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JOINT CHIEFS OF STAFF
SPECIAL HISTORICAL STUDY

THE WORLDWIDE MILITARY COMMAND AND CONTROL SYSTEM
A HISTORICAL PERSPECTIVE (1960 - 1977)

HISTORICAL DIVISION
JOINT SECRETARIAT
JOINT CHIEFS OF STAFF
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THE WORLDWIDE MILITARY COMMAND AND CONTROL SYSTEM
A HISTORICAL PERSPECTIVE (1960-1977)

Historical Division
Joint Secretariat
Joint Chiefs of Staff
September 1980

FOREWORD

This special historical study, prepared at the request of the Joint Staff, traces the factors and influences leading to the establishment and development of the Worldwide Military Command and Control System (WWMCCS) from 1960 to 1977. The emphasis is mainly on policy considerations as well as organizational matters, focusing at the level of the Joint Chiefs of Staff and the Secretary of Defense.

In presenting the subject, it was felt that an important element was the role the system played in actual crisis situations; a section, therefore, is devoted to its operational performance, and the lessons learned from these crises. No effort was made to cover technical aspects in detail beyond those necessary for the reader to understand the evolutionary process of organizational and policy matters that shaped the system.

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Footnote deletions are in accordance with JCS MOP 39

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SECTION I

MEANING AND SCOPE OF COMMAND AND CONTROL

(U) The story that unfolds in the pages of this study has to do with the establishment and development of the Worldwide Military Command and Control System in the early 1960s, and the events, influences and decisions which shaped it up to the latter part of the 1970s.

(U) Before entering, however, into the details of a rather intricate subject, it may be worthwhile to shed some light on a basic question at the very outset: what is "command and control," its origin and meaning? The term has undergone such wide variations in interpretation during the last thirty years or so, that meaning has ranged from the art of generalship, to military applications of computer technology, to more specific and narrow functions within the sphere of so-called "real-time" communications/information systems.

(U) In the closing years of World War II (1943-1945) command and control was used in connection with aircraft operations and air command center activities. After 1945, the term was construed very broadly to include competitive efforts between the Manhattan District (in its pursuit of nuclear weapons development) and the Army Air Forces (AAF) to get a firm hold on atomic energy for military purposes.[1] Atomic weapons had to be given a place in overall national strategy. Doctrine had to be developed on

1. (TS-GP 1) IDA Study, S-467, The Evolution of US Strategic Command, Control, and Warning, 1945-1972, Ch I, p. 4, by L. Weinstein, C.D. Cremeans, J.K. Moriarity and J. Ponturo, June 1975, OSD Historians's Files.

when and how to use them; a system had to be established for administrative jurisdiction and civilian custody to safeguard the weapons; and, finally, a military component had to be designated to deliver them. So, the years between 1945 and 1953 were primarily the period of building a strategic nuclear strike force. The Strategic Air Command (SAC) was created in January 1946, and by 1953 a powerful network of overseas bases had come into existence from which such nuclear operations could be launched. Because of its strategic nuclear mission, SAC was more tightly controlled by the Joint Chiefs of Staff than were other major commands. Until 1951, strategic command and control concerned SAC only, but after that time faster growth of tactical nuclear weapons brought aircraft carriers and the overseas commands into the nuclear picture. With the rapidly growing nuclear arsenal of the nation, a more careful delineation of responsibilities in this field, military and civilian, became necessary. In the period 1954 to 1960, most of the basic requirements usually associated with command and control, and communications--e.g., redundance, reliability, and survivability--were all given heightened operational meaning. Additional systems came into existence which increased capabilities, and those were tested to insure their contributions were made actual. Most of the impetus for these improvements came from the Services' own systems, and within the Services from

the operational commands charged with specific functions.[2]

(U) With this background, let us return to the original question of command and control, and for the sake of abbreviation let us refer to it from now on as "C^2". Since the early 1960s, when SAC had a prevailing role because of its strategic mission, the term was used mainly in discussing those military tasks, systems, procedures and equipment for obtaining warning or other battle-related information, and in the event of attack, for sending the presidential nuclear release code to SAC and other nuclear resources. From the beginning, the meaning of C^2 expanded. Some began to use command, control and communications (C^3) as a synonym for C^2 while others regarded C^3 as the only proper term. In 1977, the office of the Assistant Secretary of Defense for Communications, Command, Control and Intelligence (C^3I) was established in the Pentagon.[3]

(U) From the outset, some confusion existed concerning the precise meaning of the abbreviations of C^2 and C^3, and as a result interpretations proliferated and led to many specialized definitions as well as arguments. To eliminate the confusion, the Joint Chiefs of Staff approved a definition of C^2 as early as October 1961 which underwent several modifications until its current official acceptance as follows:

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2. Ibid., "Executive Summary (U)," pp. XIII-XIV. The History of the Joint Chiefs of Staff, The Joint Chiefs of Staff and National Policy, Vol IV, 1950-1952, Hist Div, OJCS. (TS/RD) History of Strategic Arms Competition, 1945-1972, Chronology-US, Vol. I, p. 148, Office of the OSD Historian.

3. DOD Directive 5137.1, 11 Mar 77.

> The exercise of authority and direction by a properly designated commander over assigned forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures which are employed by a commander in planning, directing, coordinating and controlling forces and operations in the accomplishment of his mission.[4]

(U) Despite this formal definition by the Department of Defense, there was still some confusion as to what C^3 really represented. By some, it was often regarded as hardware or software and systems, or both. Or, as in the JCS definition, it was interpreted as somehow similar to command, and sometimes confused with communications or intelligence. In actuality, as perceived in its historical context, C^2 was a new function of warfare, different from the older and better understood functions of command, intelligence or communications. It was something apart from the electronic revolution, or even its identification with an integrated system. In the sense of a C^2 system per se, a separate definition was adopted which read as follows in the 1979 DOD Dictionary of Military and Associated Terms (JCS Pub 1):

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4. JCS Pub 1, 1 Jun 79. On 4 Oct 61, JCS approval was given to the following definition of command and control: "An arrangement of personnel, facilities, and the means for information acquisition, processing, and dissemination employed by a commander in planning, directing, and controlling operations." This original definition was replaced by the current one in 1971. Records of the Terminology Br., J-5 and JCS Pub 1, 1 Feb 62, 3 Jan 72, and 1 Jun 79.

> The facilities, equipment, communications, procedures, and personnel essential to a commander for planning, directing, and controlling operations of assigned forces pursuant to the missions assigned.

(U) A simpler, clearer definition which goes to the heart of C^2 was formulated in mid-1978 by Colonel Kenneth L. Moll, USAF (Ret.), a former Director of the Worldwide Military Command and Control System Council Support Office (1974). It reads as follows:

> Command and control is the military function of supporting the commander in his immediate direction of operational forces.[5]

(U) From all this variety of carefully thought out attempts to describe C^2 several specific traits emerge common to the basic concept. First, C^2 is a distinctive function. It performs something different both from any other function and something which is new in warfare. Recent advances in the technology of weapons as well as in related areas of communications, sensor, and automation make this function a necessity. Second, C^2 supports the command function. In this regard C^2 merely expands and supports the scope and rapidity of exercising command, but essentially is distinct from it. Third, C^2 operates in real time In other words, the special characteristic of the C^2 function is the ability to provide immediate or simultaneous information and, as a result, equally rapid

5. Kenneth L. Moll, "Understanding Command and Control," Defense and Foreign Affairs Digest, Jul 78, p. 34.

response to support the commander in the event of a crisis or emergency. Fourth, C^2 is concerned with employment of operational forces. Traditionally, other functions such as communications and intelligence help the commander in making force deployment decisions before a battle. In contrast, the uniqueness of the C^2 function allows him to use all available resources in combination during the battle. Other functions such as planning, analysis, and deployment remain more separated and visible when exercised in and by themselves, but it is the C^2 function that provides the ability to bring them together into a unified, instantaneous strike force responding to a sudden outside emergency or threat.[6] Finally, C^2 is military. It is a function that by its very nature is meant to combine and coordinate various independently pursued functions and resources within the total armed forces' structure and produce an integrated, rapid reaction response to the particular needs of a national or international military situation, be it in war or peace. Viewed in this light, C^2 provides a better framework for understanding its purpose and evolutionary development.

~~(C)~~ C^2, together with the functional element of warning US strategic forces, has come to involve the ability to accomplish several key operations: (a) maintain an up-to-date accounting of the status of forces [and nuclear weapons]; (b) on the defensive side, secure as early a warning as possible of an enemy

6. Ibid.

attack, assess it, and pass that warning to the National Command Authorities (NCA) and to the strategic forces; (c) communicate the orders to those forces and maintain contact with them after launch; (d) ascertain the effectiveness of strike forces and the ability of those forces to retaliate and, (e) maintain the capacity to carry out these functions during and after a nuclear attack on the United States.[7]

(U) These functions have become more difficult to perform with the passage of years, both as US forces increased in number, diversity, and sophistication, and as the Soviet nuclear threat loomed larger. Weapons evolved from jet bombers to land-based missiles to missile-launching submarines, and eventually to a combination of these three, forming the so-called Strategic Triad. Accordingly, in coordinating these elements, C^2 had to keep up the pace.

(U) The speed, range, and destructiveness of modern weapons precipitated in the last two decades the parallel evolution of an increasingly sophisticated technology. Development especially in the field of computers made it possible to obtain reliable, fast communications in a world where on the one hand, the element of time is continuously shrinking, while, on the other, the threat environment is progressively being enlarged. In this context, C^2 is not a decision-making process in itself, but rather a combination of means through which critical information, contributive to the making of decisions, is controlled and funneled to appropriate command levels for execution by military forces.

7. (TS-GP 1) IDA Study, S-467, "Executive Summary (U)," p. XI.

(U) Civilian control over the Armed Forces is exercised primarily by the President in his role as Commander in Chief and the Secretary of Defense.[8] It is accomplished by means of the National Military Command System which links them to the military forces. The foremost body within the military structure, directing and coordinating operations for the Armed Services, is the Joint Chiefs of Staff.

(U) The formation of the Joint Chiefs of Staff emerged initially as a counterpart organization to the British Chiefs of Staff after the Roosevelt-Churchill ARCADIA Conference in February 1942. Together they played a vital role in the strategic direction of the war.[9] On the other hand, the first comprehensive worldwide system of unified command for the US forces under JCS control, known as the Unified Command Plan, was approved by the President in December 1946. It called for the eventual establishment as "an interim measure for the immediate postwar period," of seven unified commands[10] which became prominent when Congress passed the National Security Act in 1947.

(U) This Act was the vehicle that gave the Joint Chiefs of Staff a legal basis for existence, and

8. These two constitute the National Command Authorities, together with their authorized successors and alternates.

9. JCS Sp. Hist. Study, "A Concise History of the OJCS, 1942-1978," Hist. Div., Jt. Secretariat, March 1979.

10. (C) JCS Sp. Hist. Study, "History of the Unified Command Plan," Hist. Div., Jt Secretariat, 10 Dec 77.

affirmed their role as military advisers to the President and the Secretary of Defense. It also assigned them the responsibility to prepare plans and provide strategic direction to the Armed Forces. In fact, a key element of such responsibility to this day entails the obvious need for a C^2 ability in linking the NCA and the Joint Chiefs of Staff to the unified and specified commands. Further, in 1958 the Department of Defense Reorganization Act, which amended the National Security Act , removed the Services from the chain of command, and made the Joint Chiefs of Staff the military staff of the Secretary of Defense to pass orders to the CINCs. With this last link between the President, the Secretary of Defense, the Joint Chiefs of Staff, the Unified Commanders, and US forces everywhere, the circuit of organizational structure was completed.[11]

(U) These actions clearly pointed to the necessity of a national C^2 capability. The focus now began to be placed on developing a system for rapid, reliable communications keyed to events of a time-sensitive nature and preparedness for the eventuality of some unexpected crisis somewhere in the world. Such system would provide continuous channels of exchange between the Commander in Chief, top officials in the military establishment, and the executing forces in the field.

