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SECRETARY OF DEFENSE THE UNDER SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301

RESEARCH AND ENGINEERING

Office of the Secretary of Defense
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Date: SEP 2 5 2019

MEMORANDUM FOR SECRETARY OF DEFENSE
DEPUTY SECRETARY OF DEFENSE

SUBJECT: Strategic Connectivity Review — ACTION MEMORANDUM (U)

(U) On April 9, 1981, the President approved your recommendation of March 30th to review the requirement to expand the Navy's Extremely Low Frequency (ELF) Communications System, and requested your recommendation by early August. To put the need for ELF communications in perspective, a cross-Service/Agency review of strategic command, control, and communications (C3) processes and systems has been conducted. A summary of that review is at enclosure 3 to Tab A. Because the President must advise the Congress by September 1 of his decision on ELF communications, the summary emphasizes the role of that program. Salient conclusions are:

1. (S) [redacted]

1.5 3.3(b)(5)

2. (S) The strategic submarine force is the most survivable leg of the strategic TRIAD today, and will continue to be for the foreseeable future, [redacted]

a. (U) ELF communications will enhance survivability, connectivity, operational flexibility and effectiveness of the current submarine force; there is no near-term alternative for achieving these important benefits.

b. (U) Accordingly, the ELF facility in Wisconsin should continue to be upgraded for operational use, and a second facility, consisting of a comparable transmitter and a 56 mile antenna, should be constructed in Michigan for better timeliness and coverage.

3. (S) [redacted]

[redacted]

18-11-1883

~~CLASSIFIED BY USDRE~~
~~REVIEW ON 5 AUGUST 1987~~

USDRE: [redacted]

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(S) In addition to the findings on ELF communications, the review has identified a number of procedural changes and programmatic actions to correct the most critical deficiencies in our strategic C3 system. These actions will establish a strong foundation for addressing the enduring strategic C3 problem, but will require an addition of $700 million to the C3 budget for fiscal year 1983 along with significant increases in subsequent years. Recommendations and rationale for these initiatives are enclosed with the summary at enclosure 3 to Tab A, and they will be considered as part of the Defense Resources Board program review.

(S) I recommend that you sign the memorandum to the President at Tab A. This memorandum describes the contribution that ELF communications can make to deterrence and our ability to wage nuclear war, and recommends that he decide in favor of deploying the ELF system described in item 2.b., above.

(U) The Executive Review Board of the Strategic Connectivity Review is composed of senior representatives of OSD, the JCS, the Services, and Defense Agencies. They have approved the recommendations contained in the report. To assure that actions are taken to correct the critical deficiencies in strategic C3, we will continue the Strategic Connectivity Review process.

Jim Wade

James P. Wade, Jr.
Chairman, Executive Review Board

TAB A (S)

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STRATEGIC CONNECTIVITY REVIEW

SUMMARY REPORT

5 AUGUST 1981

~~CLASSIFIED BY JCSDR~~
~~REVIEW ON 5 AUGUST 1987~~

HON. JAMES P. WADE, JR.
PRINCIPAL DEPUTY UNDER SECRETARY
OF DEFENSE (R&E)
CHAIRMAN, EXECUTIVE REVIEW BOARD

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STRATEGIC CONNECTIVITY REVIEW

Summary

A. INTRODUCTION: (S) This review defines actions which should be undertaken to reinforce the capabilities of our strategic command, control and communications (C3) system. This system is the vital cog that assures that our strategic forces can be used when they are needed; it provides the capability for the National Command Authorities (NCA), senior military commanders and subordinate force commanders to direct and manage the strategic forces in peace and in war in support of the highest priority mission of the Department of Defense in accordance with national policy and defense strategy for employment of these forces. That policy requires assured survivability and enduring capability of strategic C3; without such capability, matching that of our weapons, our deterrent posture is flawed.

(S) The strategic C3 system consists of the tactical warning sensors, both satellite and ground based, the command decision centers, and the communications links to convey information from the warning sensors to the command centers and to communicate command decisions from the NCA to the strategic triad forces. In the event of strategic nuclear war, national leadership and the strategic C3 system are put at grave risk, and a plan and means to ensure their survivability are of the highest importance.

B. BASIC REQUIREMENTS: (U) Strategic C3 must function, in concert with other forces and C3 reliably in peacetime, during crisis and conventional war, during the transition to nuclear war, and through the period of nuclear conflict, which may be protracted, to termination.

