chose to adopt.

-- The retaliatory potential of U.S. forces remaining after a counterforce exchange is substantial even in the worst case and would increase steadily after 1981, with or without SALT, primarily through the ALCM and TRIDENT programs. This potential would be much greater in generated alert.

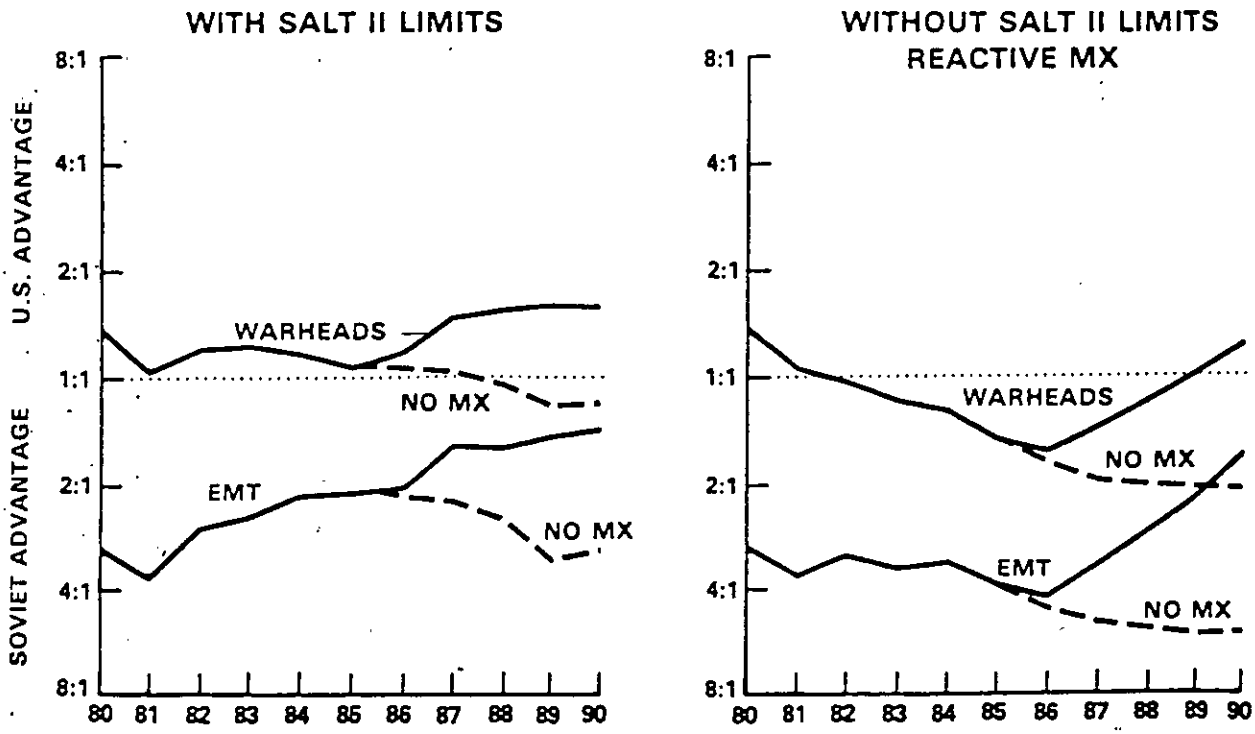
(U) These general conclusions emerge unambiguously from this analysis: the importance of carrying out our planned ALCM, TRIDENT, and survivable MX modernization programs to reverse adverse trends; the significant growth in the capabilities of the U.S. forces that would survive a Soviet first strike; the greater relative strength of U.S. forces in a generated alert situation (when the Soviets assess the potential consequences of initiating a crisis such as a war against NATO and threatening an attack on U.S. nuclear forces, they would have to plan on U.S. forces being on generated alert); and the advantages to the United States of having strategic competition take place in a SALT-constrained environment.

(U) Our countervailing strategy seeks to deny the Soviets victory, and an improved relative balance would appear to be a minimum condition of "victory." Although it is only part of the overall picture, this analysis shows that, in terms of these measures, the Soviets would not be able to improve their relative military position by a nuclear attack on the United States, given the potential capabilities of our forces to retaliate against Soviet strategic forces.

(U) Further analysis (Chart 4-4) reveals the special contributions in the late 1980s that MX in a survivable basing mode would make to the post-exchange ratios, even under the more adverse day-to-day alert conditions (i.e., surprise attack in a bolt-out-of-the-blue situation). The increments of strategic power provided by a survivable MX are significant with or without SALT II. With Soviet forces under SALT II limitations, it is MX that gives the United States a post-exchange warhead advantage in the latter half of the decade; without SALT II limits, MX is needed to reverse the adverse post-exchange warhead trend. MX forces the Soviets to make a difficult choice between allocating a large number of ICBM warheads against MX shelters and employing them against other valuable targets. (These graphs assume they target MX.) The full contributions of MX are even greater than those indicated here, because MX provides a considerable hedge against potential Soviet advances in threats to the submarine and bomber legs of the TRIAD (much as the SLBMs now provide a hedge during a period of ICBM vulnerability). Without MX, such potential Soviet advances would have more severe implications.

(U) CHART 4-4

POST-EXCHANGE DAY-TO-DAY ALERT FORCES WITH AND WITHOUT MX



CHAPTER 1

STRATEGIC FORCES

I. STRATEGIC OFFENSIVE FORCES

(U) The total request for strategic offensive forces in FY 1982 is approximately $15 billion. These direct costs represent about 7.5 percent of the DoD budget.