11. Blue Ribbon Def. Panel Rpt to the Pres and the SecDef, 1 Jul 70, p. 34.

SECTION II

THE DEVELOPMENT OF THE WORLDWIDE MILITARY COMMAND AND CONTROL SYSTEM

(U) As briefly outlined in the preceding section, the years since World War II led to tremendous innovations in the area of national defense which radically altered the nature of warfare. Great advancements in the technology of nuclear and conventional weapons, the proliferation and diversity of C^2 mechanisms in the military Services themselves, and the changes in the command structure brought about by the DOD Reorganization Act of 1958, were key factors in this evolution. Equally important was the interdependence of military power and top levels of civilian government authority in the context of ever-shrinking time for making vital decisions. It was this urgent need to provide rapid, effective links in information exchange that furnished the impetus to improve the existing C^2 structure within the framework of what became known as the National Military Command System (NMCS), followed by the formation of its brainchild, the Worldwide Military Command and Control System (WWMCCS). It was fortuitous that all the pieces of a broad effort to develop the C^2 capability happened shortly before the outbreak of the Cuban missile crisis.

~~(S)~~ The Chief of Naval Operations (CNO) first raised the need for better C^2 with the Joint Chiefs of Staff in January 1960. He proposed an integration of all war rooms and operations control centers into a "world wide joint command and control system complex, immediately

responsive to the requirements for the strategic direction of the armed forces."[1] Such a complex would, of course, include the unified and specified commands; it would be jointly developed and supported by the Services, and operated under the direction of the Joint Chiefs of Staff. The principal features of such a plan were outlined by the CNO in his memorandum stressing global pervasiveness of the system in terms of standardizing information, building in flexibility, and considering survivability so as to insure the continuity of command under all conditions of alert or emergency. Finally, he suggested that a policy and a plan for implementing such worldwide C^2 system be given high priority.[2]

(U) On 29 March 1960 the Joint Chief of Staff approved establishment of a Joint Command and Control Study Group (JCCSG), an ad hoc group composed of representatives from the Services under the Director, J-3, and charged to develop a comprehensive plan for a joint C^2 system.[3] The JCCSG recommended on 14 September 1960 that a Statement of Joint Command and Control System Policy be issued, to develop "a world-wide command and control system whereby the President and Secretary of Defense, through the Joint Chiefs of Staff, may exercise strategic and operational direction over forces assigned to the unified and specified commands." The JCS subsystem for C^2 would be the

1. (S) Memo, CNO to JCS, 11 Jan 60, Att to JCS 2308, 13 Jan 60, JMF 4930 (11 Jan 60) sec 1.
2. Ibid.
3. (S) Dec On JCS 2308/4, 29 Mar 60, same file. (C) Paper, "National Military Command Center," undated, JCS Hist Div Files.

central element of a number of other subsystems. The JCCSG would: (1) establish a worldwide command control concept of operation; (2) develop a phased plan and program to provide a C^2 subsystem capability; and (3) develop alternate JCS command elements to preserve effective continuity. The Joint Chiefs of Staff approved the policy statement on 27 September and issued it as JCS Memorandum of Policy No. 126. The JCS policy for such worldwide C^2 ability anticipated a gradual process of development to stretch over several years in an evolutionary manner.[4]

(U) In October 1960, the JCCSG recommended establishment of a full-time Joint Command and Control Development Group (JCCDG) functioning under JCCSG and reporting to the Director, Joint Staff. The Group was to perform the work of developing the C^2 system as defined in MOP 126 and received the approval of the Joint Chiefs of Staff on 20 October 1960.[5]

~~(S)~~ Among the areas which received special attention during the early months of the Kennedy Administration was the C^2 function. Secretary of Defense Robert S. McNamara assigned on 8 March 1961 the task of reassessing the general subject of command and control to the Joint Chiefs of Staff and the Director of Defense Research and Engineering (DDR&E). He asked them to review the entire command and control apparatus, "particularly as it relates to strategic forces," and to recommend changes to insure that the system would

4. ~~(S)~~ JCS 2308/5, 14 Sep 60; (S) JCS Policy Memo 126, 27 Sep 60; JMF 4930 (11 Jan 60) sec 1.
5. (S) Dec On JCS 2308/5, 20 Oct 60, same file.

be continuously responsive to "duly constituted authority."[6] Investigation and follow-on action to their reports resulted in the appointment by the Secretary of Defense of the National C^2 Task Force (NCCTF) in September 1961. This group was chaired by General Earle E. Partridge, USAF (ret.). He was a former CINCNORAD, who had been on record for several years with proposals to strengthen the National Command System particularly toward a potential ICBM threat. His group was instructed to examine "interrelated, organizational, doctrinal and equipment aspects of the command and control system; [to] develop and evaluate alternate means by which improvement can be effected; and [to] prepare recommendations . . . ."[7]

~~(C)~~ The report of the task force, known as the Patridge Report, was prepared in late November 1961, and reflected a number of criticisms of exiting systems, including the inadequate provisions for continuity of the high command.[8] In the report

6. (C) Memo, SecDef to CJCS et al., 8 Mar 61, Encl to JCS 2101/413, 10 Mar 61, JMF 5000 (8 Mar 61).

7. (TS) Memo, SecDef to GEN Partridge, 1 Sep 61, Att to JCS 2308/47, 5 Sep 61, JMF 4930 (12 Aug 61) sec 1. For JCS response to appointment of NCCTF, see (TS) JCSM-250-61, 18 Apr 61, JMF 4930 (10 Apr 61) sec 2. For DDR&E response, JCS comments thereon and further DDR&E comments on JCS response, see JCS 2308/32, /34 and /35, same file, sec 4; further JCS comments in JCS 2308/36, same file, sec 5.

8. (FOUO) JCS 2308/64, 20 Nov 61, JMF 4930 (12 Aug 61) sec 2. NCCTF Rpt, same file, sec 2A.

the task force proposed, among other suggestions, a single Supreme Military Commander (CINCUSCOM) as the channel for operational direction of the unified and specified commands, instead of this role being performed by the corporate body of the Joint Chiefs of Staff. It also proposed the appointment of a four-star general officer as Special Assistant to the Secretary of Defense for C^2, responsible for all aspects of the system, and in line to be Deputy CINCUSCOM when the Secretary of Defense approved of such arrangements. Other important recommendations in the report included the appointment of an Emergency Representative of the President (EMREP) to assume war powers in the event of a hiatus in the availability of the President or an appropriate successor; and the establishment of an integrated or "coupled" network of command facilities for greater assurance of survival and continuity.[9]

~~(C)~~ The Partridge Report proposals encountered opposition by the Joint Chiefs of Staff, particularly those concerning the CINCUSCOM and the Special Assistant for C^2 positions. They rejected them basically on the grounds of departing from the provisions of the National Security Act of 1947, as amended, and from the implementation of DOD Directive 5100.1 of 31 December 1958. This last document had designated the Joint Chiefs of Staff as "the immediate military staff of the Secretary of Defense," and carried the chain of operational command all the way upward to the President as Commander in Chief, as well as downward to the unified

9. (FOUO) JCS 2308/64, 20 Nov 61, JMF 4930 (12 Aug 61) sec 2. NCCTF Rpt, same file, sec 2A.

and specified commanders.[10] The opposition created by the Patridge Report both in the Pentagon and the White House caused it not to be adopted in the end. The functions and duties of CINCUSCOM for example ran counter to statutory injunctions against a single chief of staff, and controversial changes in legislation would be required.[11] As far as the delegation of presidential authority to the EMREP was concerned, that proposal seemed rather sweeping and undefined both in function and duration. In the event of general war for instance, such broad delegation of powers raised sensitive issues of civilian control and civil military jurisdiction in emergencies.

~~(S)~~ One central thread to most of the thinking of this initial period of development was the idea of survivability for most of the planned command facilities. The earlier mentioned JCCSG report of September 1960 had identified a need to establish alternate command elements for the Joint Chiefs of Staff, the unified and specified commands, and each of the Services, as a way to preserve effective continuity during and after conflict situations. This concept, favorably received by the Joint Chiefs of Staff, led to the establishment in September 1961 of the Joint Alternate Command Element (JACE) at the Alternate Joint Communications Center (AJCC), Fort Ritchie, Maryland.[12]

10. (TS) JCSM-836-61 to SecDef, 30 Nov 61 (derived from JCS 2308/65), JMF 4930 (12 Aug 61) sec 2.

11. The rejection of the CINCUSCOM recommendation also swept aside the idea for a C^2 Special Assistant.

12. (S) Dec On JCS 2308/5, 20 Oct 60, JMF 4930 (11 Jan 60) sec 1. (S) JCS 2308/17, 17 Feb 61, same file, sec 3. (S) JCS 2308/33, 28 Apr 61, same file, sec 4. (S) DJSM-733-61, 20 June 61, same file, sec 5.

(TS) Also under consideration at this time was the concept of mobile command facilities. Such facilities were a relatively new idea in the early 1960s, prompted by the ever-present problems of the cost of fixed sites and of protecting them against nuclear weapons. Fixed centers were basically advantageous because they provided more space for equipment and people, in short, greater built-in capabilities. However, their survivability imposed stricter requirements such as expensive hardening, duplication at various locations, and "internetting."[13] On the other hand, advances in weapon yields, and improvements in accuracy and multiple warhead targeting, tended to offset hardening and dispersal so that the concept of smaller mobile centers, even with space-weight limitations had attractive alternatives to offer--particularly if preselected options could be transmitted by short execution messages. Among the mobile center concepts, the Navy had proposed a National Emergency Command Post Afloat (NECPA) in a cruiser operating in the Chesapeake Bay and adjacent coastal waters, ready to serve as a command center for the President and his key advisers. The Air Force had recommended a National Emergency Airborne Command Post (NEACP) in an aircraft on ground alert (b)(1) similar to the airborne command post at SAC headquarters. In March 1961, the Joint Chiefs of Staff approved trial operations of the NECPA on the cruiser USS NORTHAMPTON, and NEACP in KC-135 aircraft.[14]

13. Internetting--bringing together several independent command centers into a common network.

14. (TS) JCSM-136-61 to SecDef, 9 Mar 61 (derived from JCS 2308/16), JMF 4930 (11 Jan 60) sec 3.

~~(C)~~ The basic judgment that a system of multiple centers was needed, and that it should include both fixed and mobile facilities, seemed readily accepted by 1961. In their early appraisal of command survival for the Secretary of Defense in the spring of 1961, the Joint Chiefs of Staff referred to the "current and planned" system of hardened and fixed facilities, supported by mobile command posts, together with the "explicit retaliatory doctrine" in case political authorities were not available.[15] On his part, the Secretary of Defense, in his April posture statement, stressed the need for additional, more survivable sites, specifically the airborne and seaborne command posts, and during that year he approved funds for further hardening the AJCC, modifying the USS NORTHAMPTON (CC-1), and converting KC-135 aircraft for command post operations.[16] These mobile elements, plus one other--the Advanced Airborne Command Post (AABNCP) which will be discussed in a later time period--were to contribute to the survivability of the C^2 system as a whole.

