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STUDY S-467

THE EVOLUTION OF U.S. STRATEGIC
COMMAND AND CONTROL AND WARNING,
1945-1972 (U)

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June 1975

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15 Sep 1992

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400 Army-Navy Drive, Arlington, Virginia 22202

Contract DAHC15 73C 0200
Task T-111

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E. DEFENSE SUPPORT PROGRAM

(U) (S) The newest and most sophisticated addition to the missile warning network was the satellite-based, infrared-detecting surveillance and warning system presently known as the Defense Support Program (DSP). It was an outgrowth of over a decade of experimental R&D, first with the Missile Defense Alarm System (MIDAS) of the late 1950s and early 1960s and then with the highly sensitive (and controversial) follow-on Programs 461, 949, and more recently 647--a series of technologically difficult, expensive, and for many years operationally uncertain efforts to develop an orbital infrared detection system that could detect missiles in the powered-launch phase. It remained a developmental and demonstration effort until 1971, when the first operational satellite was orbited.¹⁶

(U) (S) Although it was many years in reaching fruition, satellite-based infrared detection promised the earliest possible warning of missile attacks, within minutes of launch, extending potential warning time for north polar ICBMs from the 15 minutes of BMEWS to perhaps 27 minutes; providing improved and more flexible coverage than BMEWS, including coverage of SLBMs, FOBS, or other circumventing systems; increasing the credibility of other warning sensors by adding correlative evidence, confirmatory or not, from an alternative system; and adding to the accuracy and reliability of information as to the source, magnitude, and, with tracking, the nature of an attack. Although the program was beset with serious reliability and cost problems and pushed hard at the limits of infrared-discrimination and other technologies, it continued to attract strong support throughout the 1960s.¹⁷

(U) (S) One of the strong underlying themes in the arguments supporting the various precursors of the DSP, and one that illuminates an important strategic command and control issue of the 1960s, concerned its utility not merely for attack warning but also for attack assessment. The system was

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important, perhaps even more than other systems, for providing time for decisionmakers to take measures for survival, including possibly relocation to the NEACP or elsewhere; it could provide extra time for them to perform essential retaliatory command functions, including more opportunity to ascertain the situation and consider desirable alternatives. By providing usable warning time, the system was also important for enabling the strike forces to undertake precautionary or other actions that might be vital to the effectiveness of any response.

(J) (S) Time alone, even minutes, was considered of crucial significance for such purposes.¹⁸ But the DSP-type systems held out hopes for even more. They promised more information, better information, more accurate and reliable information, and timelier information as to the source, magnitude, and objectives of an attack; as to whether one or a few weapons impacts were accidental, or the first of a salvo; whether it was a controlled or indiscriminate attack; whether it was an attack directed against military targets, population centers, or both; whether it was an attack that included or excluded governmental control centers; and so on. The systems promised, in short, to improve the capability to assess an attack and even evaluate the likely intentions of an attacker, and to do so by a wide margin over other warning and surveillance systems.¹⁹

(J) ~~It~~ Even with BMEWS and 440-L, exercises showed, national authorities were required to make retaliatory decisions in the absence of any real knowledge of the nature of an attack--at best in the knowledge only that some more or less large number of warheads was en route to the United States, a rough approximation of their impact times and areas, and perhaps a crude estimate of the country of origin.²⁰ This was hardly the quantity and quality of information required for a choice among the flexible response options desired by decisionmakers. It was hardly sufficient for the decisions called for in the *SIOP Decision Handbook* prepared by the JCS for the President, the

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Vice President, the Secretary of Defense, the CINCs (and themselves): Whether to execute and if so--to execute strikes against nuclear threat targets only, against nuclear threat plus other military targets, or against nuclear threat plus other military plus urban-industrial targets of a country? To execute or withhold strikes against the Soviet Union, China, or other individual Communist countries? To execute or withhold strikes against military and government controls in the Moscow area? To execute or withhold strikes against nuclear delivery and storage sites in China? To execute or withhold strikes against military-government control targets in the Peking area?²¹

(U) (S) The DSP-type systems promised, for the first time--nearly a decade after programs were initiated to develop sufficiently flexible strategic forces and sufficiently flexible command and control systems, and a sufficiently flexible SIOP war plan--to make flexible response options more than a remote possibility. This was their chief attraction during the 1960s, far more than the extra minutes of warning time alone, and it continued to be their chief attraction as they came into operation during the 1970s. Not warning alone, but warning time and attack assessment, became the keys to strategic flexibility.

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COMMAND AND CONTROL SYSTEMS, 1968-72

(U) In the course of the twenty-seven years covered by this study, an elaborate and enormous command and control structure had evolved. This chapter presents a picture of the end product of that evolutionary process. The command and control structure as it existed in 1968 did not change significantly in the next four years:

(U) Operational control of US strategic forces was exercised in different ways by the three levels of command involved (see Figure 1), namely:

(1) The National Command Authority level consisted of the President and the Secretary of Defense, operating through the Chairman, JCS, and the NMCC at the Pentagon, the ANMCC at Fort Ritchie, or the airborne command post (NEACP) on ground alert at Andrews AFB.

(2) The CINC level consisted of the SIOP-committed CINCs--CINCSAC, CINCPAC, CINCLANT, and CINCEUR. SAC, for example, operated through the SAC underground command post at Offutt ABF, the SAC airborne command post (LOOKING GLASS), or the SAC alternate command posts at the 2nd and 15th Air Forces (or their airborne alternates on ground alert).

(3) The weapons level--the Titan launch control centers, the Minuteman ground and air launch control centers, the SAC bombers, and the SSBNs.

