THE UNDER SECRETARY OF DEFENSE

WASHINGTON, DC 20301-3000

ACQUISITION

August 26, 1992

MEMORANDUM FOR SECRETARY OF THE NAVY

SUBJECT: Medium Lift Replacement Concept -- Acquisition Decision Memorandum

On August 18, 1992, the Defense Acquisition Board (DAB) conducted a Milestone 0 Review of the Medium Lift Replacement (MLR) concept. The Navy requested permission to proceed with the Concept Exploration and Definition phase of an MLR. The Joint Requirements Oversight Council (JROC) reviewed the requirements for an MLR concept and concluded that a new Mission Need Statement (MNS) for MLR is not necessary, since the Advanced Vertical Lift Aircraft Joint Services Operational Requirement (JVX JSOR) of April 1985 states the broad and generic mission need for a follow-on to the CH-46E and CH-53D. The JROC also noted that the range and speed requirements of the JVX JSOR need not be met by the MLR solution and that specific MLR characteristics must be evaluated across a range of scenarios. The Conventional Systems Committee recommended Milestone 0 approval.

I approve the Navy's request to proceed with the MLR Concept Exploration and Definition phase. I have approved the attached guidelines for the Cost and Operational Effectiveness Analysis (COEA) of the MLR program. The Navy is to start the COEA within 30 days, prepare it in accordance with DoD 5000.2M and the attached guidelines, and provide an OSD review group led by ASD(PA&E) with quarterly briefings on the progress made in the COEA. Any issues arising from these meetings will be resolved on the spot, or elevated immediately, and any changes in the COEA guidelines will be approved by me. If the Navy needs additional funding authority to complete the studies, it should identify potential sources. Continuation of V-22 development with the FY 1992 funds will proceed concurrently with the approved MLR concept studies.

Attachment

Don Yockey

Don Yockey

#448

Milestone I COEA Guidance
for
USMC Medium Lift Replacement (MLR)

Purpose.

The Milestone I Cost and Operational Effectiveness Analysis (COEA) will provide a basis for comparing alternative approaches to satisfy the need for a medium lift replacement aircraft for the United States Marine Corps. The Advanced Vertical Lift Aircraft (JVX) Joint Services Operational Requirement (JSOR) (Joint Services memorandum, revised April 1985) adequately states the broad and generic mission need for a follow-on to the CH-46E and CH-53D.

COEA Issues.

The issues to be addressed by the COEA including the essential elements of analysis are as follows:

1. To what extent does the current fleet of medium lift helicopters meet the operational requirement? What are the operational impacts of not meeting the requirements?

Essential Elements of Analysis.

- What are the medium lift operational mission needs?
- What are the performance capabilities of the current (base case) systems, and other alternatives to meet the medium lift operational mission needs?
- What, if any, are the combat deficiencies for the base case systems? What are the combat effectiveness improvements (from the base case) associated with the other alternatives?
- What are the operational risks associated with each alternative?
- What are the transportability and deployability impacts associated with the study alternatives?

2. Based on tradeoffs among performance, cost, and program schedule, identify and quantify performance, cost, and schedule drivers. In particular, show the sensitivity of results to the size of the force to be moved, enemy and friendly force buildup rate, sequencing of buildup, over-the-horizon (OTH) standoff range, number of troops carried, internal and external load capacity, and avionics suite. Where a driving factor is identified (e.g., the High Mobility Multi-Purpose Wheeled Vehicle (HMMWV)) the analysis should consider alternatives to achieving the mission objectives. Analysis must consider the ability of each alternative to

carry maximum loads of internal/external cargo and troops unconstrained by initial assault wave doctrine.

Essential Elements of Analysis.

- What are the performance capabilities of each study alternative?
- Which system performance capabilities are major drivers of operational effects?
- What are the life-cycle costs of each alternative?
- What are the decision costs and primary cost drivers for each alternative?
- What is the proposed program schedule for each alternative, and what are the critical program schedule drivers?
- From these analyses, what final set of study alternatives should be examined in the COEA effectiveness analysis?

3. For a final set of study alternatives emerging from the analysis of the preceding issues, evaluate the cost and operational effectiveness of each as a medium lift replacement?

Essential Elements of Analysis.

- What is the operational effectiveness, using a variety of measures, of each study alternative?
- What is the effect of varying threat force buildup (plus or minus fifty percent)?
- What are the relationships between performance parameters and operational effectiveness for each alternative?
- What is the life cycle cost and discounted (present value) cost of each alternative?
- What are the relationships between these costs and performance parameters and operational effectiveness?

Scenarios.