~~(C)~~ Along the lines already under study by the JCCSG-JCCDG, the Joint Chiefs of Staff in December 1961 provided further comments to the Secretary of Defense for an improved C^2 system. Essentially they stressed that, given the expectation of oncoming technological advances, the JCS organization and procedures had to

15. (TS) JCSM-250-61 to SecDef, 18 Apr 61 (derived from JCS 2308/28), JMF 4930 (10 Apr 61) sec 2.
16. (TS) J3M 470-62 to DepSecDef, 25 Apr 61, J-3 files. DOD Annual Report, FY 1961, p. 7.

be extended and strengthened. Moreover, they felt, this was the correct vehicle for absorbing and discharging C^2 responsibilities to the armed forces.[17]

~~(C)~~ The outlines of a national command center complex, based essentially on integrating and expanding existing facilities, began sharpening in early 1962. In February, the Secretary of Defense approved a National Military Command System (NMCS) composed of four major elements: the National Military Command Center (NMCC), the Alternate National Command Center (ANMCC), the NECPA, and the NEACP.[18] On 26 April, the Secretary assigned to the Joint Chiefs of Staff the responsibility of developing the "functional system design" for the NMCS, namely covering established policy and operational guidance into functional specifications or requirements.[19]

~~(C)~~ Further, in order to discharge this task more effectively, the Secretary of Defense approved on 18 May 1962 the JCS recommendation that JCCDG be augmented and redesignated Joint Command and Control Requirements Group (JCCRG). Concurrently, JCCSG was dissolved after its mission was completed.[20]

17. (TS) JCSM-881-61 to SecDef, 22 Dec 61 (derived from JCS 2308/72), JMF 4930 (12 Aug 61) sec 3.

18. (S) Memo, SecDef to JCS et al., 19 Feb 62, Att to JCS 2308/77, 21 Feb 62, JMF 4930 (23 Dec 61).

19. (C) Memo, DepSecDef to CJCS, 26 Apr 62, Encl to JCS 2308/102, 27 Apr 62, JMF 4930 (6 Mar 62) sec 3.

20. (C) JCSM-362-62 to SecDef, 9 May 62 (derived from JCS 2308/100), 9 May 62, same file, sec 2. (C) JCS 2308/104, 22 May 62, same file, sec 3.

~~(C)~~ On 5 July 1962, the Joint Chiefs of Staff submitted to the Secretary of Defense a "concept of operations of the Worldwide Military Command and Control System (WWMCCS)," prepared by the JCCRG. The central subsystem of the WWMCCS was the National Military Command System (NMCS) which in turn included the NMCC and the ANMCC.[21]

~~(S)~~ Next, an event of major significance was the approval of the first phase of WWMCCS by the Secretary of Defense on 28 July 1962. By a memorandum to the Chairman, Joint Chiefs of Staff, Mr. McNamara approved in principle the WWMCCS concept of operations, as submitted to him on 5 July 1962 by the Joint Chiefs of Staff, and considered it a basic guide, subject to periodic future amendment as experience and technological developments dictated. The Secretary further elaborated in his memorandum of 28 July, that the WWMCCS concept statement must also "recognize the broader role in meeting the communications needs of the President, the top civilian leaders, and essential diplomatic and intelligence needs visualized for the NMCS so they can be incorporated in the functional system design."[22]

~~(S)~~ What the Secretary intended, after this was done, was to have the concept statement of 5 July 1962 by the Joint Chiefs of Staff, published as a basic DOD-wide planning guidance. This was in fact

21. (S) JCSM-491-62 to SecDef, 5 Jul 62 (derived from JCS 2308/110), JMF 4930 (15 Jun 62) sec 1.

22. (S) JCS 2308/117, 28 Jul 62, JMF 4930 (15 Jun 62) sec 1. (S) CM-949-62 to SecDef, 10 Sep 62, Att to 3d N/H of JCS 2308/117, 13 Sep 62; same file.

accomplished by the Chairman in a memorandum for the Secretary of Defense of 10 September which outlined the following actions that had been taken:

> Redesignation of the Joint War Room (JWR) as the National Military Command Center (NMCC) and the Alternate Joint War Room (AJWR) as the Alternate National Military Command Center (ANMCC), effective 1 October 1962.
>
> Establishment of J-3 supervision over the Joint Alternate Command Element (JACE), effective September 1961.
>
> Establishment of detailed arrangements with agencies outside the Organization of the Joint Chiefs of Staff (such as DIA and DCA) to provide transition into the new concept.

A final action reported by the Chairman was the designation of the Chief, Joint Command and Control Requirements Group, as the JCS representative to work with the DDR&E in modifying the concept to conform with a recent report to the President on continuity of operations throughout the entire Government.[23]

~~(S)~~ All these changes to the various command center facilities above were first steps responsive to the the new NMCS concept and to technical advances.[24]

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23. ~~(S)~~ CM-949-62 to SecDef, 10 Sep 62, Att to 3d N/H of JCS 2308/117, 13 Sep 62, JMF 4930 (15 Jun 62) sec 1.

24. JCS 2308/117, 13 Sep 62, same file.

(U) The Secretary of Defense on 16 October 1962 published DOD Directive S-5100.30, entitled "Concept of Operations of the World-Wide Military Command and Control System." This document was, of course, the vehicle by which the entire C^2 system became operational. Its stated purpose was:

> to define the functional, organizational, and operational relationships between all elements of the World-wide Military Command and Control System (WWMCCS), and to provide expanded policy guidance for the operation and development of the system.[25]

~~(S)~~ As conceived, the mission of the WWMCCS was to provide "the National Command Authorities (NCA), which included the Joint Chiefs of Staff, with the information on world situations needed for accurate and timely decisions, to include the commnications . . . under all conditions of peace and war for the national direction of U.S. military forces."[26] The system's role, therefore, to serve the NCA was primary. The intention was to bring all the military resources available to support and carry out decisions at the highest level of government in the event of a national emergency.[27] The NMCS would be managed and operated under the policy direction of the Joint Chiefs of Staff, and under the supervision of the Director of Operations (J-3). It included the following elements:

(1) The National Military Command Center (NMCC).

(2) The Alternate National Military Command Center (ANMCC).

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25. DOD Dir S-5100.30, 16 Oct 62 (hereafter cited as 1962 WWMCCS Dir 5100.30).
26. 1962 WWMCCS Dir 5100.30, p. 1.
27. Ibid., p. 2.

(3) The National Emergency Command Post Afloat (NECPA).

(4) The National Emergency Airborne Command Post (NEACP).

(5) Such other alternates to the NMCC as might be established.

(6) Survivable communications and links to the Unified and Specified Commands, their subsystems, the subsystems of the Service Headquarters, and those of component commands and other DOD agencies.[28]

(U) When the directive was published, it was recognized that the development of the system would be evolutionary. Its principal characteristics were to be: survivability, flexibility, responsiveness, standardization, and economy. But, in terms of management structure and tight threads of responsibility running through top-to-bottom elements, the directive was cast in a rather permissive light. Although the NMCS was defined in detail, the various subelements were not; the organizations affected did not submit their own implementing instructions, following the guidelines of the DOD directive and, as a consequence, positive assignment of specific responsibility was left open-ended for later resolution.[29]

(U) As the preceding chronological record reveals, plans drawn in 1961 called for the NMCS to consist of

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28. 1962 WWMCCS Dir 5100.30, p. 2-4.

29. (S) WWMCCS and the JCS, FY 1963-1974: A Joint Staff Perspective of the Development of the WWMCCS, 15 Aug 74, prepared by WWMCCS Council Supt Ofc, OJCS, p. 3 (hereafter cited as WWMCCS and the JCS, Aug 74, copy in Hist Div files).

a primary command center in Washington, a fixed alternate center, and two mobile emergency centers. All unified, Service, and other DOD component C^2 systems would dovetail with this primary system while continuing at the same time to meet their own requirements. One immediate advantage of such definition of roles and purposes was that it enabled the offices of the Secretary of Defense and the Joint Chiefs of Staff to reassess proposals for expanding and modernizing current systems in terms of the needs of the whole.[30] Thus, through the common effort of half a dozen DOD and other agencies--among them, the State Department, Office Of Emergency Preparedness, and CIA--seeking to expand the basic national military command system plan, shape it into mutually acceptable guidance, and standarize the information-gathering and decision-making facilities and process, the directive establishing the Worldwide Military Command and Control System (WWMCCS) came into being.[31]

(U) On 26 October, the Deputy Secretary of Defense, proceeding to implement the WWMCCS concept as reflected

30. (TS) IDA Study, S-467, pp. 306-309. (S) A. K. Marmor, USAF, Command and Control Problems, 1958-1961, Hist Div Liaison Office, US Air Force, Jan 1963, pp. 34-37. (S) T. A. Sturm, The Air Force and the Worldwide Military Command and Control System, 1961-1965, Hist Div. Liaison Office, US Air Force, Aug 1966, pp. 4-9. The Evolution of U.S. Strategic Command Control and Warning 1945-1972, by L. Weinstein, C. C. Cremeans, J. K. Moriarty and J. Ponturo, Jun 1975, pp. 306-309.

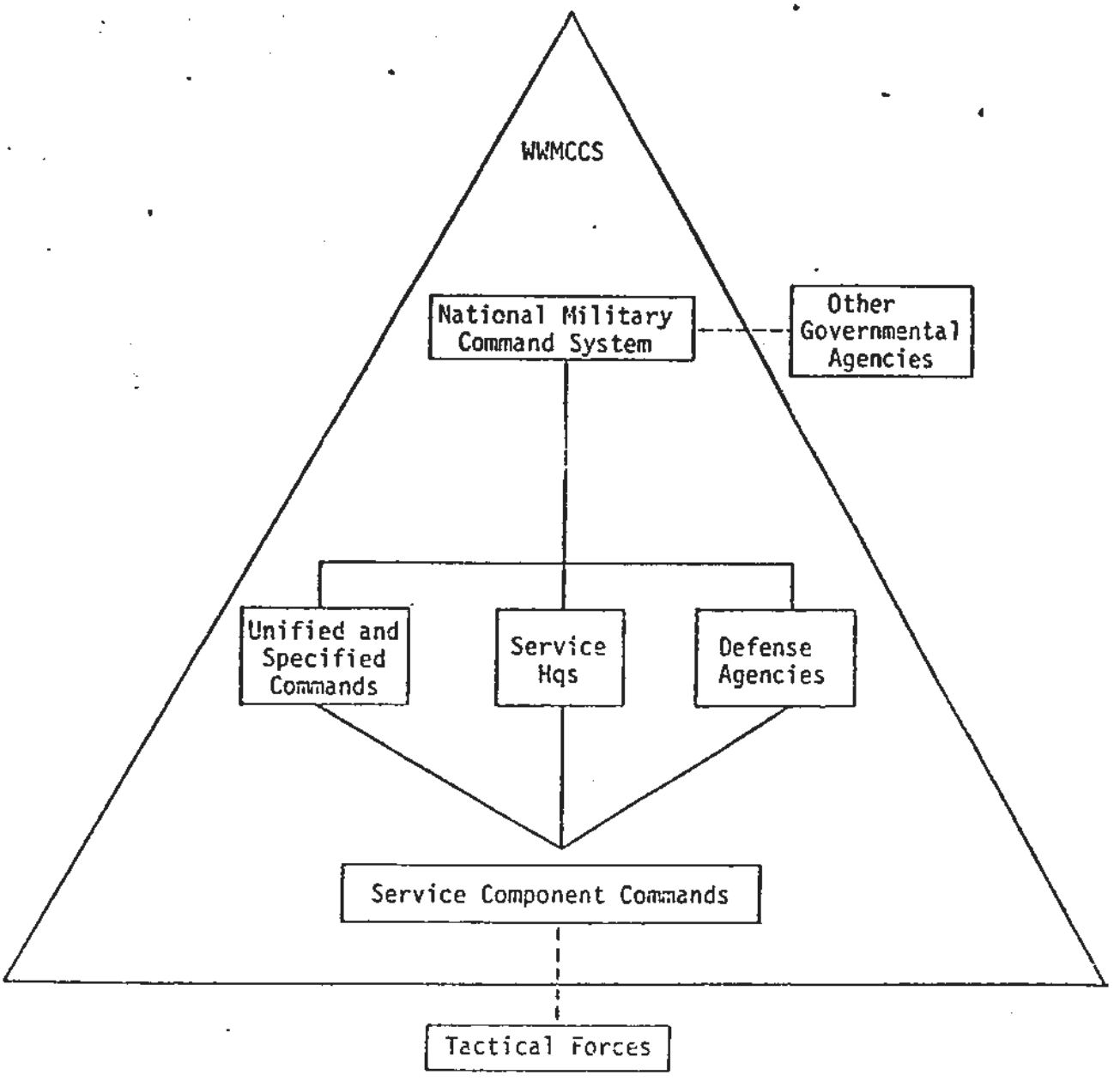
31. DOD Dir 5100.30, 16 Oct 62. (S) JCSM-739-62 to SecDef, 29 Sep 62 (derived from JCS 2308/129), JMF 4930 (15 Jun 62) sec 2.