A. THE NATIONAL MILITARY COMMAND SYSTEM

(U) The heart of the myriad systems for strategic operations was the National Military Command System, consisting of the facilities, equipment, doctrine, procedures, personnel, and communications supporting national authorities in the exercise of their military operational command function. It included

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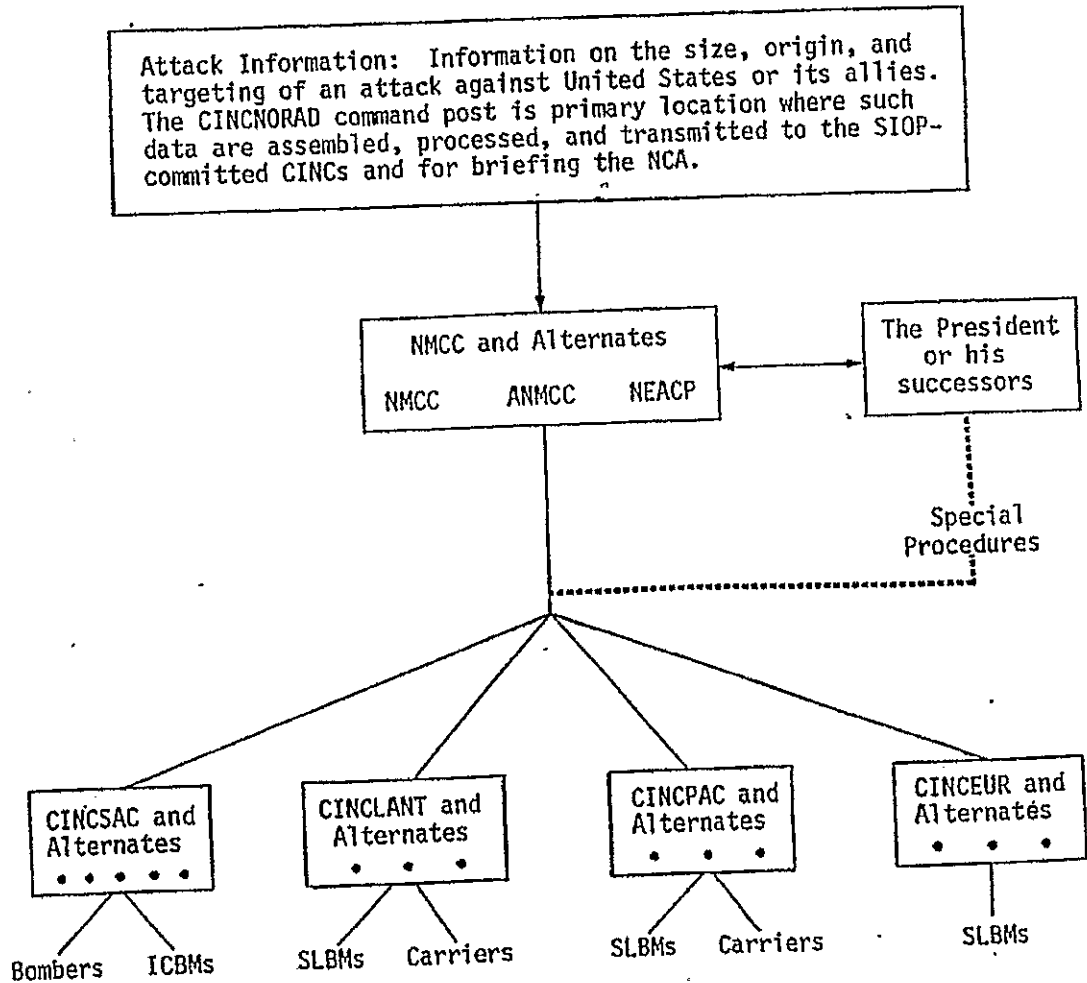


Figure 1 (e). TRANSFER OF INFORMATION AND AUTHORITY FOR EXECUTION OF US STRATEGIC FORCES (U)

the National Military Command Center in the Pentagon, which served as the primary center of command for the highest levels of military command, including the President, the Secretary of Defense, and the Joint Chiefs of Staff. It also included the fixed, underground Alternate National Military Command Center at Fort Ritchie, a mobile National Emergency Command Post Afloat on a naval vessel off Annapolis (until 1970), and a mobile National Emergency Airborne Command Post in an aircraft based at Andrews AFB. At the beginning of this period, all were continuously manned and ready for use by the NCA or their alternates or successors. All were supposed to be linked to each other and to the unified and specified commands by reliable, secure, and survivable communications so as to provide for a non-interruptable (or at least rapidly recoverable) national command capability at all times.

(U) (S) Supporting the NMCS were a series of systems designed to control the tactical forces or to provide warning through ballistic missile tactical warning and attack assessment systems. The command systems were designed to ensure that the orders of the NCA and the unified commanders would reach SAC and naval SIOP forces, both the Polaris boats and the carriers. There were also Air Force and Navy LF-VLF communications systems linked to the NMCS. The Air Force LF-VLF Special Purpose Communications System and the Navy LF-VLF communications net for the Polaris fleet were combined, along with SAC's Emergency Rocket Communications System (ERCS), into a Minimum Essential Emergency Communications Network (MEECN). Also included was the teletype net from the JCS to all unified and specified commanders called the Emergency Actions Teletype System (EMATS).

(U) (S) The need for such a minimum essential communications backup to primary and alternate facilities supporting the command and control structure was first acknowledged in February 1963, when the Secretary of Defense directed a study on how to use the LF-VLF spectrum to meet such a requirement. The painfully slow process of planning for and developing the MEECN was

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typical of much in the command and control area. It was not until 1968 that a procedural plan was promulgated, and centralized direction was established under the JCS only in May 1969. The MEECN System Engineer was not designated until May 1970, more than seven years after the Secretary's study request.¹

B. CINC SYSTEMS: SAC

(U) The SAC command control structure was divided into pre-attack and post-attack systems. At the beginning of this period, the pre-attack system consisted of the primary alerting system, the high frequency, single side band net, the telephone and teletype nets, and the SAC Automated Command and Control System (SACCS). These were all considered non-survivable systems primarily intended for day-to-day operation, but they would be costly for an enemy to attack because of the extensiveness of the facilities involved.

(U) The SAC Automated Command and Control System had attained a full operational capability by January 1968. It was designed to furnish CINCSAC with the data necessary to assure effective control of the SAC force. It provided automated assistance in information submission, secure high-speed transmission, and automated routing, processing, and display of information. By the time SACCS was completed, however, the computers (the 465L) were already obsolescent and a program change for new ADP equipment was requested by the Air Force immediately after the system went into operation.