(U) The five-year program is designed to preserve the strength of our strategic offensive forces throughout the 1980s and beyond. It includes vigorous programs to modernize all elements of the Triad in order to meet current and future challenges: (1) the MX program will increase the survivability and effectiveness of our land-based ICBMs; (2) the TRIDENT SSBN and missile programs will improve the flexibility and maintain the survivability of our sea-based forces; and (3) the ALCM and bomber modernization programs will maintain a high degree of effectiveness for the bomber force, while our bomber R&D programs will ensure continuing high capabilities in the future.

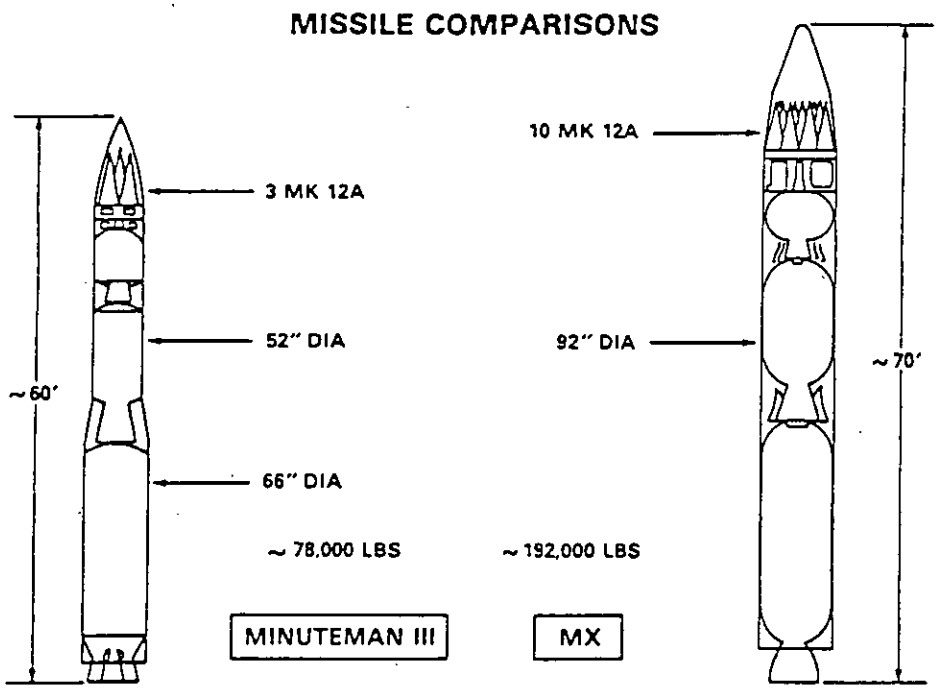
A. The ICBM Force

(U) Increasing the survivability of the land-based ICBM force continues to be the highest priority strategic initiative in the five-year program. About half of the funding for strategic offensive force acquisition (RDT&E and procurement, including military construction) in the five-year program has been earmarked for MX.

(U) The MX missile is compared with MINUTEMAN III in Chart 1-1. It is the largest new missile permitted by SALT II and is about the largest ICBM that can be mobile. In terms of military capability, it will be the equivalent of the much larger Soviet SS-18. The MX, with the combination of MK-12A yield and Advanced Inertial Reference Sphere (AIRS) guidance, will be capable of attacking the full spectrum of Soviet targets. Engineering development is proceeding at the planned rapid pace. System design review, a major milestone, was completed in September. The first of twenty scheduled flight tests will begin early in 1983.

(U)