in the directive, established by memorandum specific DOD-wide policies and procedures, and assigned responsibilities to DOD-wide elements, i.e., to the Joint Chiefs of Staff and the commanders of unified and specified Ccmmands, to the Secretaries of the Military Departments, and the directors of other defense agencies in developing and processing design, engineering, construction, and installation of C^2 capabilities.[32] (Figure 1)

(U) The events related to command and control, as outlined above for the end of the 1950s and the opening years of the 1960s, are worthy of observation. New approaches to thinking, stimulated especially by the realities of nuclear warfare, led to technological developments compatible with compressed time for vital decision-making. Survivability became a prime factor in national defense planning. The roles of the Secretary of Defense and the Joint Chiefs of Staff were strengthened by the 1958 Defense Reorganization Act. A more diversified and flexible strategic posture was sought to assure an adequate national response to a surprise attack. As a result, C^2 was accorded a high priority, perhaps higher than it ever received in the past. The NMCS, composed of these command elements

32. Memo, DepSecDef to Secys of the Mil Depts et al., "Development, Acquisition, and Operation of the Command and Control Systems of the Unified and Specified Commands," 26 Oct 62, Enclosed as App B of study entitled WWMCCS and the JCS, 15 Aug 1974, JCS Hist Div files.

Figure 1 (U). COMMAND AND CONTROL SYSTEM RELATIONSHIPS, WWMCCS (U)



directly supporting the NCA and the Joint Chiefs of Staff, came into being in early 1962. Its composition encompassed interconnected command centers with specialized communications and facilities. Thinking expanded in the direction of mobile-command centers besides fixed ones.

(U) Perhaps the main uncertainty and problem inherited from the 1950s in terms of C^2 was the continuity of presidential authority, coupled with the issue of subordinate delegation for execution through the military chain of command. Finally, in an effort to coordinate the proliferation of communications facilities and command centers, the WWMCCS was established in late 1962. The changes in planning, however, brought about by an ever-increasing Soviet threat, and by parallel technological advances in the field of C^2, fortified the view that there would be a continuing evolution and refinement in the system for many years ahead.

(U) Earlier in this section, discussion of the first WWMCCS directive in 1962 outlined the establishment of various military resources which composed the National Military Command System. These were the NMCC, the ANMCC, the NECPA, and the NEACP. It remains to briefly describe here how each of them functioned within the new system.

The NMCC

~~(S)~~ The National Military Command Center (NMCC) was developed as a continuously manned, unhardened facility, operated by the Joint Staff to serve the

Joint Chiefs of Staff, the Secretary of Defense, and the President in their operational command functions.[33] It did not normally function as a center for decision-making for national authorities. It was basically an information and communications center between top-level officials and their principal staffs, other government agencies, and US force commanders worldwide. It maintained contingency data files, operational assessments, and status-of-action score sheets for day-to-day command activities, including crisis and limited war management, up to the point of transferring functions to alternate centers in case of nuclear war. As long as it survived as the primary center, it provided the capability to initiate emergency actions, preparing and transmitting SIOP orders, and keeping abreast of events and decisions from other centers. It gained considerable stature during periods of crisis, such as Cuba in 1962, Tonkin Gulf in 1964, the Dominican Republic and Vietnam in 1965, and the Middle East in 1967. Having expanded considerably in size through the early to late 1960s and having come under the control of the Operations Directorate (J-3) of the Joint Chiefs of Staff, the NMCC continued to be the focal point for developing and exercising national-level C^2 for general nuclear war.[34] Later in the 1970s (between 1973 and 1976), a program also was under

33. (S) JCSM-337-63 to SecDef, 25 Apr 63 (derived from JCS 2308/165), JMF 4930 (15 Jun 62) sec 3. DOD Dir S-5100.44, "Master Plan for the NMCS," 9 Jun 64.

34. (S) Sturm, The Air Force and WWMCCS, AFCHO, 1967, pp. 32-48. WWMCCS Handbook, 13 Jun 74, JMF 360 (13 Jun 74).

way to make improvements to the NMCC for an effective interface with the intelligence community through the new National Military Intelligence Center (NMIC).[35]

The ANMCC

(U) The Alternate National Military Command Center (ANMCC) was interconnected fully with the NMCC, providing a remote facility near Fort Ritchie, Maryland, and designed to operate for about 30 days in a "buttoned-up" condition.[36] It was continually manned by a skeleton battle staff, and prepared to accommodate national military authorities, should they require relocation. It also was so organized and equipped as to carry out "trans-strike" and "post-strike" phases during general nuclear war, assess attack damage, and assume control of critical data bases from the NMCC, if needed.[37] Since 1974, the ANMCC message processing facility was integrated with its Pentagon counterpart in an effort to consolidate and automate the two for all critical message traffic. Overall, the ANMCC was intended to provide sufficient information to other alternate centers and to commanders of the forces in the field.

The NECPA and NEACP

(U) It may be recalled earlier that there was need for additional survivable mobile centers, both

35. DOD Annual Rpt, FY 1977, p. 177.
36. (S) JCSM-337-63 to SecDef, 25 Apr 63; JCSM 130-63 to SecDef, 14 Feb 63 (derived from JCS 2308/168) JMF 4930 (30 Nov 62); Memos, SecDef to CJCS, et al., 26 Apr 62, Att to JCS 2308/195, 30 Apr 63; JMF 4930 (30 Nov 62) sec 3.
37. Ibid. DOD Annual Rpt, FY 1977, p. 177.

airborne and seaborne capable of operating independently outside the Washington area for short periods, and for serving the NCA during crises until broader command facilities were reconstituted. The National Emergency Command Post Afloat (NECPA), as it was called, consisted of two ships (the converted cruiser USS NORTHAMPTON in 1962 and the USS WRIGHT, a refitted auxiliary aircraft transport in 1963), with one continuously under way at sea and capable of operating for two weeks if necessary without extensive logistic support.[38] But budgetary considerations later in FY 1970, leading to reductions, precipitated various changes to the WWMCCS, one of which was to phase out the NECPA element altogether in 1970.[39] This vacuum in seaborne communications was eventually to be filled by using frequencies such a VLF and ELF on ballistic submarines.

(U) The National Emergency Airborne Command Post (NEACP)--originally a modified KC-135 aircraft--the most space-restricted of all mobile center elements, was perhaps the most likely survivable relocation site for the NCA and the Joint Chiefs of Staff to exercise control in the initial stages of a general war. It could be airborne on very short notice (within 15 minutes) and was supported by a secondary aircraft equally on advanced readiness alert status.[40] The

38. (TS) J3M 470-62 to DepSecDef, 25 Apr 61, J-3 files. (S) Memo, SecDef to JCS et al., 19 Feb 62, Att to JCS 2308/77, 21 Feb 62, JMF 4930 (23 Dec 61).

39. (S) See effect of Program 703 actions in WWMCCS and the JCS, Aug 1974, p. 11.

40. (S) WWMCCS Handbook, 13 Jun 74, JMF 360 (13 Jun 74), pp. 4-17, 22.

NEACP was unique in that it was an important feature of both the NMCC and the Minimum Essential Emergency Communications Network (MEECN). (b)(1)

(b)(1)

~~(S)~~ Although none of these four facilities was invulnerable, each had particular survivability characteristics (hardening, mobility, dispersal, redundancy) that contributed to the survival of the complex as a whole. While they did not constitute a literally "non-interruptible" command system (as expressed in the Joint Chiefs of Staff objectives), they offered a reasonable chance that one or more could survive even a deliberate effort to disrupt the command process.[42]

~~(S)~~ The NMCS still lacked one fundamental prerequisite for an effective, unified and survivable national command system: (b)(1) (b)(1)

(b)(1)

41. DOD Annual Rpt, FY 1977, p. 178.

42. (S) JCSM-337-63 to SecDef (including Master Plan for the NMCS), 25 Apr 63 (derived from JCS 2808/165), JMF 4930 (15 Jun 62) sec 3.

(b)(1)

[redacted] But, if the President was caught by a strike in Washington, identifying and locating a senior surviving authority would be no easy matter.

WWMCCS Developments in the 1960s

(U) The opening years of the 1960s found a sizable collection of resources and facilities associated with command control and communications. What was lacking was cohesion to serve a common purpose. The WWMCCS directive of October 1962, as discussed earlier, established the framework by which the system became operational.

~~(C)~~ One of the provisions of the WWMCCS directive concerned the establishment of the Joint Command and Control Requirements Group (JCCRG), designated as the activity to exercise coordination and control of Joint Chiefs of Staff responsibilities regarding the operation and development of the NMCS.[44] This meant that the JCCRG would be responsible for the process of converting broad policy and strategic and doctrinal guidance from the Secretary of Defense and the Joint Chiefs of Staff into functional specifics of operational requirements. It would also serve as the focal point for the "evolutionary improvement of the NMCS

43. (TS) JCSM-865-63 to SecDef, 8 Nov 63 (derived from JCS 1899/773-6), JMF 6820 (19 Jul 63) sec 2.
44. 1962 WWMCCS Dir. 5100.30, pp. 12-13.

and its interface . . . with other subsystems and associated systems." A policy decision, however, through a Secretary of Defense memorandum in November 1962 redesignated the Department of Defense Damage Assessment Center (DODDAC) as the NMCS Support Center (NMCSSC) and transferred it to DCA--one of several actions which began to fragment WWMCCS responsibilities among a number of organizations instead of the initially planned centralization under the JCCRG.[45]

~~(C)~~ The next important step was the drafting of a document setting forth the broad planning guidance for defining the functional, organizational, and operational relationships among elements constituting and supporting the NMCS, as the principal subsystem of the WWMCCS. This resulted in early 1963 in the drafting by the Joint Chiefs of Staff of the NMCS Master Plan whose mission was to provide "the National Command Authority with the means essential for accurate and timely decisions, including the communications required . . . [and] with a minimum of delay for the national direction of US military forces under all conditions of peace and war."[46]

~~(C)~~ The NMCS Master Plan essentially was designed to serve the President, the Secretary of Defense and the Joint Chiefs of Staff in exercising direction of the armed forces through the military chain of command.

45. (S) WSEG Staff Study 153 (incl IDA Study S-362) Study Plans for C3 Problems, Feb 1970, App B. WWMCCS and the JCS, Aug 1974, p. 3.

46. (S) JCS 2308/165, 26 Jan 63; JCS 2308/187, 25 Mar 63; JMF 4930 (15 Jul 62) secs 4 and 5.

The entire structure of the national military establishment had to be flexible in order to act promptly and selectively in any situation. The NMCS, therefore, had to possess the necessary mechanisms to insure that worldwide political-military considerations were synchronized to decisions reached by the NCA. In other words, centralized direction was crucial to the coordination of worldwide contingencies. (b)(1) [redacted] The NMCS consequently had to have a built-in capability to survive a major disaster and continue to function effectively in a post-crisis environment. This thinking provided the keystone for the development of the NMCS Master Plan.[47]

(S) After extensive coordination among the agencies concerned, the Secretary of Defense issued the NMCS Master Plan, as drafted by the Joint Chiefs of Staff, on 9 June 1964 as DOD Directive S-5100.44.[48] This plan, together with a directive on continuity of operations policy and planning provided the foundation for the concept of C^2.[49]

(C) From this period on, the NMCS received considerable visibility and support as a set of arrangements for general purpose command and control, including crisis management and direction of strategic nuclear objectives. In the latter context, however, the four command centers--the NMCC, the ANMCC, the NECPA, and the NEACP--did approximate a composite or "coupled" set

47. (S) DOD Dir S-5100.44, 9 Jun 64. (S) JCS 2308/187, 25 Mar 63, JMF 4930 (15 Jun 62) sec 4.
48. (S) DOD Dir S-5100.44, 9 Jun 64.
49. (S) DOD Dir 3020.26, 25 Aug 67.

of command facilities along lines proposed a few years earlier by the Partridge Report and subsequently favored by the Joint Chiefs of Staff.