(U) ~~(S)~~ Concern over SACCS survivability and quick-reaction capability led to the development of a separate Post Attack Command and Control System (PACCS). This system included airborne command post and communications relay aircraft, the Survivable Low-Frequency Communications System (SLFCS), the Airborne Launch Control System (ALCS), the Emergency Rocket Communications System, and the GREEN PINE UHF radio.

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(U) (S) The basic post-attack system was composed of 14 airborne command posts and 18 communications relay aircraft. During peacetime, one SAC command post aircraft (LOOKING GLASS) from Offutt AFB was continuously airborne. On board was an alternate CINCSAC and a battle staff. At each numbered air force in SAC, 1 command post aircraft was on 15-minute alert, and 2 communications relay aircraft were on 15-minute alert at Grissom AFB, Ind., Ellsworth AFB, S.D., and Minot AFB, N.D. In periods of tension or in the event of attack, the alert aircraft would be launched to provide a line-of-sight link with the National Command Authorities and from CINCSAC to the numbered air forces, the SAC strike force, and Headquarters NORAD. SAC could launch its Minuteman missiles by command from PACCS aircraft using the Airborne Launch Control System. Such a procedure was to be used in the event that missiles became isolated from their parent launch control centers through loss of communications. All Minuteman stations were to be equipped for airborne launch by 1970.

(U) (S) The second SAC post-attack system was the "Survivable Low Frequency Communications System, capable of transmitting teletype messages, which would be used to transmit the "go code" and other operational messages to waiting aircraft. Tests had indicated that low frequencies could be used during and immediately following nuclear detonations with relatively little loss of signal strength. During emergencies, the SAC network could become part of the DoD Minimum Essential Emergency Communications Network, which would permit preemptive use by the JCS. Complete operational capability for the SLFCS was planned by mid-1970.

(U) (S) The Emergency Rocket Communications System (494L) became operational in December 1967. Designed to disseminate the "go code" to bombers subsequent to their launch, it consisted of communications-transmitting equipment substituted as warheads on six Minuteman missiles. The ERCS recorders would

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accept a 30 to 90 second voice message for broadcast over two UHF transmitters, a message that would be repeated during the ballistic trajectory of the missiles. The ERCS had been developed to provide a reliable and survivable means of trans- and post-attack communication from CINCSAC to SAC forces. The coverage included SAC control elements; SAC aircraft launched under positive control; SAC forces operating along airborne alert routes in the Pacific, Atlantic, North Polar, and Mediterranean areas; SAC ground command elements and alert forces in Europe, the Pacific, and North America; and SAC missile forces in the United States.

(U) (S) The GREEN PINE system was a dedicated voice network consisting of 14 UHF transceiver sites, 13 located along the 70th parallel from Alaska to Iceland and 1 in Sardinia. These were connected to the SAC command post by diversely routed leased landlines. The primary use of the system would be to relay the "go code" to SAC aircraft under positive control procedures. The GREEN PINE stations could receive the transmission of the ERCS and the SLFCS.²

C. SACEUR-CINCEUR STRATEGIC COMMAND AND CONTROL ARRANGEMENTS

(U) (S) In 1968, a special problem in command and control of strategic forces existed in the delicate interface with NATO of the US force of nine Polaris submarines that supported NATO. The force represented a unique case in both strategic command organization and communication. Three of the Polaris boats were assigned to SACEUR and six to CINCEUR. All other boats in the Atlantic fell under the command of CINCLANT and operated under him normally, except when special arrangements were made.

(U) (S) The boats operated out of Rota, Spain, or Holy Loch, Scotland, and normally patrolled the Mediterranean. The SACEUR-assigned boats actually did half of their patrol in the Atlantic, while en route from Holy Loch to the Mediterranean, and

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went on alert from the time they left Scotland. The boats were controlled by CINCLANT for administrative, safety, and navigational purposes while passing through Atlantic waters, but this arrangement did not change their release procedures.

(U) (S) The SACEUR boats operated day-to-day under US national command, specifically under the US submarine force in EUCOM (CTF 64), which was under USNAVEUR and thus under CINCEUR. The CTF 64 also commanded the six CINCEUR-assigned boats while on patrol. It should be noted that the command arrangements described above for both the SACEUR- and CINCEUR-assigned boats pertained only to actual patrols. While the boats were in Holy Loch or Rota for refitting, they were under the command of CINCLANT.

(U) (S) SACEUR had targeting and alerting responsibility for his three boats, and even though normally under national command, the SACEUR boats were at all times officially under SACEUR's release-message control. SACEUR could declare a higher state of readiness for his boats at his own discretion, but any release message still required a US authenticator.

(U) (S) At the declaration of Reinforced Alert, SACEUR's three boats came under NATO operational control, but in actual fact the change was more apparent than real. With Reinforced Alert and the general switch of EUCOM to NATO command, CTF 64 would become a NATO command, designated CTF 442, under the Commander Strike Force South (Commander Sixth Fleet). In effect, the command structure would remain the same, except for a change of hats.

(U) (S) The six boats assigned to CINCEUR were also earmarked for NATO. When directed specifically at Reinforced Alert (this dual requirement removed any automaticity of action) by the US command, the boats were switched to NATO operational control and came under CTF 442. There was a degree of fiction in this command relationship because the CINCEUR boats were targeted in accordance with SIOP, and, even though switched to NATO control,

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they remained targeted for US-designated targets and under US release authority.

(U) ~~(S)~~ The specific weapons release procedures called for the release message to go to the CINCEUR boats via SACEUR. However, the concept of SACEUR release had meaning only if the SACEUR scenario of a general nuclear war in Europe without a US-Soviet strategic exchange were to come to pass. Otherwise, the boats would fire on US orders at SIOP targets and by the time the message went through SACEUR the missiles would have been launched.

(U) ~~(S)~~ In sum, a command and control arrangement had been devised for the CINCEUR and SACEUR submarines that recognized the boats as "belonging to SACEUR," but at the same time it was difficult to conceive that operation of the boats would actually follow the specified procedures when war came. There were clearly unresolved command and control problems in the operation of the NATO boats, but the question inevitably arose, although not formally admitted, as to how much effort should be expended in an attempt to solve these problems when it was generally recognized that the arrangements were essentially nominal.