CHART 1-1

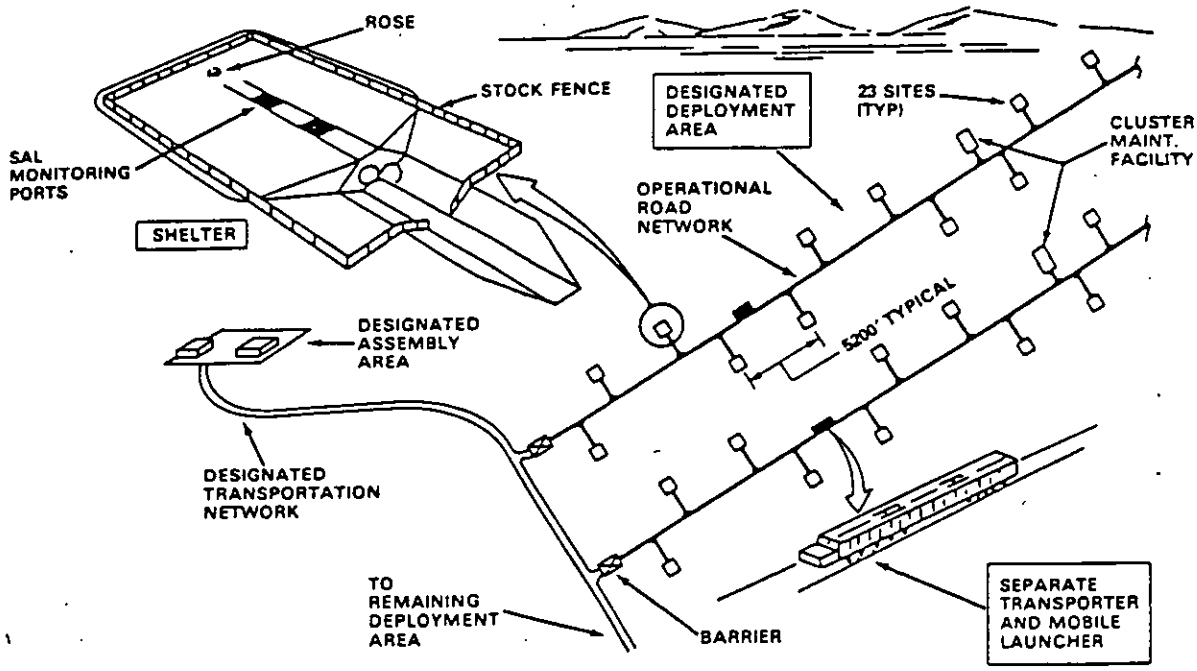


(U) The details of the horizontal shelter MX basing scheme selected in 1979 have been refined technically during the past year. This will result in operational benefits, lower costs, and reduced environmental impact. The railroad from the assembly area to the deployment areas has been replaced with a much lower-cost roadway. We also have replaced the transporter-erector-launcher (TEL) with a smaller, detachable launcher mechanism that would be moved by a separate transporter. As a result, the shelter can be made smaller (by about 20 percent) and less costly, a 500,000 pound shield vehicle becomes unnecessary, the mass simulator--to create the impression that a missile and launcher are present when they are not--becomes simpler and less expensive, and we can lay out linear or loop roads depending on topography (the earlier integral TEL required loop roads to make full use of its shelter-to-shelter dash capability).

(U) The current basing approach is illustrated in Chart 1-2. The launcher, with its canisterized missile, is moved occasionally among the 23 shelters in a cluster. The shelter layout pattern has been selected to provide the desired missile survivability and also allow room for at least a 50 percent increase in the number of shelters without expanding the area requirements for the system.

(U) Chart 1-2

HORIZONTAL SHELTER – SEPARATE TRANSPORTER & MOBILE LAUNCHER



(U) Survivability of the system is based primarily on preservation of location uncertainty (PLU), which is maintained by periodic movement of the missile, on the launcher, from shelter to shelter and by masking or simulating the movement process. In the unlikely event that PLU is compromised, some or all of the transporters could go into constant motion and, on receipt of warning of an imminent attack, could dash to random shelters and unload their missile launchers before incoming missiles arrive. This capability to change location rapidly (possible only in a horizontal basing mode) is, I believe, important for long term confidence in survivability.

(U) Our planning calls for full operational capability of a survivable MX system of 200 missiles in 4,600 shelters by the end of 1989. An initial operational capability (IOC) for 10 missiles is scheduled for July 1986. If the Soviet threat to MX grows beyond our best current projections, we are prepared to ensure the continued survivability of the MX system. Our responses could include a combination of additional missiles and shelters, as well as consideration of a low-altitude ballistic missile defense system, if a breakdown in strategic arms limitation is signaled by Soviet deployment of two or three times the number of ICBM warheads allowed by SALT II.

(U) MINUTEMAN silo survivability is expected to be as low as 10 percent for several years before planned MX deployment in a survivable basing mode will begin to increase ICBM survivability. We have carefully examined a number of interim solutions to increase ICBM survivability more quickly. Options considered include basing a number of MINUTEMAN III missiles on TELs at existing MINUTEMAN bases, or basing some MINUTEMAN IIIs in an MPS vertical shelter scheme in the vicinity of existing bases. Missiles on TEL could be dispersed for survivability in time of crisis, but would be more vulnerable than silo-based missiles to surprise attack. The MINUTEMAN MPS scheme would be very costly and would not be available much earlier than MX. None of these alternative basing schemes provides the desired degree of survivability, and funding requirements would compete for MX funds. We have, therefore, discarded these alternatives. MX deployment in existing MINUTEMAN silos, at substantial early dollar costs, could speed up IOC by as much as a year; this would not solve the MINUTEMAN vulnerability problem. Adding MPS vertical shelters would not provide an earlier solution to the vulnerability problem than would the present MX basing arrangement (the environmental impact process would probably delay IOC beyond the currently programmed date) and loss of position location uncertainty in such a system would be fatal to survivability. Such considerations have led to the choice of the present deployment as optimum.

(U) We will have to rely more heavily on the other two legs of our strategic Triad during the years when MINUTEMAN will be more vulnerable, while we focus our ICBM survivability effort on MX. We will, however, continue planned MINUTEMAN improvements, such as the MK-12A reentry vehicle for 300 missiles, and ALCS Phase III (discussed in Section III of this chapter), to enhance the effectiveness and post-attack capability of the existing force.

	FY 1980 Actual Funding	FY 1981 Planned Funding	FY 1982 Prop'd Funding	FY 1983 Prop'd for Authorization
MX				
Development: $ Millions	670.0	1491.0	2408.7	2278.8
Procurement: $ Millions	--	--	--	1776.2
MINUTEMAN Improvements (MK-12A, ALCS Phase 3, C^3 Integration)				
Development: $ Millions	35.3	53.3	33.6	42.1
Procurement: $ Millions	109.2	142.7	107.1	--

B. The SLBM Force

(U) The program for the SLBM force is designed to provide a cost-effective transition from a submarine force designed in the 1950s to a force that will continue to provide high-confidence, sea-based deterrence well into the 21st century.