(U) Meantime, in October 1963, the Deputy Secretary of Defense issued a memorandum to implement the WWMCCS directive "insofar as the development, acquisition and operation of [C^2] systems of the unified and specified commands [were] concerned."[50] An examination of the key provisions of the so-called "Gilpatric Memo" revealed a shift in emphasis from the NMCS to the CINCs who were brought in as a major driving factor regarding future support of the WWMCCS.[51] It was felt that a more aggressive approach was needed, and the way to achieve it was to make the system more responsive to the direct requirements of the unified and specified commanders.

~~(S)~~ Included within the NMCS were also communications providing links to intelligence systems, and to and from the command posts of the unified and specified commanders, whose responsibilities encompassed C^2 of offensive nuclear forces (CINCLANT, CINCEUR, CINCPAC and CINCSAC) from both ground and airborne command post elements. The three main facilities--NMCC, ANMCC, NEACP--had particular survivability characteristics (hardening, redundancy, dispersal) that could overcome an attacker's confidence to disrupt altogether the

50. (U) Memo, DepSecDef to Secys Mil Depts et al., 26 Oct 63, App B to WWMCCS and the JCS, Aug 74.
51. (S) WWMCCS and the JCS, Aug 74, p. 4.

command process. So structured, they provided continuous access to each other and to the needs of national authorities.[52]

~~(C)~~ In October 1965, an agreement between the Chief, JCCRG, and the Director of Operations (J-3) was drafted which would bring a major change in responsibilities by shifting the central point of contact from JCCRG to J-3 for planning, development, and operation of the NMCS within the organization of the Joint Chiefs of Staff.[53] It was never implemented in its initial version, but changes occurred in early May 1966, when the Director, Joint Staff, approved revised charters for J-3 and JCCRG in connection with functional realignments.[54] This change placed the NMCS, still an element of WWMCCS, in a position of independently managing the JCCRG subelement. By mid-1968, the autonomy of the JCCRG was further reduced as J-3 was assigned to monitor and coordinate its activities. The result was that JCCRG's emphasis shifted somewhat from the NMCS to the unified and specified commands, while continuing to provide guidance and assistance concerning the overall WWMCCS.

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52. (S) JCSM-337-63 to SecDef, 25 Apr 63 (derived from JCS 2308/165), JMF 4930 (15 Jun 62) sec 21. (S) JCSM 641-63 to SecDef, 17 Aug 63 (derived from JCS 2308/230), JMF 4930 (9 Aug 63). (S) JCSM 483-68 to SecDef, 5 Aug 68 (derived from JCS 2308/412), JMF 360 (24 Jul 68).

53. Memorandum of Agreement between Dir of Ops (J-3) and Ch, JCCRG, regarding NMCS dev and opn., 30 Sep 65, C^2 ADP Div Files, C^3S Directorate.

54. DJSM-570-66 to Dir of Ops (J-3) and Ch, JCCRG, 5 May 66, JMF 5029 (10 May 66). For approval of revised charters, see J3M-1831-65, 29 Nov 65, and JCCRG 275-65, 12 Oct 65.

~~(C)~~ During the period 1967-1969 the responsibilities of the JCCRG increased particularly in the areas of Automatic Data Processing (ADP) as applied to WWMCCS, the Advanced Airborne Command Post (AABNCP), surveillance sensors, and general C^3 of the unified and specified commands.[55]

~~(C)~~ Skepticism about relocation concepts and uncertainty about the effective function of the NMCS without a resident political authority, or even reluctance to leave supreme command in any other hands, led to a search for alternatives. One such approach was the proposal for a Deep Underground Command Center (DUCC), a "superhard" command post easily accessible to NCA and designed for minimum dislocation or interruption of official routines. The original DUCC proposal had reached the Secretry of Defense in a memorandum from the Comptroller early in 1962, referring to the planned 1963 configuration of the NMCS as "the best that can be done to etablish a survivable command facility in the near future."[56]

~~(S)~~ The DUCC proposal was controversial and raised many questions, including technical aspects, costs, and elements of the NMC it might displace. The Joint

55. Memorandum of Agreement between Dir of Ops (J-3) and Ch, JCCRG, regarding NMCS dev and opn., 30 Sep 65, C2 ADP Div files, C3 Directorate. (C) Development Concept Paper (DCP) for ADP, JCS 2349/67, 20 Aug 69; Memo, SecDef for CJCS et al., 13 Nov 69, Att to JCS 2349/67-1, 17 Nov 69; JMF 410 (14 Aug 69).

56. (S) Memo ASD(C) to SecDef, "Deep Underground National Command Center," 31 Jan 62, OSD files. Cover sheet of memo indicated initial idea was put forth by R. Shorey and A. Enthoven in the OASD(C) Programming Office.

Chiefs of Staff were also to be included in the event it became a reality.[57] But, even if the DUCC could be built to survive against direct blasts of nuclear weapons, questions of communications coupling and lifeline logistics remained very difficult to resolve.

~~(S)~~ The Joint Chiefs of Staff reaction was lukewarm. In December 1963 they took the position that the planned NMCS complex represented an optimum C^2 posture for the time being, and should not be reconfigured to a single, fixed underground facility of unproven effectiveness and survivability.[58] The DUCC proposal did not receive White House approval or consideration in the FY 1965 budget and was set aside indefinitely.

(U) One of the main objectives of the WWMCCS ADP Program was to enable different command centers to transmit, process and exchange data among command centers in the system, and thus provide commanders at different locations with a concurrent view of the general situation and readiness condition of military forces. Before the advent of the ADP program, the various elements of WWMCCS were left much to their own resources and initiative in determining requirements for automation and types of equipment. This independently developed confederation of subsystems lacked

57. (TS) JCSM-914-63 to SecDef, 2 Dec 63 (derived from JCS 2308/244-1), JMF 4930 (14 Nov 63).

58. (TS) JCSM-914-63 to SecDef, 2 Dec 63 (derived from JCS 2308/244-1, JMF 4930 (14 Nov 63). (TS) JCSM-957-63 to SecDef, 7 Dec 63 (derived from JCS 1800/797), JMF 7000 (5 Dec 63).

centralized control. Each command came up with its own technical specifications and each negotiated separately with industry for procurement and maintenance of hardware. The results of such arrangement were not satisfactory in terms of the needs of the NCA and the Joint Chiefs of Staff.

(U) In January 1966, informal discussions on concrete proposals as to how to correct this situation began between OSD and OJCS. The ADP program was formally introduced in September 1966 when the Secretary of Defense directed the Joint Chiefs of Staff to conduct a study to determine the feasibility of acquiring computers on a multi-year procurement basis rather than piecemeal. This approach appeared desirable, and specifications for competitive procurement began in April 1967. The contract was awarded to Honeywell Information Systems on 15 October 1971, and 35 computer systems were eventually purchased and installed in 26 locations by the end of December 1973.[59]

~~(C)~~ In his announcement of 15 September 1966 of Program Change Decisions for the Consolidated Command, Control and Communications Program,[60] the Deputy

59. (C) WWMCCS and the JCS, Aug 74, pp. 13-14, App K, p. 4. WWMCCS Handbook, Ch III, pp. 3-1 to 3-12, JMF 360 (13 Jun 74)

60 The reader may recall from Section I, p. 3, that since the early 1960s the meaning of the term "command and control" (C^2) expanded and often was synonymous with "command, control, communcations" (C^3). Although C^3 is more widely in use today, there is perhaps a broad, overall distinction--C^2 expressing better the exercise of authority and direction, while C^3 representing the more composite notion of the function and the facilities, a total system concept.

Secretary of Defense directed the Joint Chiefs of Staff to conduct a comprehensive study of concepts and policies relating to the continuity of operations and planning for alternate command facilities within the WWMCCS.[61] Parallel to that study, the Joint Chiefs of Staff had recommended a revision of the 1962 WWMCCS basic directive (DOD Dir S-5100.30) in August 1966[62] and again in May 1967. The reason was basically to clarify and sharpen responsibilities between C^2 elements of WWMCCS, only loosely defined in the initial directive. Substantive changes in their revision were:

a. The inclusion of instructions governing the development, acquisition, and operation of the C^2 systems of the Military Departments, the unified and specified commands, the Service component commands, and the C^2 support information systems of DOD agencies.

b. The designation of C^2 systems of the Military Departments as elements of WWMCCS and the clarification of the interrelationship of C^2 systems employed in both the operational and administrative chain of command.

c. Clarification of the role and assignment of specific responsibilities to the Secretaries of the Military Departments, the Joint Chiefs of Staff, the commanders of the unified and specified commands and the directors of DOD agencies with regard to WWMCCS.[63]

61. (S) JCS 2308/353-4, 2 Mar 67, JMF 4930 (20 Sep 66, JMF 4930 (20 Sep 66). PCD Program Element 5.21.01.12 T.

62. (S) JCS 2308/339, Encl A, 29 Aug 66, JMF 4930 (29 Aug 66).

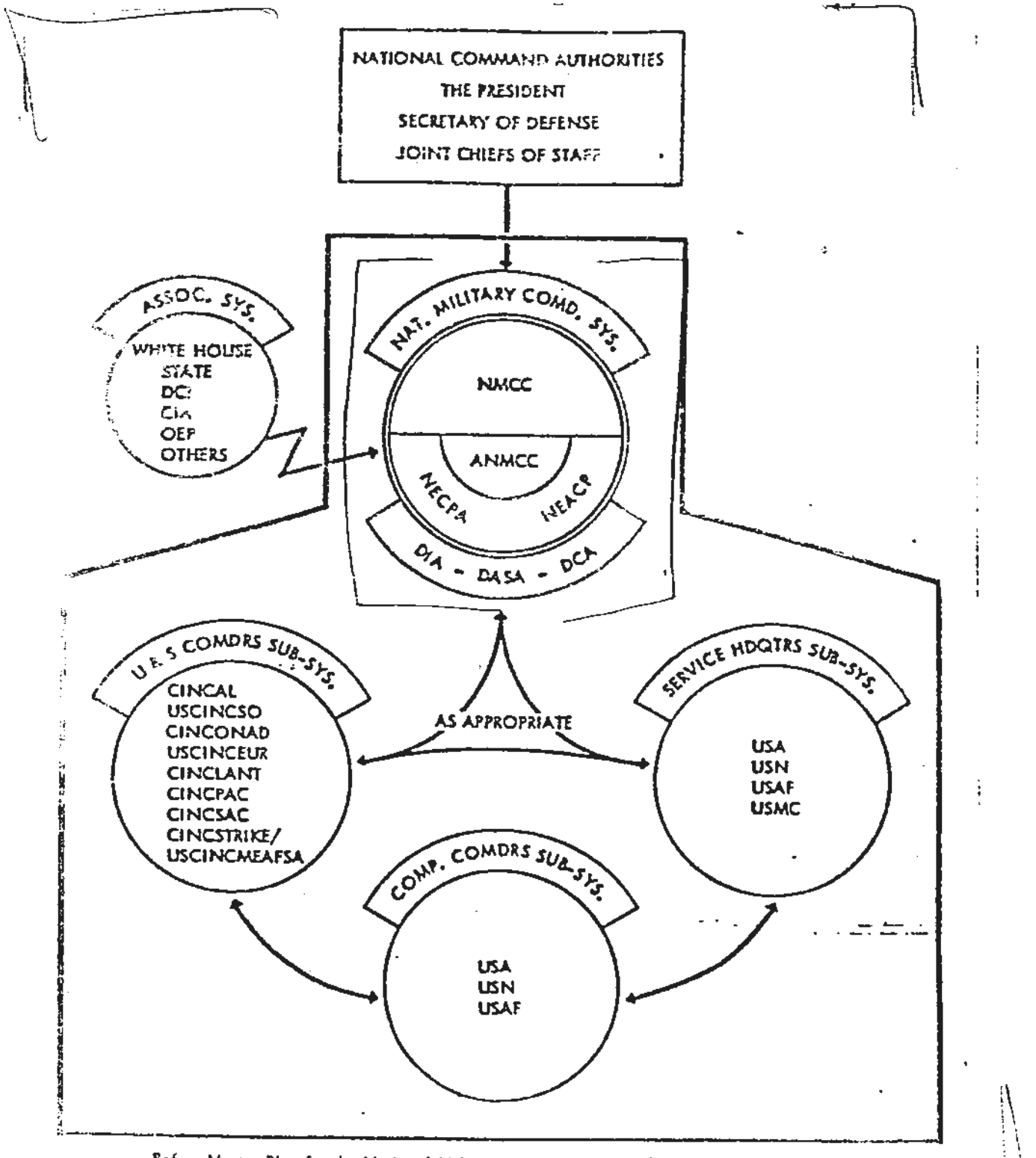
63. (S) JCS 2308/371-1, 17 May 67, JMF 360 (12 Apr 67).