(S) During peacetime, we can only exercise the strategic C3 system under simulated wartime conditions, and plan for the transition to war and its aftermath. It is not possible to simulate the full range of stresses that would be imposed on the system during a full-scale attack. Further, it is not possible to preplan the many complex decisions required during the transition and subsequent phases to deal with all possible contingencies that could attend the outbreak of nuclear hostilities and subsequent exchanges.

(S) [redacted]

JS 3.3(b)(5)(8)

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* (S) This review has not explicitly addressed the implications of strategic warning or deficiencies in the strategic warning system. However, proper exploitation of such information could be of crucial importance in assuring that the NCA remains in contact with the strategic C3 system through the transition to war, as well as strongly affecting the availability of forces for retaliation. A recommendation on this point will be made later.

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credible deterrent, we must first assure the balanced availability of essential strategic C3 functions to bridge the transition from peace to war. These are:

- (S) Tactical Warning — which provides the unambiguous basis for determining that an attack has been initiated, including characterisation of the attack in terms of its origin, composition and general objectives.

- (S) Decisionmaking — to take such actions as are needed and possible to prevent the forces from being destroyed before they can be used, or to use some or all of them in a prompt responsive strike.

- (S) Communications — to convey tactical warning information to the decisionmakers; for use by the NCA in conference with his senior military advisors in support of prompt response and force-survival decisions; for conveying orders to carry out such decisions to the forces; and for reporting the results of these actions to decisionmakers and force commanders to form the basis for subsequent actions.

(S) In addition, actions must be initiated to mobilize and assure the survivability and endurance of those elements of the strategic forces and C3 system that will be used during subsequent phases.

(S) The transition phase, which could span less than an hour, entails intense effort by the strategic C3 system.

(S) Subsequent phases of nuclear conflict will continue until termination. These phases may be regarded as a series of exchanges, and the nature of the strategic C3 process and attendant requirements shift radically from those used in peacetime and during the transition phase. In particular, the requirement for credibility of tactical warning is less stringent, because a state of war has already been established.

(U) During extended nuclear conflict, the additional essential strategic C3 functions are:

- (S) Strike assessment, beginning with determination of the consequences of the prompt responsive strike (if that option was exercised during the transition) and continuing through subsequent exchanges.

- (S) Damage assessment, beginning after the initial attack, to establish the status of residual forces, C3 and support systems and facilities.

- (U) Reconstitution of residual forces, including surviving bombers at overseas recovery bases.
- (U) Target acquisition and selection, based on strike assessment data and post-attack reconnaissance.
- (U) Designation and direction of residual forces to strike the selected targets.
- (U) Two-way communications with the forces, for determining the status of surviving elements, managing the reconstitution process, and for force management in subsequent strikes.

(U) [redacted]

JS 3.3(b)(5)

(S) With regard to communication of orders to the forces, salient differences between the three legs of the triad must be taken into consideration. No single system can accommodate the total needs in this regard and meet the essential requirements for reliability and endurability.

(S) The most urgent messages are those which initiate escape of alert bombers before their bases are destroyed by submarine-launched ballistic missiles (SLBMs). The escape message must be delivered to the bases before communications to the bases is disrupted. The messages to launch the bombers need not irrevocably commit the bombers to strike their targets, however, and the urgency of such commitment is not nearly as great.

(S) However, if a decision to commit the bombers is significantly delayed, we must have the capability to transmit strike orders to them over long ranges, and in time for them to carry out their missions. The difficulty of meeting this requirement is increased by the aforementioned stresses of jamming and effects of nuclear detonations on communication systems and links. Finally, communication capabilities are needed to facilitate reconstitution of the bomber forces, whether or not they are committed during the transition phase.

(S) [redacted]

JS 3.3(b)(5)(8)

(S) If the decision to employ the ICBM force is deferred, then means are needed to determine the availability of surviving elements of the force for use in planning subsequent phases.

(S) The Fleet Ballistic Missile (FBM) submarine force (SSBNs) is the most survivable leg of the strategic triad today, and will likely continue to be for the foreseeable future. Accordingly, the requirement for employment decisions and for communicating orders to the FBM submarines is least urgent. However, SSBN operational procedures, which help assure covertness (and therefore survivability and endurance) also significantly constrain our options for transmitting orders to them, and the requirement for survivable and enduring connectivity to the FBM submarine force (without jeopardizing survivability of the force itself) is not an easy one to meet.