(S) The 36 POLARIS/POSEIDON SSBNs in the strategic force at the beginning of FY 1981 were constructed from the late 1950s to the mid-1960s. The five oldest SSBNs, armed with 16 POLARIS multiple reentry vehicle (MRV) missiles per submarine, are currently planned to be retired from the strategic force by the end of FY 1981, although we are protecting the option of retaining three of these beyond that time. In the 1970s, the 31 newest SSBNs were converted to carry 16 POSEIDON missiles with multiple independently-targetable reentry vehicles (MIRVs). Twelve of these POSEIDON submarines are now programmed for further modification to carry the TRIDENT I (C-4) missile. This missile significantly enhances our strategic force effectiveness by improving yield, accuracy, and range--relative to the POSEIDON missile. The greater range allows these 12 TRIDENT-backfitted submarines to operate in much larger patrol areas, thus hedging against the possibility of major Soviet ASW improvements. The first submarine with the TRIDENT I missile was deployed in October 1979 and four more deployed in 1980; program completion is planned for FY 1982 [redacted]

(U) The ultimate size and missile configuration of the SLBM leg of the Triad has yet to be determined. These decisions will be based on many and changing variables, including: (a) the role of SLBMs in a countervailing strategy; (b) assessments of the size and capability of Soviet strategic and ASW forces; (c) the attractiveness of alternative strategic programs compared with TRIDENT; and, (d) progress in strategic arms limitations negotiations.

(S) Nine TRIDENT submarines have been authorized through FY 1981, and long-lead funding has been authorized for two others. Delivery of the lead submarine, USS OHIO, has slipped, with a firm schedule for sea trials and IOC are not available at this time. The TRIDENT has more (24 instead of 16) and larger missile tubes than the POSEIDON submarine; is quieter, making acoustic detection more difficult; and will have an increased at-sea, on-patrol time. A basic procurement rate of one SSBN per year is programmed through 1984, [redacted]

(S) The TRIDENT II missile program, [redacted] a follow-on missile for the entire TRIDENT submarine force. [redacted] candidates being considered are: [redacted] a new missile (D-5) [redacted] using the maximum SLBM length and diameter permitted by the TRIDENT submarine launch tube.

C-4 missile

(U) Although today's sea-based forces provide a highly survivable and enduring capability against most military and industrial targets, they are ineffective against hardened military targets such as command bunkers and missile silos. The TRIDENT II missile is to provide SLBM capability against the full spectrum of targets.

	FY 1980 Actual Funding	FY 1981 Planned Funding	FY 1982 Prop'd Funding	FY 1983 Prop'd for Authorization
Acquisition of TRIDENT Submarine				
Procurement: $ Millions	1382.5	1134.6	1459.2	1626.7
Acquisition of TRIDENT I Missile				
Procurement: $ Millions	765.5	837.9	933.6	932.1
R&D of TRIDENT II				
Development: $ Millions	25.6	97.6	242.9	354.0

C. The Bomber Force

(U) The program for the bomber force is designed to maintain the effectiveness of the current force in the face of a growing Soviet threat and to lay the foundation for a modern bomber force in the future.

(U) The main elements in the near-term program are deployment of air-launched cruise missiles (ALCM) and introduction of improved avionics in the B-52 force. These plans will increase by two-thirds the number of weapons in the bomber force by 1986, keep the force abreast of improvements in Soviet air defenses, and ameliorate problems associated with the aging of the B-52s. With these and related improvements, the B-52 force can remain effective into the 1990s. To maintain the effectiveness of the bomber force beyond that time, our program includes research and development on a new multi-role bomber.

1. Cruise Missile Program

(U) Introduction of the ALCM is the major near-term modernization program for strategic bomber forces. The ALCM is a small, unmanned, highly accurate, winged vehicle capable of penetrating Soviet air defenses. Competitive flyoffs this past year resulted in selection of the Boeing AGM-86B as the ALCM.

(U) ALCM procurement has been reduced slightly this year, to coincide with the B-52 modification schedule. The change will not affect the planned IOC or the rate of deployment of ALCMs on B-52Gs. In December 1982, the first B-52G squadron will carry cruise missiles externally. Full operational capability (FOC) is planned for FY 1990, when all B-52Gs will be equipped to carry 20 ALCMs each, 12 external and eight internal.

2. Bomber Modification and Rebasing

(U) Several modification programs for current aircraft are planned or in progress, in order to improve their reliability and maintainability, to counter improving Soviet air defenses, and to expand B-52 weapons capabilities.

(U) Modification of all B-52G/H aircraft with a new Offensive Avionics System (OAS) commences in FY 1981 and is scheduled for completion by FY 1987. The OAS program will improve reliability and maintainability, and significantly improve B-52G/H weapons accuracy. The program is necessary in order for the B-52G to deliver ALCMs, and would also enable the B-52H to carry ALCMs if we choose to convert them in the future.

(U) Modification of the B-52D with a Digital Bombing-Navigation System (DBNS) is scheduled for completion in FY 1983. The DBNS will improve reliability and maintainability, and will greatly increase B-52D bombing accuracy.

(S) We plan to rebase and redistribute the B-52 force [redacted] This action will entail no base closings. It will protect high-priority B-52G ALCM-carriers through interior basing, allow more efficient use of tanker resources, and position the B-52D for quick response to conventional contingencies.