(U) ~~(S)~~ A change in system was being discussed in 1971 whereby the assignment of specific boats to NATO would be ended and replaced with assigned missiles instead. These assigned missiles could be on any number of boats, instead of just three, and all the missiles could be constantly on alert, since there would not be the loss of alert status as under the existing system when a specified boat was being refitted.³

D. CINCPAC STRATEGIC COMMAND AND CONTROL ARRANGEMENTS

(U) ~~(S)~~ As one of the SIOP-committed unified commanders, CINCPAC controlled strategic forces that included at this time seven fleet ballistic missile submarines with 112 missiles plus nuclear-capable, general-purpose forces (carriers and Army surface-to-surface missiles).

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(U) (S) CINCPAC had an airborne command post (EC-135) manned and equipped to perform essential SIOP-related command and control functions. The command post had been maintained on airborne alert status through the 1960s, but it was reduced to ground alert at the end of 1969 for budgetary reasons. The CINCPAC TACAMO aircraft, designed to function as a continuously airborne VLF communications relay to the PACOM fleet ballistic missile submarines, constituted a highly survivable link for transmitting SIOP execution messages, but it was not intended to be a true alternate command center. Generally, PACOM provisions for alternate emergency command arrangements and facilities for continuity of command under general war conditions were considered to be inadequate.⁴

E. COORDINATION OF NUCLEAR OPERATIONS

(U) (S) The earlier problem of coordination of nuclear operations, which had once posed such difficulties, was well in hand by 1968. Under the DoD Reorganization Act of 1958, the USAF had been relieved of managerial responsibility for the Joint Coordination Centers (JCCs), but SAC had continued to operate them for the JCS through field representatives (FRE for Europe and FRFE for the Far East).

(U) (S) By 1969, the JCCs, which had become redundant with the creation of the Joint Strategic Target Planning Staff in 1961, had been under review for some time. The Far East JCC had moved from Tokyo to Kunia, Oahu, in 1957, and Headquarters SAC was proposing that the JCC Europe be moved from England to the United States. It was decided to consolidate the two JCCs into one coordination center and to relocate both at Fort Ritchie and in April 1971 Fort Ritchie assumed responsibility for both. Henceforth it was to be "the" JCC and the supporting Coordination of Atomic Operations Communications Network (CAOCOMNET) was realigned accordingly.⁵

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F. REORGANIZATION OF THE WORLD-WIDE MILITARY COMMAND AND CONTROL SYSTEM

(U) The procedures and systems for the command of strategic nuclear forces were tied into the World-wide Military Command and Control System (WWMCCS). The WWMCCS mission was to provide

the National Command Authorities with the information on world situations needed for accurate and timely decisions, to include the communications required for reliable transmission of those decisions with a minimum of delay under all conditions of peace and war for the national direction of the US military forces.⁶

(U) The WWMCCS supported the requirements of the chain of command from the NCA down to and including the component commanders of the unified and specified commands and such contingency commands as existed or might be established. The WWMCCS consisted of communications equipment, facilities, personnel, and procedures that provided: (1) the operational and technical support required to control US forces; (2) the means by which the President, Secretary of Defense, and the Joint Chiefs could receive information, selected responses, and apply military resources; and (3) the means for the NCA to direct the unified and specified commands.

(U) The WWMCCS--and many of its basic problems--were the result of the 1958 Amendments to the National Security Act. Those amendments retained the existing concept of a decentralized military structure. Operational command of the forces was given to the unified and specified commands, while the services retained their role in the development, generation, and support of the military forces. Both groups remained subject to the direction, authority, and control of the Secretary of Defense, who later delegated to the JCS the duties of serving as his advisers and as his military staff in the chain of command.

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(U) The command and control systems that were developed to support the unified and specified commands were formally incorporated in the 1962 WWMCCS directive. This step was intended to give the commands a greater voice in developing and implementing a command and control system in the interest of making the system more responsive to the needs of the NCA. Basically, standardization and cooperation of service-aimed-and-oriented command and control systems were to be enforced through controls over the operational specifications of the systems, but the specifics of requirements and management were left open for later resolution.

(U) Many of the major problems and deficiencies of the WWMCCS were clearly the result of its structure and management. The WWMCCS in 1968 still consisted of a number of independent subsystems comprising 37 activities. It was not a totally integrated system by any definition. It constituted a network of primary and alternative command facilities and interconnecting communications that served the various commanders and headquarters comprising the system (see Figure 2). In general, the structure accommodated the chain of command from the JCS (who were then integral to the NCA) through the unified and specified commands to their service component commanders. At the same time, it recognized and interfaced with the separate service chains of command. While the composite reflected the functioning of command relationships established by the National Security Act and subsequent amendments, it did not appear to lend itself to the trend toward centralization of command of the forces, which had characterized the crises and operations of the previous decade.

(U) The WWMCCS was six years old in 1968 and by that time had accumulated a large number of resources. The Washington nerve center alone was supported by two major fixed command centers, three EC-135 airborne command posts, and two major naval vessels. CINCSAC maintained one of five EC-135 command