[redacted]

(S) Following the transition to war, the nature of SSBN operations will likely also change, especially if steps are taken as part of a prompt responsive strike and early subsequent actions to degrade Soviet capabilities for anti-submarine warfare. Such steps would relax the need for extreme covertness in SSBN operations and thereby permit use of alternative communication links. In any event, during the protracted war period, emphasis must be placed on positioning the SSBNs and maintaining sufficient connectivity with them to assure that selected targets can be struck in a timely manner.

JS 3.3(b)(5)

C. FINDINGS:

1. [redacted]

4. (U) Effects of nuclear detonations, especially from weapons detonated at high altitude, collectively constitute a most serious threat to the strategic C3 system, because they may cause a serious and widespread disruption to command and control facilities and communications links almost immediately after detonation occurs.

5. (U) We believe that together with those already programmed, the procedural changes and programmatic actions recommended by the review, will correct the most important remaining deficiencies in the strategic C3 system for the transition phase, to the extent that the stresses of large-scale nuclear conflict can be anticipated and calculated. First priority must be given to achieving reliable and timely tactical warning and the means to act on warning information. Achieving greater endurance in strategic C3 is the next priority. Major resources should not be committed to improving pre-impact attack assessment beyond current capabilities until the two higher priority needs are met.

6. (U) In particular, analyses performed in support of this review indicate that a small, two-site Extremely Low Frequency (ELF) Communication System will enhance survivability of the FBM forces and assure more timely connectivity to that force during the transition to war.

a. (U) The ELF Communications System will provide a continuous, very low capacity link to the submarines, which can operate with far greater operational flexibility than when they are directly connected to the links available for disseminating strike orders. They will therefore be better able to evade anti-submarine search operations. Moreover, the ELF Communications System can be used to transmit advisory messages regarding potentially hostile anti-submarine activities prior to the onset of war, giving advance notice to the submarines and further enhancing their ability to avoid detection, and therefore can provide an important offset to improving Soviet anti-submarine warfare capabilities.

JS 33(b)(5)(6)

b. (U) [redacted]

c. (U) The low data rate of ELF communications does not significantly limit implementation of these functions.

d. (U) There is no other mature technology which can provide the reliable link required by the operational concept for enhancing survivability and for reconnecting the modified-alert SSBNs.

e. (U) ELF communications capabilities can also be of significant benefit for selected missions of our general-purpose attack submarines.

f. (U) Accordingly, we recommend that the ELF Communications System be implemented by:

- o (U) Continued reactivation of the existing ELF Wisconsin Test Facility and conversion of that facility to an operational configuration with protection against electromagnetic pulse (EMP) effects of nuclear detonations.
- o (U) Construction of a small second operational transmitter facility in Michigan, comparable in size and hardness to the Wisconsin transmitter and operated in synchronism with it.
- o (U) Development and procurement of ELF communications receivers qualified for use on submarines, in sufficient quantity for equipping all SSBNs and eventually the entire submarine force.

7. (U) The review examined, in considerable detail, the results of previous studies and evaluations of strategic connectivity. These efforts, however, focused primarily on identifying deficiencies of the current strategic C3 system during peacetime and the transition phase; the problem of assuring enduring strategic connectivity has not yet been addressed to the extent needed to define a coherent approach. It therefore should not have been expected that the Programmatic Objective Memoranda for fiscal years 1983-1987 would be responsive to the Defense Guidance in this area.

a. (U) However, given the framework for survivable and enduring strategic C3 that was outlined above under Basic Requirements, we believe that the programmatic actions recommended for correcting transition-phase deficiencies will provide a solid foundation for implementing a survivable and enduring strategic C3 system. These actions will necessitate significant changes to the budget, as reflected in the Program Objective Memoranda, in the amount of $700 million for fiscal year 1983, and $5 billion over fiscal years 1983-1987. Additional detail on the recommended actions is given in Section V of the body of the report; cost data are given in Section VI.

b. (U) The next step is to build on this foundation to achieve a strategic C3 system which meets national policy and defense strategy requirements. Such a step will require dedication and intense effort by all three of the Services, as well as major Defense resource commitments. These commitments could entail investment of as much as $15 billion in the out-years above the $5.0 billion for the foundation capability referred to above.

c. (S) To assure that realistic goals are established and that component elements of the program are developed in coordination, continued high-level attention is needed. We will therefore continue the current Strategic Connectivity Review process to provide an authoritative basis for program surveillance and guidance, and take actions to ensure that the critical deficiencies in strategic C3 are corrected quickly.