3. Multi-Role Bomber (MRB) Program

(U) Programs concerned with development of a new bomber have been redirected and restructured under the new MRB program. In the long term, the bomber force will have the roles of delivering nuclear weapons with penetrating aircraft (using short-range missiles and bombs) and launching ALCMs from standoff. Bombers also may assume a greater role in conventional conflict by penetrating air defenses, launching various standoff munitions, or both. We are energetically exploring a wide variety of new bomber candidates to contribute to those capabilities. Near-term alternatives include the FB-111B/C and a number of aircraft embodying B-1 technology. Longer-term alternatives entail applications of advanced technologies in multi-role bomber design. My judgment is the high-confidence of penetration of prospective Soviet air defenses in the 1990s will require employment of advanced technologies in any U.S. penetrating bomber.

4. Bomber R&D

(U) In addition to the MRB program, a number of R&D programs are proceeding to enhance the effectiveness of current and new manned bombers. Notable among these efforts are first-generation ALCM improvements, advanced-technology ALCMs, electronic countermeasure (ECM) improvements, and a program to diminish the effectiveness of Soviet air defenses by countering the Soviet Union's AWACS (SUAWACS).

(U) We currently are evaluating a number of lethal and non-lethal measures to counter the SUAWACS threat expected in the late 1980s. Non-lethal measures involve ECM, communication jamming, decoys, or various combinations of such measures. Lethal measures involve an advanced air-launched missile.

(S) We propose continuing R&D efforts in bomber ECM [redacted] ECM capabilities would be highly useful even if we develop and deploy stand-off CMCs and penetrators using advanced technologies.

(S) Finally, a number of new programs in the areas of sensors and munitions have great potential to enhance strategic bomber effectiveness in general purpose and nuclear roles. Examples are synthetic aperture radars, Assault-Breaker munitions [redacted]

5. Aerial Tankers

(U) The KC-135A tanker force was originally sized to support the strategic bombers, and today, the entire KC-135A force is required for a generated SIOP. They also support airlift forces and Air Force tactical aircraft. The potential combined demands of SIOP and a major conventional conflict could severely strain the refueling capability available. KC-10As entering the inventory will provide some additional refueling capability for general-purpose missions.

(U) We are continuing to examine the tanker problem. Additional KC-10A procurement beyond the programmed buy could provide added tanker capability. Another alternative is KC-135 re-engining, although the investment cost would be quite high. We are currently reassessing the reengining effort in the light of our tanker requirements for SIOP/General Purpose Force employment in the mid-to-late 1980s.

	FY 1980 Actual Funding	FY 1981 Planned Funding	FY 1982 Prop'd Funding	FY 1983 Prop'd for Authorization
Air-launched Cruise Missile Program				
Development: $ Millions	90.6	107.3	70.6	11.3
Procurement: $ Millions	372.3	579.6	605.4	611.7

	FY 1980 Actual Funding	FY 1981 Planned Funding	FY 1982 Prop'd Funding	FY 1983 Prop'd for Authorization
Multi-Role Bomber				
Development: $ Millions	--	261.0	--	26.5
Counter-SUAWACS Technology				
Development: $ Millions	12.3	15.8	10.6	15.9
Modification of B-52 Strategic Bomber				
Development: $ Millions	94.3	100.9	143.8	111.1
Procurement: $ Millions	567.7	485.0	511.6	505.9
Bomber Research and Development				
Development: $ Millions	10.0	13.9	14.4	28.8
KC-135 Re-engining				
Development: $ Millions	13.0	23.5	30.0	30.1
Procurement: $ Millions	5.0	104.5	31.5	--

II. STRATEGIC DEFENSIVE FORCES

A. Program Basis

(U) Our surveillance sensors are designed to provide tactical warning and to assess the size and objective of a missile attack on North America. We continue treaty-permitted R&D on Ballistic Missile Defense (BMD) as a hedge against Soviet breakthroughs or breakouts that could threaten our retaliatory capability, and as a possible point defense option to enhance the survivability of our ICBM

force. Together with Canada, we are developing an air defense system to provide tactical warning and characterization of bomber and cruise missile attacks, to provide a limited air defense in war, and to control access to North American airspace in peacetime and crises. Furthermore, we are improving surveillance systems to warn of attack on U.S. space systems and we are continuing R&D on anti-satellite techniques as the basis for future space defense. Finally, we oversee the formulation of civil defense programs to reduce the possibility of coercion in crisis, to enhance deterrence, to improve population survival, and to provide for continuity of government should deterrence fail.

B. Program Status and Description

(U) Our objectives are addressed in the three elements of our strategic defense programs: Ballistic Missile Defense, Air Defense, and Space Defense. The Department of Defense manages no civil defense programs. However, the National Security Council and DoD oversee the development of civil defense policies and programs by the Director of the Federal Emergency Management Agency (FEMA).

1. Ballistic Missile Defense (BMD) R&D

(U) The BMD program, operating within the constraints of the Anti-Ballistic Missile Treaty of 1972 and its 1974 Protocol, consists of two interrelated programs, an Advanced Technology Program and a System Technology Program. The Advanced Technology Program involves broad research on future ballistic missile defense technologies and concepts, including laboratory and field experiments in missile discrimination, simulations, missile-borne data processing, and interceptor concepts.

(U) The Systems Technology Program envisions a layered defense concept using different technologies for BMD outside and within the earth's atmosphere. The concept includes an interceptor using long wavelength infrared (LWIR) sensors to detect reentry vehicles (RVs), and a homing intercept guidance system accurate enough to kill RVs using non-nuclear warheads. The first flight test of the Homing Overlay Experiment to demonstrate the technology associated with these concepts is planned in FY 1982. The pre-prototype demonstration of a Low-Altitude Defense (LoAD) system is a major new effort, begun in FY 1980 as a hedge against the possibility of unconstrained growth of the Soviet ICBM threat to MX.