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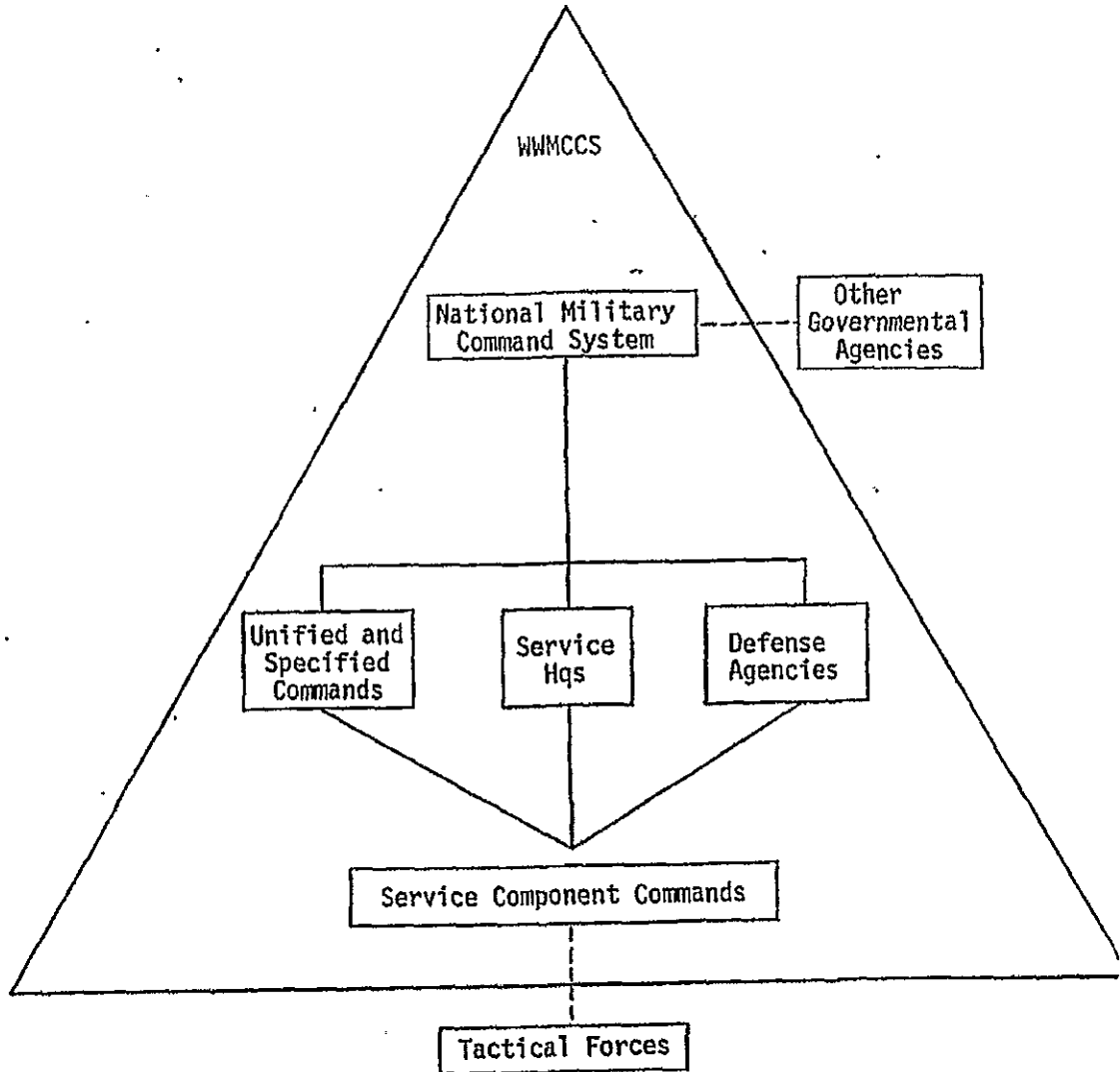


Figure 2 (U). COMMAND AND CONTROL SYSTEM RELATIONSHIPS, WWMCCS (U)

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posts continuously airborne and had an elaborate underground (but unhardened) command post. CINCONAD had a much more elaborate command center at Cheyenne Mountain, Colo. Other commands had made similar investments in command centers, and communications and tactical warning systems circled the globe. Automatic data processing was becoming more important and more evident in many command and control functions.

(U) The problems of the WWMCCS were made evident by three contingency episodes in 1967-69--the USS *Liberty*, the USS *Pueblo*, and the reconnaissance EC-121 incidents. In all three incidents, there were serious failures in command and control. While not involving the strategic forces and their command systems, the episodes carried great impact because of their implications. These concerned not only national prestige and the capacity to act in such minor contingencies, but also the vastly more serious matter of strategic nuclear operations. The episodes raised questions concerning the enormous amounts of money expended on command and control in view of the inefficiency demonstrated, and no doubt made the lines between tactical and strategic command and control seem less sharp in the view of those in authority. However, response to these episodes in terms of steps to improve the WWMCCS in a major way were very slow.

(U) One major source of weakness in the WWMCCS concept was the lack of single-agent responsibility for the WWMCCS in the period from 1962 to 1970. This was intentional and the result of the clash of interests between the services and OSD.

(U) (S) Movement toward a systematic effort to improve the WWMCCS was given impetus when the JCS received the WSEG/IDA Staff Study 153, which suggested an overall study plan for command and control problems.⁷ Then in July 1970 came the Blue Ribbon Defense Panel Report (see Chapter XXXII) which criticized the loose decentralized management of the WWMCCS. The report provided some additional impetus to change the WWMCCS, although

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it does not cause any specific major change by itself. Then, in February 1971; WSEG/IDA Report 159 was submitted, and in the words of an OJCS historian, "it caused consternation in the OJCS because of the bleak but largely accurate picture it painted of the WWMCCS."⁸

(U) A really major influence was the interest developed in command and control by Deputy Secretary of Defense Packard while he was a member of the Washington Special Actions Group. As a result of their mutual interest, Packard and the Chairman of the JCS, Admiral Moorer, worked together in the fall of 1971 to rewrite the WWMCCS directive. The Deputy Secretary sought to stress the primacy of the needs of the National Command Authorities as expressed through the NMCS, and he wanted the Chairman, JCS, to be responsible for running the NMCS. He specifically stated that instead of unified commanders having as their first priority the design of a command system to meet the requirements of their mission, they were instead to design a system that met first the requirements of the NMCS and, secondly, those of their own mission.

(U) The new directive, issued in December 1971, differed from the 1962 version in three principal respects.⁹ First, the Chairman of the Joint Chiefs of Staff was given overall responsibility for the system under the direction of the Secretary of Defense. He was directed to operate the NMCS, define its scope and components, develop and validate its requirements, maintain cognizance of all WWMCCS programs and capabilities, and make recommendations to the Secretary of Defense to insure the responsiveness, functional interoperability, and standardization of WWMCCS.

(U) Second, the directive provided for an Assistant to the Secretary of Defense for Telecommunications, a step that reflected the widespread concern in the defense community and the government at large about strategic communications and the problems involved in their centralization and coordination.