~~(C)~~ The Secretary of Defense did not provide a response to the 1967 JCS recommendations and the clear need to revise the 1962 WWMCCS directive. It was becoming obvious at this point that some positive action had to be taken by higher echelons in DOD. But this did not happen, as will be seen, until combined criticism from several sources in 1970-1971 challenged the system's overall C^2 effectiveness in times of national emergency.

~~(S)~~ By the end of the 1960s, the general consensus was that the unified and specified commands possessed an adequate C^2 capability, and that their systems were appropriately linked to the highest authority--the NCA--through the Joint Chiefs of Staff by way of the NMCS network (Figure 2). The significant improvement to the already existing nerve nodes of the system was the interconnecting of the Air Force-Navy LF-VLF communications net with SAC's Emergency Rocket Communications System (ERCS) to form the highly concentrated Minimum Essential Emergency Communications Network (MEECN). The need for such minimum essential linkage between primary and alternate facilities had been initially recognized in early 1963 when the Secretary of Defense directed a study on how to use the Low Frequency-Very Low Frequency spectrum to meet such requirement. But it was not until 1968 that a procedural plan was developed, and mid-1969 that a centralized direction was established by the Joint Chiefs of Staff. Finally, the MEECN System Engineer was not designated until May 1970--seven years after the original study request.[64]

64. (S) IBM Briefing on the WWMCS, given by V. N. Cook, VP, IBM Corp., Harry Diamond Laboratories, Maryland, 13 Feb 78.

Figure 2 - WORLD-WIDE MILITARY COMMAND AND CONTROL SYSTEM (AT THE BEGINNING OF 1970)



Ref.: Master Plan for the National Military Command System (NMCS), June 9, 1965, DOD Directive S-5100.44

(U) A major ingredient in the deterrence of nuclear conflict had been all along the sought-after capability to direct forces before, during, and after a massive nuclear attack. Within the WWMCCS structure, the collection of systems which could provide this ability was the MEECN. Centralized direction was given to the Director, Communications-Electronics in November 1971.[65] Characteristics such as accuracy, speed of transmission to deployed forces, security, anti-jam capacity, and vertical-horizontal interflow of data were considered vital. As a result, recommendations were made to have these improvements incorporated in five ongoing programs, specifically AABNCP, enhanced VLF system operating from aircraft, survivable satellite system, ELF system, and a message processing program.[66]

(U) The fact that there were problems and difficulties with the WWMCCS was made evident by three contingency episodes in the period 1967-1969--the USS LIBERTY, the USS PUEBLO, and the EC-121 reconnaissance incidents. The first two of these crises are described in some detail in Section III of this study;[67] only a highlight summary is provided here.

(U) When Israel attacked Egypt on 5 June 1967 to begin the 1967 Arab-Israeli War, the USS LIBERTY was standing 12 1/2 miles of the Egyptian coast. She was a naval communications ship under the operational

65. (U) JCS 202/190, 9 Nov 71, JMF 029 (20 Oct 71).
66. DOD Annual Report, FY 1977, p. 179. WWMCCS Handbook, Ch II, p. 2-15, JMF 360 (13 Jun 74),
67. See pp. 95-98.

command of USCINCEUR. Shortly thereafter, the LIBERTY was reassigned to the Commander, 6th Fleet, but without accompanying orders to change position. On 7-8 June, a series of four messages was dispatched to the LIBERTY to move 100 miles from shore. These messages were delayed in reaching the LIBERTY and she was attacked by Israeli air and naval forces. Later investigation showed that the first of the four messages ordering the change of position was released 13 hours before the attack and the final one 3 1/2 hours before the strike. Hence the LIBERTY incident was an instance of communications failure.[68]

(U) The second contingency involved the intelligence ship USS PUEBLO. On 23 January 1968, she was captured by North Korean gunboats. Sophisticated electronics aboard allowed the ship to notify the White House Situation Room of the crisis before the NMCC, CINCPAC, and CINCPACFLT received the word. The problem in this case was the lack of a two-way conferencing among the operational control commander, Naval Forces, Japan, the vertical layers of the chain of military command, and the White House. As a consequence the response time in this case extended to 7 hours as opposed to between 1 1/2 and 5 1/2 in rapid reaction.[69]

(U) As to the third contingency episode, official records reveal that on 14 April 1969, an EC-121 aircraft, while on a reconnaissance mission off the coast of North Korea, disappeared from friendly radar

68. Journal of Defense Research, Crisis Mgmt Issue, May 1977 (Special Issue 77-1) prepared for DARPA by Battelle Columbus Labs, OATSD(AE) Files.
69. Ibid.

screens after being tracked for several hours, and was then intercepted by North Korean aircraft. It was later confirmed that the aircraft had been shot down, with the loss of all crew members. Messages indicating imminent danger took 3 hours, 1 hour and 45 minutes, and 30 minutes respectively to be transmitted to Washington.[70] (See Table 1.)

(U) All three incidents were serious failures in the C^2 area; all three carried great impact because of their implications concerning not only the ability to react rapidly in a crisis, but also what reliability could be expected from the system in the far more sensitive case involving nuclear operations. Even after these episodes, major corrective action came rather slowly. These happenings were perhaps symptoms of the main weakness in the WWMCCS concept during the 1960s: the absence of single agent responsibility.

(TS) In addition to the deficiencies revealed by the three contingencies described above, a general exercise in 1967 (HIGH HEELS 67) to test the entire spectrum of command in a strategic crisis also uncovered a number of weaknesses regarding C^2. The major problems revolved around the capability of forces to respond to full-scale attacks and to ensure the surival of the NCA.

(TS) 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

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70. (TS) CINCPAC Command History 1969, vol IV, pp. 133-134.

TABLE I

Command and Control Performance During Crises, 1967-1968

Crisis Event/Date	C^2 Efficiency/Effectiveness	Comments
M. East War Jun 1967	Unsatisfactory	Signal movement of 6th Fleet took too long (18 hrs). Fortuitous ceasefire within 6 hrs prevented confrontation between US and USSR.
USS LIBERTY Jun 1967	Failure	Delay in sending orders sufficiently ahead of Israeli attack. Normal communications should have been faster and more direct (several hours).
USS PUEBLO Jan 1968	Failure	Response time (7 hrs) too slow. Rapid tri-service conferencing through secure channels not coordinated with NCA.[71]

71. (S) Journal of Defense Research, Crisis Management Issue, May 1977 (Special Issue 77-1).

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 (levels of military alert) were rapid, but the implementation process by CINCs did not insure that the objectives of the uniform readiness conditions could 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.[72]

(U) In the light of these findings, an appraisal by the Deputy Secretary of Defense in mid-1969, stressed the urgent need to improve C^2 and decision-making in time of crisis or war.[73]

(U) Although the period of the 1960s left a legacy of doubts and uncertainties, some new perceptions and ideas developed as a result of the changing strategic relationship between the United States and the Soviet Union shortly before the decade closed. The concepts that had emerged initially during the Kennedy-Johnson Administrations--sufficiency or parity of nuclear weapons and flexible response--became the issues that gave shape to the discussion on nuclear strategy and also to its narrower subtopic of command and control, particularly in the context of a limited nuclear

72. (TS) Summary, WSEG Rpt 123, prepared for SecDef, 8 Jan 68, JMF 385 (4 Mar 67) sec 2A.

73. (TS) Memo, DepSecDef to ASD(SA), 11 Jul 69, OSD files (C3I).

exchange. Continuing questions kept resurfacing about centralization of the command principle and the coordinated effectiveness of the various command centers throughout the period of the late 1960s and into the 1970s. Difficulties that persisted had their roots in (a) the complexity of the C^2 structure that had evolved; (b) the lack of comparability between Soviet and US C^2 systems; and (c) the impossibility to test and predict what would happen in an actual nucler environment situation.[74]

(U) Thus, the problems of C^2 did not change in kind in the decade after 1962. They only became more intractable, particularly since this period brought about the ending of US nuclear superiority. This recognition of Soviet strategic parity made quite apparent the fact that the overall C^2 structure was vulnerable. Some steps were taken through the reordering of the WWMCCS, but improvements, mostly in communications, were hampered by organizational problems. There was refinement of concepts, but the focus was mainly on reorganization, rather than on the creation of a new system or structure to C^2.

(U) Secretary McNamara, on the eve of his departure after seven years in office, had this to say about the unpredictability of the future US-Soviet strategic relationship:

> Many of the tasks we set out for ourselves seven years ago have been successfully accomplished. But, the situation which we foresaw then is

74. (TS) IDA Study, S-467, The Evolution of U.S. Strategic Command Control and Warning, 1945-1972 by L. Weinstein, C. D. Cremeans, J. K. Moriarty and J. Ponturo, June 1975, pp. 373-375, OSD files.

> now well upon us . . . . The problem now confronting the nation is how best to ensure our safety and survival in the years ahead [when] each country will have the residual offensive power to break through the defenses of the other, and desroy it regardless of whether the other contry strikes first.[75]

WWMCCS Developments in the 1970s

(U) By 1970 it was generally considered that the unified and specified commands possessed an adequate C^2 capability and that these systems were appropriately linked to the highest authority through the Joint Chiefs of Staff via the NMCS, with its facilities and networks. However, additional improvements to WWMCCS were necessary to bring about greater cohesion and translate policy into action.

~~(C)~~ It may be remembered from developments in the early 1960s, when the outlines of the National Military Command System (NMCS) began to take shape, that a JCS recommendation to augment and redesignate the original Joint Command and Control Development Group (JCCDG) as the Joint Command and Control Requirements Group (JCCRG) met with approval by the Secretary of Defense in May 1962. In essence, this body's function was to exercise coordination and control of the JCS responsibilities connected with the NMCS, and basically to convert policy and operational guidance

75. (S) Statement of SecDef R. S. McNamara before the House Subcom on DOD Appropriations, FY 1969-1973 Defense Program and FY 1969 Defense Budget, 22 Jan 68 Draft, pp. 45-47.

into functional specifications of requirements, under the supervision of the Director of Operations (J-3).[76] Further, in 1966, in an apparent follow-on action, JCCRG responsibilities were functionally realigned to give J-3 a predominant role.

~~(S)~~ By February 1970, that organization's responsibilities were incorporated into J-3 under the Deputy Director, C^2, and the JCCRG was eliminated.[77] Thus, the J-3, besides its role in overseeing the development of the NMCS, now acquired overall supervision of the remainder of the WWMCCS which included functional compatibility, doctrinal aspects, and standardization of subsystems, as well as any requirements of the unified and specified commands. The result was total consolidation of all C^2 responsibilities within the Joint Staff under a single head--the Operations Directorate.