2. Air Defense

(U) Soviet bombers flying at low altitudes could penetrate undetected through gaps in our bomber surveillance coverage. Because of the potential vulnerabilities caused by this situation, we are taking steps now to improve our tactical bomber warning. Since our bomber surveillance and warning radar sensors are prerequisite to the command and control functions essential to strategic deterrence, I discuss those programs in Section III of this chapter, under Strategic Surveillance and Warning. In addition to surveillance systems, manned interceptors, with their supporting command and control, are needed to characterize penetrators as friendly or hostile, to control access to our sovereign airspace, and to provide limited defense in crisis or war.

a. Interceptor Forces

(U) U.S. and Canadian active and U.S. Air National Guard (ANG) F-106, F-15, CF-101 and F-4 squadrons provide 312 interceptors to North American air defense. The NORAD-assigned interceptor forces, along with other Tactical Air Command (TAC) F-15 and F-4 augmentation forces, maintain peacetime alert at 26 sites around the periphery of the 48 contiguous states. To improve the interceptor force, two squadrons of TAC F-15s are programmed to be assigned to air defense, the first squadron of 18 aircraft in FY 1982 and the second in FY 1985. The Air Force, Navy, and Marine Corps are tasked to provide additional interceptors in a crisis. In 1982, 48 Air Force F-15s will replace F-4s in the air defense augmentation force, and in 1984, 8 Marine Corps F-18s will replace F-4s. Canada is scheduled to phase in new F-18 fighter aircraft in its active forces starting in FY 1983.

b. Airborne Surveillance and Control Systems

(U) In crises and wartime, we plan to augment our ground-based surveillance radars with E-3A Airborne Warning and Control System (AWACS) aircraft. A total of 34 AWACS are tentatively planned for operation by TAC; at present, seven of these are designated for North American air defense in peacetime. Additional AWACS flying hours will be available within the programmed AWACS force to supplement North American tactical warning surveillance coverage, depending on other AWACS commitments.

c. Command and Control Systems

(U) The CONUS Semi-Automatic Ground Environment (SAGE) system will be phased out in FY 1982-1983 and replaced by the Joint Surveillance System radars and four Region Operational Control Centers (ROCCs). The Alaska manual control system will be replaced with an ROCC in FY 1983, and two ROCCs will be acquired by Canada via FMS.

3. Space Defense

(U) While emphasizing our intent to abide by agreements limiting the use of space to peaceful purposes, and stating our preference for verifiable limitations on anti-satellite (ASAT) systems, the President has directed that, in the absence of an agreement and in the face of an already-tested Soviet ASAT system, we should vigorously develop a U.S. ASAT capability and work to make our satellites survivable.

(S) Our space defense program has several elements. First, we are improving our ability to monitor space activities. In FY 1982, we will activate the first of a network of five worldwide ground-based electro-optical deep space surveillance sensors to detect, track, and identify objects [redacted] Several radars will be modified and tested to provide additional high- and low-altitude surveillance coverage. We are working on information processing improvements for better orbital predictions, and for support of anti-satellite targeting and strike assessment. We also have research and development activities in long wavelength infrared space-based surveillance technologies.

(S) [redacted] the Air Force is developing the Prototype Miniature Air-Launched System (PMALS) [redacted] The system employs a Short Range Attack Missile (SRAM) first stage, an ALTAIR II second stage, and a Miniature [redacted] warhead terminal stage [redacted] we are considering high-energy lasers and particle beam concepts for possible far-term applications.

(U) The Space Defense Operations Center (SPADOC), was established at the NORAD Cheyenne Mountain Complex in FY 1980, to provide command, control, and communications to manage space defense operations. SPADOC is being enhanced to include communications with satellite operators and users, to support future ASAT operational testing and, eventually, to improve command and control of our space surveillance systems.

C. Program Costs

(U) The development and procurement costs for the strategic defense programs discussed in this section are given below:

	FY 1980 Actual Funding	FY 1981 Planned Funding	FY 1982 Prop'd Funding	FY 1983 Prop'd for Authorization
Ballistic Missile Defense				
Development: $ Millions	240.7	268.2	345.5	409.8
Joint Surveillance System				
Development: $ Millions	5.8	9.7	1.4	.9
Procurement: $ Millions	62.9	--	--	--
Space Defense System				
Development: $ Millions	83.8	110.2	147.3	190.9

III. STRATEGIC COMMAND, CONTROL, AND COMMUNICATIONS

A. Program Basis

(U) Our strategic command, control, and communications (C^3) systems are designed to give the National Command Authorities (NCA) flexible operational control of the strategic forces at all levels of conflict. The FY 1982-1986 program will correct many of the most serious deficiencies in strategic C^3 capabilities. We will continue to improve our ground-based radars and space-based sensors for strategic surveillance and warning. Survival of the bomber force and important elements of our C^3 system depend on high-confidence tactical warning. We also need attack assessment information that is accurate and timely enough to assist the NCA in selecting the most appropriate response. We plan to increase substantially the capability of our airborne command posts to provide survivable decision-making and direction of the strategic forces. Our programs also will reduce the vulnerability of our strategic communications to physical attack, jamming, and nuclear effects, so that we can reliably communicate with our forces in a nuclear war. Programmed improvements in strategic C^3 are described below.