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Third, a WWMCCS Council, made up of the Deputy Secretary of Defense, the Chairman, JCS, and the Assistant Secretaries of Defense for Intelligence and Telecommunications, was established to provide policy guidance for the development and operation of the WWMCCS and to evaluate its overall performance.¹⁰

(U) (S) Although Deputy Secretary Packard and Chairman Moorer seemed to have worked out a mutually satisfactory understanding on the new WWMCCS directive, there was disagreement among the military on four major aspects of the document.¹¹ The first had to do with the redefinition of the National Command Authorities to exclude the Joint Chiefs of Staff, who had been included under the previous directive. The decision reportedly was based on an OSD legal office opinion that the National Security Act of 1947 implied that only the President and the Secretary of Defense could control US military forces, an affirmation of civilian primacy and the subordinate role of the military.¹²

(U) (S) Another major issue considered concerned the redefinition of the WWMCCS insofar as it affected resource management responsibilities of the military departments. The third issue was the apparent exclusion of the chiefs of the services from the chain of command by making the Chairman of the Joint Chiefs an independent agent for the implementation of the orders of the National Command Authorities for SIOF execution. The service chiefs through the CJCS should have been designated the executive agent of the Joint Chiefs. The final issue was that of responsibility for WWMCCS development. The new directive assigned this responsibility to the Chairman, so the issue again was that of the services against the Chairman. How serious these issues were at the time is difficult to determine. It would appear that such problems as might have existed had been taken care of by mutual agreement between the Chairman and the service chiefs. Nevertheless, the combined support for the directive by the Deputy Secretary and the Chairman of .

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the Joint Chiefs assured the promulgation of the document in the form in which they had conceived it.

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CONTINUING PROBLEMS IN THE COMMAND AND CONTROL STRUCTURE

A. THE BLUE RIBBON DEFENSE PANEL REPORT

(U) A major study of overall defense matters in this period was the July 1970 Report to the President and the Secretary of Defense by the Blue Ribbon Defense Panel. The Panel, formed by the Nixon administration in the summer of 1969, was made up of a group of distinguished citizens who were charged with reviewing the organization of the Department of Defense in all its ramifications.

(U) The Panel's report, which received considerable official and public attention, included a top secret section on "National Command and Control Capabilities and Defense Intelligence," which began by stating, in effect, that US policy and doctrine complicate the matter of command and control:

It is stated U.S. policy to retaliate only in the event of unmistakable attack, only by decision of the President or his constitutional successor, and with discrimination according to the source, magnitude and type of attack.... [But] in evaluating the capability of the NMCS to perform as desired, it is well to emphasize that its continued functioning in the uncertain ... environment of nuclear war would be extremely difficult at best. Yet, the possibility of a disruption of command which would either immobilize retaliatory forces, subject them to piecemeal destruction, or bring about a weak or uncoordinated response which an enemy might feel he could cope with, might offer an aggressor too tempting an objective and thereby dangerously weaken deterrence.

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(U) ~~(S)~~ In essence, the Panel had this to say about particular aspects of the command and control system:

On the importance of warning and the difficulty of providing it: Short of confirmation of nuclear detonations, "it is possible that no President could be sure, with the present warning system configuration, that an attack was in progress or that retaliation was justified...."

On survival of presidential authority: One of the most uncertain conditions, if not the most uncertain."

On command centers: The NMCC and its alternates are vulnerable to attack. The NEACP would be survivable if airborne, but the size of the existing NEACP limits its usefulness.

On communications: "All media are vulnerable to electromagnetic pulse (EMP) and transient radiation effects on electronics systems (TREES)...."²

On the subject of communications, the report went on to say that after an attack had begun there would be little if any capability to provide information in time for a rapid decision. Hence, "the feasibility of ... [present] plans and preparations is questionable, certainly for attacks in which command and communications facilities are targeted."³

(U) ~~(S)~~ Perhaps the most interesting thing about the Blue Ribbon Panel report was that it did not go on from the point just noted to the proposition that in a limited strategic conflict command and communications facilities might not be targeted, possibilities that were being examined in the ongoing discussions of the concepts of a limited strategic option and a flexible response. Nor did the Panel mention the growing arguments in the defense community to the effect that command posts and communications probably could not be sufficiently hardened to provide effective protection against nuclear weapons, even if it were decided that that was the best course.

(U) ~~(S)~~ The recommendations of the Blue Ribbon Panel were that the Secretary of Defense "should direct, as a matter of urgency, a comprehensive and objective analysis of the

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requirements for the National Military Command System in the next decade," and that the analysis should address the "continuity of political authority, as well as the facilities, equipment and concept of operations needed to provide maximum support to the National Command Authorities...." It also recommended that a Strategic Command be created, joining the existing Strategic Air Command, the Joint Strategic Target Planning Staff, the Continental Air Defense Command, and the fleet ballistic missile submarines.

(U) ~~(S)~~ The first of these recommendations went right to the heart of a problem that remained moot throughout the period under investigation, a matter that seemed to be discussed less often than its importance warranted, that often indeed seemed to be put aside on the unspoken assumption that the highest authorities did not want to make a public decision because of the political and practical problems that any delegation of authority might raise. The second recommendation, for a single strategic command, was similarly ignored. While on the whole, a surprising number of its recommendations were ultimately implemented, the Panel's influence on major issues of command and control was probably not great.

B. COST AND PERFORMANCE PROBLEMS

(U) If the development of doctrine with respect to command and control was a difficult and perplexing problem for those involved, maintenance of the actual operating command and control system seemed at least as difficult, as full of disappointments, and as seldom marked by breakthroughs. The defense community and the government as a whole were aware of the importance of speed and efficiency in command, control, and communications. President Nixon, for example, was quoted by a Subcommittee of the House Armed Services Committee as saying "when a war can be decided in twenty minutes, the nation that is behind will not have time to catch up."⁴

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(U) In its report, the Blue Ribbon Defense Panel noted the difficulty and costs of maintaining command and control systems:

Command, Control and Telecommunications technology is changing more rapidly than almost any other discipline and there is no indication that the rate of change will slow in the foreseeable future.... Current annual expenditures ... are in the two to four billion dollar range. More than 1,000 people on DoD payrolls spend full time in Command, Control and Telecommunications activities in locations around the world.