The framework for comparing the candidate aircraft should be consistent with the Defense Planning Guidance, National Military Strategy, and appropriate Joint and USMC Doctrine. The set of scenarios should reflect the wide spectrum of possible operations ranging from Marine Expeditionary Unit contingencies through a Marine Expeditionary Force

assault. Analyses must consider the contribution of all services and forces available to the Commander-in-Chief (CINC). Scenarios should be developed in conjunction with the Joint Staff and reflect operations in a joint/combined environment. The analysis should use the base force and planned force structure for amphibious ships from the DON FY 94-99 POM for fiscal year 1999, but any potential savings in amphibious shipping should be considered.

The minimum set of scenarios analyzed should consider the contribution of the vertical assault element to the conduct of the following operations:

I. Joint/Combined Amphibious Assault. (At least three ship to landing zone ranges should be assumed: 50, 75, and 100 nm.)

   A. Marine Expeditionary Force (MEF) size operation.

   B. Marine Expeditionary Brigade (MEB) size operation.

II. Marine Expeditionary Unit (MEU) Missions. MEU size operations similar to operations that have been conducted over the last 25 years, such as noncombatant evacuation operations (NEO) and other limited objective missions. (At least three ship to landing zone ranges should be assumed: 25, 200, and 400nm.)

Threat.

The threat should be developed and coordinated with the Joint Staff and the Defense Intelligence Agency (DIA). A system specific System Threat Assessment Report (STAR) should be produced during Phase 0, in preparation for Milestone I and , when validated by DIA, should be the principal threat reference for the COEA. As a minimum, the following DIA-validated threat documents should be used in initial preparation of the COEA:

- Strike/Surface/Air Warfare Intelligence Compendium, Naval Maritime Intelligence Center (NAVMIC) Compendium #2-92.
- F/A-18E/F STAR, NAVMIC TA #037-92.
- Advanced Interdiction Weapon System STAR, NAVMIC TA #031-92.

Parametric variations of the threat should be conducted to show the impact of threat on effectiveness.

COEA Alternatives.

The minimum set of alternatives for the analysis should cover a full spectrum of size, speed, and range. Varying levels of development effort should be considered, including:

- Today's capability (base case).
- Mix of CH-53E and upgrades of existing helicopters.
- Mix of CH-53E and major modifications of existing helicopters.
- Mix of CH-53E and new helicopter developments.
- Mix of CH-53E and V-22
- Mix of CH-53E, V-22, and helicopter alternatives.

The analysis may include as many additional alternatives or options within an alternative as are necessary to illuminate the cost, performance, effectiveness and schedule drivers. Some of the alternatives may fall short of meeting all the requirements or goals established for the MLR, yet be of interest due to lower cost or technical risk. All alternatives should be analyzed parametrically so that appropriate modifications necessary to meet operational mission needs are considered. The COEA should inform the Defense Acquisition Board (DAB) of any opportunities to achieve significant savings by accepting one or more performance shortfalls. However, the COEA is not intended to determine final force structure.

Measures of Effectiveness.

The COEA should consider a variety of measures of effectiveness (MOEs) and should use as many as necessary to fully describe the military worth of each alternative under consideration. The COEA should clearly identify all MOEs that will be measured in the test and evaluation program and included in the Operational Requirements Document (ORD). The COEA should show how these MOEs were derived from the mission need.

The minimum set of MOEs applicable to the MLR are:

- For MEB/MEF Vertical Assault Elements: Combat power delivered over time. Correlation of forces/means (COF/M).

- For MEU Operations: Time in/time out with objective met.

Cost Analysis.

For each alternative, a 20-year life cycle cost estimate (in FY93 constant dollars and discounted dollars) should be provided for the following categories of cost: RDT&E, procurement, military construction, and operations and support. In addition to the total cost, the COEA should provide the quantity and unit cost for each alternative. Costs should be reported in bands to account for the uncertainties involved.

Additional Considerations.

The ability of each alternative to meet mission requirements other than MLR -- and the associated cost to do so -- should be considered as excursions to the analysis. While the requirements of extreme long range and speed necessary to fulfill the Special Operations Forces requirement, and the Navy Combat Search and Rescue requirement are not likely to be met by the MLR, this separate analysis should consider the possible contribution of the MLR to these missions. This separate analysis should not be considered as a driver in either defining the requirement for the MLR nor in assessing the effectiveness and costs of the alternatives in meeting the MLR requirement. Rather it is intended to identify potential opportunities to fulfill additional requirements in an economical way. Other service and agency participation should be sought as appropriate.

Models and Data.

All models used in the analysis should be accredited. The accreditation process and its results should be documented.

Data sources should be identified.

Analysis Plan.

The Department of the Navy should develop an analysis plan that details how this study will be conducted, by whom, and on what schedule. The analysis plan should also indicate how the information from proposed contractor trade studies will be used in the COEA.

Schedule.

The analysis plan should be developed and submitted to the Chairman, Conventional Systems committee (CSC), within 30 days of the Milestone 0 ADM.

The Navy will provide an OSD review group led by ASD(PA&E) with quarterly briefings on the progress made in the COEA.

A final COEA should be submitted in accordance with existing directives.