B. Program Description

1. Strategic Surveillance and Warning

a. Missile Attack Warning and Assessment

(S) Our primary missile attack warning system consists of [redacted] satellites [redacted] and fixed ground processing stations [redacted] satellites use infrared sens..s to detect ICBM and SLBM launches. The FY 1982-1986 program emphasizes improved survivability for both the ground- and space-based segments of the [redacted] system. By FY 1985, we will have deployed five mobile (truck-mounted) ground terminals (MGTs) for reception and processing of [redacted] missile warning data, thus reducing our dependence on vulnerable fixed ground stations. Additional system survivability improvements will be incorporated during the production of replacement [redacted] satellites. [redacted] The modified [redacted] satellites will also be able to relay warning messages from MGTs to airborne command posts over communications links with improved anti-jamming protection [redacted]

(S) Our ground-based radar systems would confirm [redacted] warning of ICBM or SLBM attacks. We depend on the Ballistic Missile Early Warning System (BMEWS) radars at sites in Greenland, Alaska, and England to confirm an ICBM attack. Programmed improvements of the Greenland BMEWS radars will produce better estimates of attack size and impact points that should be sufficient to verify an attack on our MINUTEMAN force. We also will complete the replacement of obsolete computers at all three BMEWS sites. The Perimeter Acquisition Radar Attack Characterization System (PARCS), a converted ballistic missile defense radar located in North Dakota, will act as a backup for BMEWS coverage of ICBM attacks against central CONUS. Two new PAVE PAWS phased-array radars along our east and west coasts provide improved SLBM radar surveillance of the most threatening Soviet SSBN operating areas. In addition to PAVE PAWS, we will continue to operate the older FPS-85 phased-array radar and one FSS-7 in Florida to cover possible SLBM launch areas southeast of the United States. [redacted]

(U) Twice during June 1980, errors which were generated in NORAD communications interface equipment resulted in false indications of a missile attack. In accordance with planned procedures, precautionary measures were taken to ensure that our bombers and command aircraft were not trapped on the ground. Neither the satellites nor the radars that provide the missile warning data registered an attack at the time, and the duty officers correctly evaluated the situation and terminated the alert immediately. The precautionary procedures used are the same as those practiced frequently during routine exercises. At no time during these incidents did the alert go beyond the initial, precautionary phase.

(U) The spurious data which caused the alert were subsequently traced to a failed micro-electronic circuit in the communications interface equipment; this circuit is frequently referred to as a "chip." As a result of these incidents, we have undertaken a number of technical, procedural, and managerial steps to minimize the possibility of false alerts in the future and to provide duty officers additional computer assistance in rapidly and correctly evaluating ongoing situations.

(U) Computer programs have been modified to incorporate additional redundancy checks which will help ensure the validity of missile warning messages transmitted throughout the system. Data scopes have been installed on the communications lines which connect NORAD with SAC, NMCC, and the ANMCC in order for the data being transmitted to the various nodes to be monitored manually.

(U) These changes are in place and working, but we will continue to monitor the system closely. We have highly trained and experienced personnel in charge of all phases of the warning process, and there is no chance that any irreversible action would be taken based on ambiguous computer information.

b. Bomber and Cruise Missile Warning

(S) Currently, Soviet bombers flying at low altitudes could probably penetrate undetected through gaps in radar coverage over Canada and our

ocean approaches. Programmed AWACS will not be maintained on continuous airborne alert and thus might not be available to warn against a surprise attack [redacted] Because of these vulnerabilities, we need to improve our tactical warning against Soviet precursor bomber attacks. The FY 1982-1986 program funds two over-the-horizon backscatter (OTH-B) radars--IOCs in FY 1984 and FY 1986--for all-altitude detection of bombers approaching our east and west coasts. Two options for improving warning of bomber attacks from the north are an Enhanced Distant Early Warning (EDEW) Line and a north-looking OTH-B radar. Experimental OTH-B radar testing should allow us to choose by the end of this year the best option for northern bomber surveillance. As a long-term goal, we are pursuing a capability to detect and track bombers from space.

c. Integrated Operational Nuclear Detection System (IONDS)

(S) IONDS will increase our capability for rapid detection, location, and reporting of nuclear detonations worldwide. The system will provide nuclear trans- and post-attack damage assessment information to the NCA in a nuclear war, and contribute to nuclear test ban monitoring and intelligence collection in peacetime. IONDS sensors will be installed on [redacted] the satellites of the NAVSTAR Global Positioning System. IONDS also will be able to transmit nuclear detection reports directly to airborne command posts. The FY 1982-1986 program funds the development and procurement of IONDS sensors and their integration on host satellites.

2. Strategic Command and Control Centers

a. The E-4 Airborne Command Post (ABNCP) Program

(U) The E-4B aircraft will provide survivable command, control, and communications for the NCA (the President, the Secretary of Defense, or their designated successors), the Joint Chiefs of Staff, and the Commander-in-Chief of the Strategic Air Command (CINCSAC). The program is designed to enable the United States to execute the Single Integrated Operational Plan (SIOP) and direct the operations of our strategic retaliatory forces, even if an enemy attack destroys our fixed, ground-based command centers and communications networks. Our first E-4B--the refurbished test-bed aircraft--entered operational service in early 1980. To give us a total force of six E-4B aircraft, we are upgrading the three existing E-4A aircraft to the E-4B configuration by adding improved C^3 systems and nuclear effects hardening (deliveries in 1983, 1984, and 1985), and we will procure two additional E-4B aircraft (deliveries in 1986 and 1987). We have thus accelerated the E-4B procurement schedule by one year, compared with last year's budget, to attain an FY 1987 full operational capability (FOC).