The Panel then made recommendations aimed at increased economy, concluding that "even if only ten percent improvement flows from the implementation of these recommendations, that equates to \$200,000,000 to \$400,000,000 savings annually based on current levels of activity."⁵

(U) It is probably impossible to more than estimate the amount of resources invested in command and control systems. A JCS study of the WWMCCS made the judgment that by 1974 the WWMCCS was consuming between 2 and 10 percent of the total defense budget, depending on how one charged costs. It should be noted that these estimates refer to the entire WWMCCS, not to the strategic operational elements alone. It was difficult, if not impossible, to isolate the nuclear and nonnuclear elements since many elements, especially communications, were designedly dual purpose.

(U) (S) Economies were certainly possible, but the problem was not that easily resolved. As the Secretary of the Air Force observed in a memo to the Secretary of Defense, "as is commonly known, Command and Control does not readily lend itself to quantifiable cost-effectiveness analysis. You will note that our approach ... is primarily a qualitative comparison."⁶

(U) As noted earlier, three major communications failures during contingencies between 1967 and 1969 aroused the Congress and the public and raised questions about the entire worldwide military communications system. The USS *Liberty*, an

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intelligence collection ship, was caught in the cross fire of the 1967 Arab-Israeli war and brought under heavy attack by Israeli forces. The intention had been to get the ship out of the war zone, but orders to leave the area had been delayed in transmission, sent the wrong way round the world, delayed again, and then sent to the wrong addressees. In January 1968, another communications intelligence ship, the USS *Pueblo*, was captured by the North Korean forces. The confusion in US military communications that attended this incident was still being investigated when an electronic intelligence aircraft, a Navy EC-121, was shot down by the North Koreans in April 1969. Communications--hardware, procedures, and personnel--again seemed to have failed badly.

(U) The systems involved in these three incidents were, of course, not those involved in strategic command and control, but the widespread concern, the congressional investigations, and the difficulty of explaining the complex WWMCCS system made it hard to provide reassurance about the reliability of US command and control. The importance of these incidents for command and control was the resultant focus of attention on all communications systems and the complete review that it brought about.

(U) Other and more practical, though still highly complex, problems persisted through the period in question. There had always been concern about the functioning of electronic systems in a nuclear environment, but in the 1968-72 period increased attention was turned to the question of Electro-Magnetic Pulse (EMP) and Transient Radiation Effects on Electronic Systems (TREEES), both the consequence of nuclear explosions. Most of the exploration of these effects, of course, had to be theoretical, but the best informed students of these phenomena were convinced that there was something there to worry about. Some felt that a few well-timed nuclear bursts

could be used to pin down launch vehicles. The problem was a persistent one, and no solution appeared or seemed likely to appear.

(U) (S) Still another problem was that of communications with strategic missile-carrying submarines. Complicated systems involving low frequencies, the use of special aircraft that relayed communications to the boats (TACAMO), and the use by the boats of long, trailing wire antennas produced an end result that was not entirely satisfactory. The Sanguine antenna system was one recommended improvement, but problems of cost and public opposition delayed implementation. A continuing difficulty, too, lay in the lack of interoperability among the various communications systems.

(U) (S) Throughout the period, reports on the shortcomings of the strategic command, control, and communications system were continuous. Typical was the memorandum written for Secretary McNamara on the weaknesses of the system as indicated in WSEG Report 123 on HIGH HEELS 67, the worldwide exercise carried out in a simulated strategic crisis. The report made the following observations concerning the mechanics of strategic operations:

- (1) Low precedence traffic was generally controlled (during the course of the exercise), but procedures did not seem adequate to control the increased volume of high precedence operational traffic.
- (2) Alerting procedures for changes in Defcons were rapid, but the implementation process by CINCs does not insure that the objectives of the uniform readiness conditions can be met.
- (3) Major delays occurred in staffing selective release requests for nuclear weapons.
- (4) CINCs took considerable time to reformat and retransmit decisions to forces once a decision at the national level was made.⁷

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(U) ~~(S)~~ National Security Study Memorandum (NSSM) 64 (see discussion in Chapter XXXIV) also produced numerous gloomy comments on the state of the command and control system. The following extracts were typical:

(1) HIGH HEELS repeatedly demonstrated that the masses of communications and reports, which are designed for crisis management or for idealized operating conditions, will quickly overwhelm the actual Command and Control structure.

(2) The National Command Authorities today have a limited capability for ascertaining the type of attack which the U.S. is experiencing and, therefore, probably would have insufficient information to determine with confidence the proper type of response.

(3) Capabilities did not exist to obtain accurate reconnaissance of targets struck by U.S. strategic weapons within any reasonable and useful time span (i.e., within a week at the most).

(4) The current capability for *ad hoc* planning and for retargeting of strategic weapons is limited and time consuming. Capabilities are greater where strikes are small and retargeting is not required.

(5) The programmed U.S. command and control structure will degrade significantly following any heavy nuclear attack, even if command and control itself is not targeted.

(6) Replanning capability will be reduced significantly even if command and control is not attacked.

(7) Following a heavy nuclear exchange, effective war termination capabilities are marginal.⁸

(U) ~~(S)~~ The same message was contained in a memorandum for the Deputy Secretary of Defense from DDR&E entitled "Improvement of C³ for Strategic Forces." The current system is critically deficient, the memorandum said, in these respects:

(1) The growing Soviet SLBM threat could catch many of our bombers on the ground. Improvements in tactical warning have not kept pace because of the division of responsibility.

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(2) We are deficient in our ability to assess the nature of a nuclear attack on the United States. "Our entire system for collecting and assessing attack data is fragmented and under-exercised."

(3) Communications to submarines and bombers are fragile and vulnerable.

(4) Our ability to plan limited strategic strikes is cumbersome.