~~(S)~~ As mentioned in the preceding section the three contingency episodes, USS LIBERTY, USS PUEBLO, and EC-121 aircraft, were serious failures in command and control. While not involving strategic forces, the episodes carried great impact because of their implications, particularly the absence of rapid response. Yet, efforts to correct WWMCCS deficiencies came rather slowly. The first attempt to look closely at the problems was a study by the Weapon Systems Evaluation Group-Institute of Defense Analysis (WSEG-IDA) presented in 1970 to the Joint Chiefs of Staff at their request for an assessment.[78] It pointed out that

76. See p, 18.

77. (S) CM-4915-70 to DJS, 20 Feb 70, Att to JCS 1977/30, 25 Feb 70, JMF 020 (9 Feb 70).

78. (S) WSEG Staff Study 153 (IDA Study S-362), Study Plans for C^3 Problems, Feb 1970, App B.

the overall framework of WWMCCS was more a loosely knit federation of self-contained subsystems than an integrated, interoperable network.[79] The study made recommendations for changes to improve performance through interfacing facilities, particularly ADP and communications, as a result of failures during crisis situations. This approach, in WSEG's view, would bring about both greater cohesion and faster response to the WWMCCS in general.[80]

(S) Then, in July 1970 came the Blue Ribbon Defense Panel Report which criticized the loose, decentralized management of WWMCCS. Some of the deficiencies were outlined as follows:

> The telecommunications [including command and control] requirements of the Department are largely being met. . . . However, duplication and inadequate interoperability, military department parochialism, and divided and weak central management from the Office of the Secretary of Defense, have reduced the efficiency and effectiveness of the procurement and utilization of telecommunications resources.[81]

(U) Although no immediate changes took place, the report provided additional impetus to JCS efforts

79. (S) WWMCCS and the JCS, Aug 1974, p. 16.
80. (S) WSEG Memo for CJCS, 3 Mar 70, Encl to JCS 2308/359-4, 4 Mar 70, JMF 360 (29 Nov 69).
81. (TS) Blue Ribbon Defense Panel, Rpt to the Pres and the SecDef, "National Command and Control Capabilities and Defense Intelligence," July 1970, pp. 10, 145. Henceforth referred to as Blue Ribbon Report.

to transform a number of WWMCCS requirements from "drawing board" studies into reality, with the clear approval of OSD. In essence the Panel's main thrust was that "the responsibilities now delegated to the Joint Chiefs of Staff by the Secretary of Defense to serve as military staff in the chain of operational command with commanders in the field should be assigned instead to a single senior military officer," with the Chiefs of the Services remaining advisers in long-range military planning, and continuing to run their individual Services.

~~(S)~~ Following in February 1971, another WSEG-IDA report (No. 159) was submitted emphasizing again the weakness of decentralization, and, with the exception of the NMCS, pointing to the fact that most subsystems were serving individual command, department, or agency needs, rather than focusing on the higher priority mission of the NCA. This finding caused "consternation in the OJCS because of the bleak but rather accurate picture it painted of the WWMCCS."[82]

~~(C)~~ Finally, a report by the House Armed Services Investigating Subcommittee, 92d Congress, appeared in early May 1971 as a rather severe criticism of the USS PUEBLO and EC-121 incidents. A portion of the report pointed out the following:

> Communications systems are only as good as those who operate them in the command and decision-making process. The fragmented and overlapping responsibility for communications within the Department of

82. (TS) WSEG Rpt 159 (incl IDA Rpt R-172), Command, Control and Communications Problems, 1971 (10 vols). See Appendix C of WWMCCS and the JCS, Aug 1974, p. 18.

> Defense has resulted in inefficient and ineffective management of that essential defense support function.
> . . .
> (b)(1) [redacted]
> Unresponsive communications systems of the Department of Defense delay the execution of command decisions of information to command officials in critical international situations.[83]

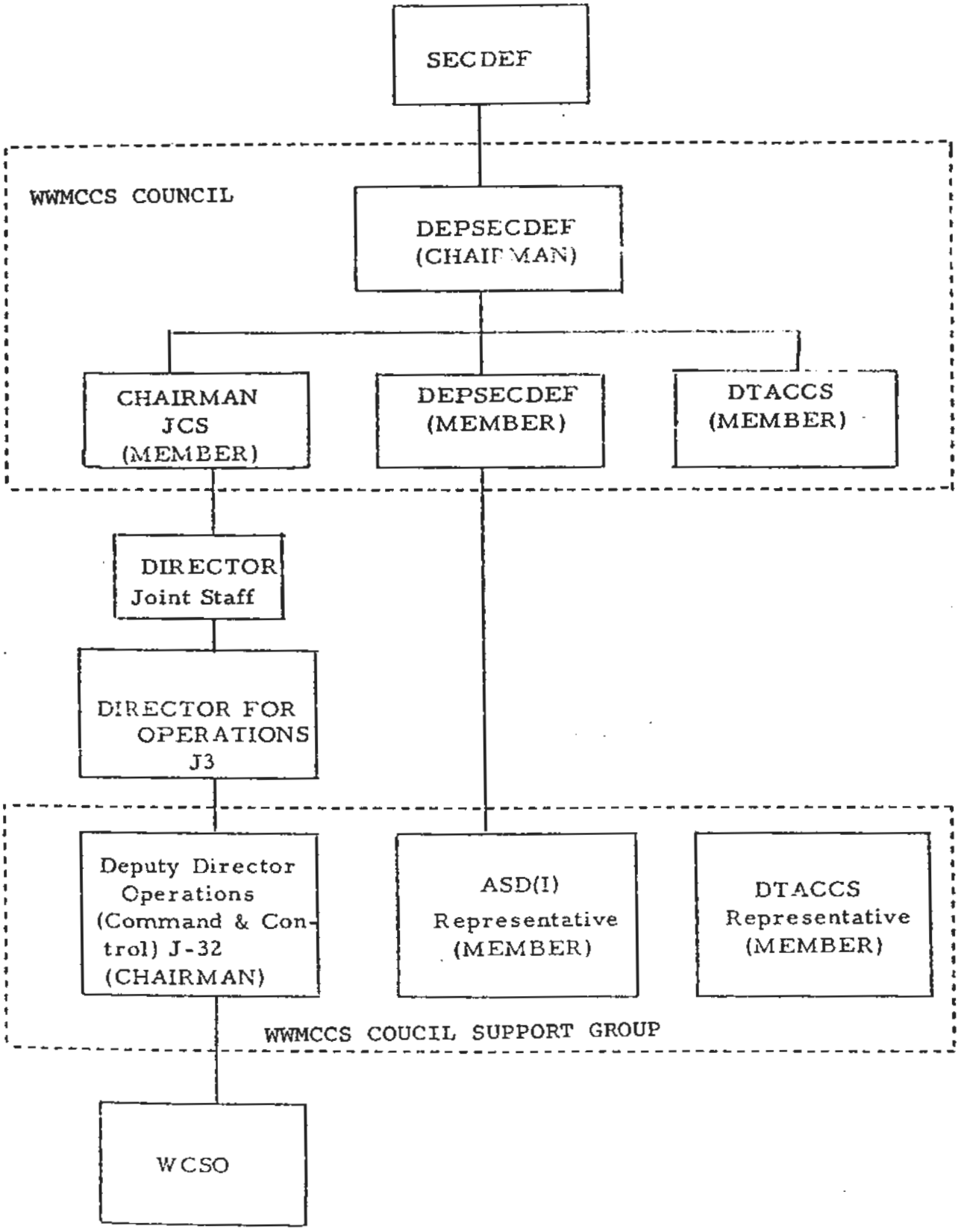
(U) All this open criticism by the WSEG Studies, Blue Ribbon Panel Report, and Congress concerning the difficulties and shortcomings of C^2 during 1970 and 1971 began to draw top level management attention in DOD. Earlier JCS proposals made in 1967 to revise the original 1962 WWMCCS directive (see p. 39) did not produce a response by OSD. Matters, however, had now reached a point of urgency for positive action. The result was a personal dialogue between the Deputy Secretary of Defense, Mr. David Packard, and Admiral Moorer, Chairman of the Joint Chiefs of Staff. After a Joint Staff briefing on 3 September 1971, Deputy Secretary Packard and Admiral Moorer decided an entirely new management arrangement was needed. The vehicle for such new direction would be a revised version of the 1962 WWMCCS Directive 5100.30.

83. "Inquiry into USS PUEBLO and EC-121 Plane Incidents," 91st Cong, 1st sess., H. Com on Armed Services, 1971, p. 1609.

(U) As a result of their mutual interest, the Deputy Secretary and the Chairman worked together in the fall of 1971 to rewrite the directive.[84] Mr. Packard sought to stress the primacy of the needs of the NCA as expressed through the NMCS, and he wanted the Chairman, Joint Chiefs of Staff, to be responsible for running the NMCS. The new directive, issued in December 1971, differed from the 1962 version in several principal respects.[85] 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, make recommendations to the Secretary of Defense to insure the responsiveness, functional interoperability, and standardization of WWMCCS. Second, the directive included provision for an Assistant to the Secretary of Defense for Telecommunications,[86] 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. Third, a WWMCCS Council, make up of the Deputy Secretary of Defense, the Chairman, Joint Chiefs of Staff, 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.[87] (Figure 3)

84. (S) WWMCCS and the JCS, Aug 1974, p. 20.
85. DOD Dir 5100.30, 2 Dec 71.
86. DOD Dir 5137.1, "AsstSecDef for Command, Control, Communications and Intelligence," 11 Mar 77.
87. DOD Dir 5100.30, 2 Dec 71.

Figure 3 - ORGANIZATION OF WWMCCS COUNCIL AND SUPPORT OFFICE



(S) Although Deputy Secretary Packard and Chairman Moorer seemed to have worked out a mutually satisfactory understanding on the new WWMCCS directive, there had been some disagreement in the drafting of the new directive on several major aspects of the document. The first had to do with the redefinition of the NCA to exclude the Joint Chiefs of Staff, who had been a part under the previous directive. The decision apparently was based on an OSD legal counsel's opinion that the National Security Act of 1947 implied that only the President and the Secretary of Defense had control of US military forces, in affirmation of civilian primacy and the subordinate role of the military.[88]

(S) Another major issue concerned the redefinition of the WWMCCS insofar as it affected resource management responsibilities of the Military Departments. Still another most sensitive point was the apparent exclusion of the Chiefs of Services from the chain of command by making the Chairman of the Joint Chiefs of Staff, "representing the Joint Chiefs of Staff," an independent agent (b)(1) for the implementation of the orders of the NCA for Single Integrated Operations Plan (SIOP) execution. The Service Chiefs, arguing against such special responsibilities, wanted the Chairman to be designated Executive Agent, acting after consultation with them.[89] The final point was that of responsibility for development and evaluation of WWMCCS requirements. The new directive assigned this responsibility to the Chairman, so the distinction once more was that of the Services vis-a-vis the Chairman. How serious these matters were at the time is difficult to

88. (S) WWMCCS and the JCS, Aug 1974, p. 24.
89. Ibid., p. 25.

determine. It was believed by the Military Services that Congress did not envision the Chairman, Joint Chiefs of Staff, in any role apart from the corporate body and that the law was explicit on this point.[90] Nevertheless, the combined support for the directive by the Deputy Secrtary and the Chairman of the Joint Chiefs of Staff assured that the new thrust given would produce favorable results for WWMCCS in the time ahead. The directive was finally signed by Mr. Packard on 2 December 1971, and remained essentially the document they both conceived it to be.