(S) The six E-4B aircraft will support both a continuous airborne alert for the CINCSAC airborne command post (ABNCP) and a ground alert for

the NCA/JCS National Emergency Airborne Command Post (NEACP). These aircraft will provide considerable improvements in C^3 capability that could not be accommodated in the EC-135 aircraft they replace. Airborne endurance is increased [redacted] with refueling, and secure, anti-jam communications are provided. Key communications [redacted] These enhancements will increase communications reliability and survivability to MINUTEMAN and TITAN wings, to airborne strategic bombers, and to the TACAMO aircraft relaying execution messages to SSBNs. To assure continued operations during nuclear war, the E-4B is hardened against nuclear effects including electromagnetic pulse (EMP) [redacted]

b. Other Improvements to C^3 Aircraft

(U) We also are funding improvements to the VLF/LF communications system for EC-135 aircraft serving as airborne command posts for CINCPAC, CINCLANT, and CINCEUR, and as auxiliary command posts for CINCSAC. Transmitter power will be increased to 100 kw and anti-jam protection will be incorporated to provide more reliable communications over extended distances. The Airborne Launch Control System (ALCS) Phase III program will provide nine EC-135 airborne launch control center aircraft with capabilities to monitor the status of 200 MINUTEMAN ICBMs and to retarget these missiles. This will give the NCA the flexibility to employ surviving MINUTEMAN missiles equipped with ALCS Phase III capability, even if an enemy attack disrupts or destroys their fixed ground-based launch control centers.

3. Strategic Communications

a. Air Force Satellite Communications (AFSATCOM) System

(U) The AFSATCOM system provides world-wide communications linking ground and airborne command posts to our strategic nuclear forces. The space segment consists of ultra-high frequency (UHF) communications channels on the Satellite Data System (SDS) satellites in polar elliptical orbits, the Fleet Satellite Communications System (FLTSATCOM) satellites in geostationary orbits, and classified host spacecraft. Installation of satellite communications terminals on airborne command posts, SAC bombers (B-52Gs, B-52Hs, FB-111s), TACAMO aircraft, RC-135 reconnaissance aircraft, and at ground-based command posts and ICBM Launch Control Centers is scheduled to be completed by the end of 1983. AFSATCOM terminals also will be installed on KC-10 tankers.

(U) We also are planning to augment this initial AFSATCOM capability by deploying single-channel transponders (SCTs) on SDS satellites and on the geostationary Defense Satellite Communications System (DSCS) Phase III satellites to accommodate communications from the E-4B ABNCP at super-high frequency (SHF). Because of the increased jamming protection available at SHF, the E-4B will be able to transmit execution orders more reliably to the strategic forces. This

is particularly important for our bombers, which might be dependent principally or even solely on satellite communications while en route to their targets. We expect an initial operational capability for the SHF SCT links by 1986, with a full operational capability scheduled for FY 1987.

b. Airborne Naval Strategic Communications Systems (TACAMO)

(U) We depend on Navy TACAMO aircraft for survivable communications to our ballistic missile submarines. Currently, one of these aircraft is continuously airborne in the Atlantic to ensure that NCA orders could be relayed to SSBNs in that area, even if fixed, ground-based transmitters were destroyed. There is the same requirement for airborne TACAMO in the Pacific support SSBNs operating there. To meet this objective, we are buying additional EC-130s to attain a deployed fleet of 18 TACAMO aircraft by mid-FY 1983. To sustain an airborne posture through the early 1990s for both Atlantic and Pacific TACAMO, we will procure nine replacement C-130 aircraft during FY 1982-1985, and we are modifying existing aircraft to extend their useful service life. The FY 1982-1986 program also funds EMP hardening of the entire TACAMO fleet by FY 1988.

C. Program Costs

(S) The development and procurement costs for strategic C^3 programs discussed in this section are given below.

	FY 1980 Actual Funding	FY 1981 Planned Funding	FY 1982 Prop'd Funding	FY 1983 Prop'd for Authorization
Strategic Surveillance and Warning [redacted] BMEWS, PAVE PAWS, CONUS OTH-B, IONDS)				
Development: $ Millions	11.9	21.1	39.1	83.3
Procurement: $ Millions	129.9	164.9	333.3	200.3
Strategic Command Centers (E-4B ABNCP, ALCS Phase III)				
Development: $ Millions	24.5	7.0	9.6	3.7
Procurement: $ Millions	117.8	140.0	122.8	325.5

	FY 1980 Actual Funding	FY 1981 Planned Funding	FY 1982 Prop'd Funding	FY 1983 Prop'd for Authorization
Strategic Communications (AFSATCOM, TACAMO)				
Development: $ Millions	22.8	48.1	76.6	113.6

D. Conclusion

(U) Although we will improve our capability to respond promptly to a Soviet first strike, we need to pay attention to the C^3 problems likely to arise in a prolonged nuclear war. We must be certain that our C^3 systems will not only survive the first strike, but endure as long as our strategic forces. Furthermore, for flexible employment of our strategic forces, our C^3 systems must be able to monitor the status of our own and enemy forces. The FY 1982-1986 program emphasizes enhancements to the survivability of our tactical warning systems, strategic command centers, and communications. Although these C^3 programs also contribute to endurance and flexibility, we need to emphasize these attributes more heavily in the future. This is why our current R&D efforts are aimed at enhancing C^3 endurance and flexibility.