(5) Realistic plans have not been developed for deliberate devolution of presidential authority.⁹

(v) (S) In early 1972, the ASD (Telecommunications) reported to the Secretary of Defense on a study of the "Vulnerability of Strategic Command and Control Communications (Minimum Essential Emergency Communications Network--MEECN)":

The results are extremely disquieting. With less than one percent of the Soviet Strategic Forces, the USSR can take out Command and Control to eighty percent of our strategic forces. By "take out" is meant forces never get the Go word. By spending about \$4 billion over about 5-10 years, these figures could be 10% to 50% respectively--better, but hardly comforting.... The results, understandably, are producing shocks throughout the WWMCCS Council, JCS, Systems Analysis, etc. Counterreaction will result in re-study and checking but the results are most unlikely to change from bad to good.¹⁰

At the bottom of the page is a note written by Secretary Laird: "I want to talk to Eb [Eberhardt Rechtin--ASD(T)] about this-- I don't think Joint Chiefs are as aware as should be of this problem--We must convince them and SAC and then the Congress."¹¹ Laird's comment, after three years as Secretary of Defense, seems to reflect the frustration of those who were working to improve strategic command and control. After all their efforts the same problems remained.

C. IMPROVING THE SYSTEM

(v) (S) The "Response to NSSM 64," the Blue Ribbon Panel report, and other developments in 1970 stimulated the interest

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of Deputy Secretary of Defense Packard in command and control. They were also having their influence on the military. The Director of the Joint Staff, Lt. Gen. John Vogt, and the Chairman of the Joint Chiefs, Admiral Moorer, became more and more aware of the importance and timeliness of the subject and of the interest of the Deputy Secretary of Defense.¹² And so a subject that had received major attention in the early 1960s and then had been pushed into the background by the war in Southeast Asia again became the preoccupation of key figures in Washington. As noted earlier, Mr. Packard and Admiral Moorer became deeply involved in the development of new policies and new procedures in command and control and rewrote the Department of Defense directive on WWMCCS, the fundamental US government document on the subject.

(V) ~~(S)~~ The Deputy Secretary accepted special responsibility for the matter of command and control in the Defense Department. He became the most frequent recipient of memorandums and special studies on the subject, and his own memorandums and correspondence show his interest and concern. It was, however, not an easy subject to grasp or to do anything about. In a July 1969 memorandum on the "Draft, For Comment" of the Draft Presidential Memorandum, Packard outlined possible command and control improvements that were being evaluated:



- (1) Providing pre-planned options for the NCA for additional selective responses against military and industrial targets.
- (2) Providing the procedures, data processing equipment, and computer programs for planning new, selective responses on a timely basis during a crisis.
- (3) Installing higher power transmitters in TACAMO aircraft.
- (4) Maintaining an option to defend Washington, D.C., with the Safeguard ABM system.
- (5) Improving the sensitivity and survivability of our Satellite Early Warning System (Program 647).
- (6) Providing a survivable satellite communications system to replace our more vulnerable

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ground transmitters and provide a more versatile means of communicating with our strategic forces.¹³

(U) ~~(S)~~ In April 1971, the Chairman of the Joint Chiefs sent the Deputy Secretary of Defense a memorandum entitled "National Strategic Targeting and Attack Policy and Command and Control Survivability," which summarized the results of a Joint Staff study that had reviewed the vulnerability of US command and control systems and investigated ways to guarantee delivery of retaliatory weapons. Requirements for the latter were:

- (1) Survivability and availability of presidential authority.
- (2) Availability of adequate survivable command centers for the NCA and SIOP-committed CINCs.
- (3) Availability of reliable communications from the NCA to the commands.
- (4) Communications to fleet ballistic missile submarines for SIOP execution.

The memo reported that "the study effort revealed that a full: survivable, perfect Command and Control system is not attainable." It then went on to list some actions that would help to overcome the most severe limitations:

- (1) Establishing a dedicated, survivable SIOP communications satellite system.
- (2) Acquisition of an advanced airborne command post (AABNCP) and improvements to the EC-135 ABNCPs of CINCEUR and CINCPAC.
- (3) Improved LF-VLF systems on TACAMO and ABNCP aircraft.

In addition, the Chairman reported that he had:

- (1) Requested the Chief of Staff of the Air Force to determine the feasibility of (a) providing the WWABNCP system with additional ground entry points into the AUTOVON Polygrid Network and selected FAA ground-air communications facilities and (b) using drones for relay of messages to Minuteman launch control centers.

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(2) Requested the CNO to determine the feasibility of nuclear submarines as command centers.

(3) Reevaluated HF propagation in a nuclear environment.

(4) Forwarded a memo requesting release of available information on the procedural interface between civilian and military authorities during nuclear attack.¹⁴

(U) ~~(S)~~ Another development of importance that resulted from Packard's and Moorer's interest in command and control was the dissolution of the Joint Command and Control Requirements Group (JCCRG) and the assignment of the WWMCCS Plans and Requirements functions to the Director for Operations, J-3. There had been a division within the JCS over WWMCCS and NMCS functions. Now both WWMCCS and NMCS requirements were the responsibility of the Deputy Director for Operations (Command and Control).¹⁵

(U) Deputy Secretary Packard played the leading role in the Defense Department's attempt to reorganize command and control in the years from 1969 to 1972. When he left the Department early in 1972, he did so with a keen awareness of the problems that remained in the command and control field. He made this point in an interview published in the *Washington Star* on 20 March 1972. The article in the *Star* said:

The U.S. might not be able to respond at all to a surprise attack from the Soviet Union because of weaknesses in control over the nation's strategic nuclear forces, according to former Deputy Defense Secretary David Packard. Packard ... said in an interview here that he had concluded the weakest link in the nation's strategic force was in Command and Control.

Shortly before leaving the Pentagon, Packard had signed the order making the Chairman of the JCS the link between the NCA and the strategic forces for strategic operations. The change had been brought about at Packard's initiative, impressed as he was with the institutional barriers to JCS decisionmaking.

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He wanted an individual responsibility and in this the CJCS supported him. Curiously, resistance to the step from the Joint Chiefs themselves was not as strong as had been expected. "Interservice rivalry," he said, "is one reason some times the Joint Chiefs have difficulty in making a good decision. If one of the Chiefs feels very strongly about an issue, there's no mechanism to override it or the other Chiefs simply won't override it."¹⁶

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