(U) Looking at the new directive as a whole, one could see that the primary mission of the WWMCCS regarding NCA remained unchanged, except for the redefinition of the role of the Joint Chiefs of Staff; it adopted an integrated system approach for C^2 through internetting, using the latest technology of computer communications; and it permitted the system to evolve further on a project-by-project basis, all under the aegis of the WWMCCCS Council, providing recommendations and findings to the Joint Chiefs of Staff. The Chairman of the Joint Chiefs of Staff was to focus on the NMCS, manage and develop it, and since C^2 systems of the unified and specified commands were connected to it, he had to sanction their WWMCCS requirements, programs, and capabilities. A diagrammatic representation of how the WWMCCS organizationally radiated from its nucleus outward is reflected in Figure 4.

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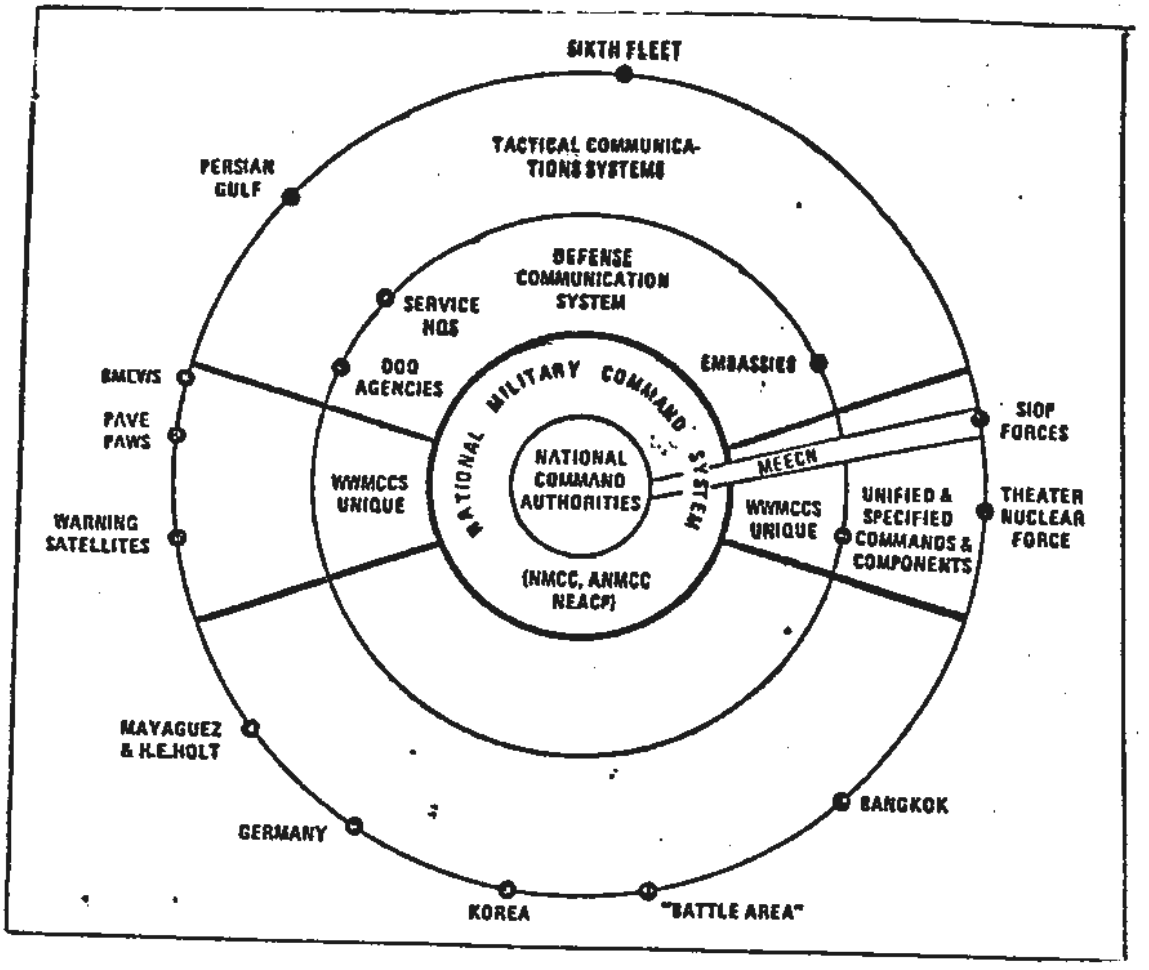
90. (S) WWMCCS and the JCS, Aug 1974, p. 26.

Figure 4 - WWMCCS NETWORK



The WWMCCS Council

(U) As noted earlier, the 1971 version of the directive provided for a focal element in the system, known as the WWMCCS Council, to review and evaluate the system's effectiveness. Moreover, it was charged with the responsibility of recommending to the Secretary of Defense matters relative to planning, programming and budgeting.

~~(C)~~ The first meeting of the Council was convened on 13 December 1971 and thereafter meetings were held on the average of once a month. In February 1972 a group within the Council, designated the WWMCCS Council Support Group, was established to identify key issues and decision alternatives and to bring them to the attention of the Council. The Support Group, meeting weekly, had a membership consisting of representatives from the same offices as the principals, namely, CJCS, DATACCS, and ASD-Intelligence. (Figure 3, p. 54.) Many of the early Council activities revolved around the establishment of the Council Support Group, and the priority of key WWMCCS issues.[91]

~~(S)~~ One of the first matters considered by the Council was the development of an Advanced Airborne Command Post (AABNCP). Although initially recommended by the Joint Chiefs of Staff in 1969, this project was not given serious consideration until 1971.

(U) The matter arose as a result of the need to maintain continuity of C^2 over military forces at high levels of nuclear exchange which precipitated improvements in the capabilities of both the NEACP and

91. ~~(S)~~ WWMCCS and the JCS, Aug 1974, pp. 25-26.

the SAC alternate command posts. This culminated in developing several E-4A aircraft, specially equipped with the latest electronic gear--the AABNCP--to remedy limitations of space, endurance, range, and vulnerability to nuclear effects associated with the EC-135 aircraft.

~~(S)~~ The Joint Chiefs of Staff had forwarded the plan for such concept to the Secretary of Defense in May 1969, and after considerable revisions, it was approved in December 1971. It was to provide seven modified Boeing 747s (E-4As), the first two to be accepted by the Air Force by FY 1974.[92] Principal refinements incorporated in the AABNCP were:

Increased communications capability,

Enhanced hardness against electromagnetic pulse,

Larger battle staff area,

Increased endurance,

High-power Very Low Frequency (VLF) transmitter,

Low Frequency/Very Low Frequency (LF/VLF) connectivity to nuclear-capable forces, equipped with greater resistance to jamming and nuclear-induced propagation effects,

An advanced airborne satellite communications terminal through the Defense Communications System (DCS) to provide secure voice and data to major commands at key sites around the world.[93]

~~(S)~~ Another recommendation, however, by the Council later in FY 1975, reduced the AABNCP C^3 capability

92. (S) WWMCCS and the JCS, Aug 1974, p. 12.
93. DOD Annual Rpt, FY 1977, p. 178.

because of budgetary considerations. Due to projected cost growths, they determined that the number of planned aircraft be limited to six, and that they be managed from a single location (Offutt AFB, Nebraska). The first two planes were accepted by the Air Force in 1973, but because of rising costs, there were doubts as to whether future production would reach the total of six, as planned.

~~(C)~~ Another important proposal made by the WWMCCS Council during the 1972-1973 period was the need to proceed with construction of an expanded National Military Command Center as the principal element of the NMCS. It may be remembered that the NMCS, as perceived in the first half of the 1960s, remained something of an incomplete solution to the problem of national strategic C^2. It is true that its justification rested primarily on grounds of providing options for on-the-spot delegation, relocation, or other conceivable means for continuity of command that might otherwise be foreclosed. But dissatisfaction persisted over the level of confidence in the reliability of the national strategic command process. This basic policy issue remained, and in fact reappeared in the assessments of the early 1970s.

~~(S)~~ Through the Council's recommendations and followup, NMCS capabilities improved considerably, through operational experience, procedural refinement, and equipment upgrading. The NMCC itself was provided with expanded automatic data processing support, which became the nucleus of an enlarged Joint Reporting Structure (JRS); and the ANMCC was further hardened.

(U) Other actions by the WWMCCS Council during the 1972-1973 period included the selection of a plan

to phase in the new WWMCCS Automated Data Processing Program (ADP), and the establishment of an airborne command post for the Commander in Chief, Atlantic (CINCLANT) from within existing Worldwide Airborne Command Post (WWABNCP) resources. In August 1973, the Council recommended that adding ADP to the AABNCP be held in abeyance pending further study by the Air Force and the users. During 1972 and 1973 there were several briefings given on the status of the WWMCCS ADP program, covering such items as program status, costs, milestones, and future objectives (including the management and standardization of the software). Also, in February 1975 the Council reallocated WWMCCS ADP from the US Army in the Pacific to the Navy for operation of the Ocean Surveillance Information System (OSIS) by the Commander, Pacific Fleet (CINCPACFLT).[94] Parallel to this, research efforts explored ways in early 1976 to improve the security aspects of the computer network and make it useful for intelligence purposes.[95]

WWMCCS Objectives Plan

~~(S)~~ The authors of the revised directive of 2 December 1971 apparently recognized that the elimination of a concept of operation from the new version would require the publication of a separate WWMCCS Objectives Plan. The document, however, provided no specific guidance for such a plan. Fulfilling this intent, the Joint Chiefs of Staff developed a plan in 1972 which measured objectives against proposed C^2 improvements. They submitted the plan to

94. (S) WWMCCS and the JCS, Aug 1974, p. 15. (S) WWMCCS Rpt to Senate Appro Cm, Jul 76 prepared by Dir DTACCS (OSD), OSD Files.

95. DOD Annual Rpt, FY 1977, p. 180. WWMCCS Hand-Book, Ch III, pp. 3-1 to 3-12, JMF 360 (13 Jun 74).

the Secretary of Defense on 25 September 1973 for approval, and recommended that it be forwarded to the Services, CINCs, Defense agencies and others for planning purposes. The plan set forth objectives, based on operational requirements, to guide development of the WWMCCS, together with an enumeration of issues needing further study and a list of operational requirements supporting objectives for use in preparing the C^2 portion of other joint strategic planning system documents. All these points, of course, were in harmony with the requirements of DOD Directive 5100.30. After approval by the Secretary of Defense, the document was issued as the WWMCCS Objectives and Management Plan.[96]

~~(S)~~ Predicated upon the basic military objectives of the United States as stated in the Joint Strategic Objectives Plan for FY 1979 through 1986 (JSOP FY 1979-1986), the WWMCCS Objectives translated as follows:

1. Support an assured retaliatory capability.

2. Support a credible deterrence posture against all nuclear and conventional conflict levels.

3. Provide adequate C^2 to manage rapidly crises and to fight effectively at all conflict levels.

4. Assure that enemy escalation to a broadened level on conflict will offer no relative advantage.

5. Permit tailoring of US response in accordance with US values (e.g., minimize collateral damage).

96. (S) JCSM-420-73 to SecDef, 25 Sep 73; Dec On JCS 2308/571, 24 Sep 73; SM-433-73 to CINCs; SM-434-73, to Service Chiefs; SM-435-73 to Defense Agencies; all dated 25 Sep 73, JMF 360 (12 Sep 73). (S) JCS Pub 19, WWMCCS Objectives and Management Plan, Apr 77, vol III, WWMCS Objectives, 2 May 77.

6. Minimize the probability of conflict initiation as a result of C^2 inadequacies.

~~(C)~~ These ojectives were the key planning considerations for the continued development of the WWMCCS in each of its five elements (i.e., command facilities, ADP, communications, warning systems, and executive aids).[97] Apart from these purely military goals, however, there were other broad and equally pervasive directions for overall improvement which fell in the category of objectives. These were:

(a) A planning and management structure to guide systematic research, development and acquisition of C^2 resources.

(b) Improved essential intelligence communications with a more widely distributed interface among users, and means of interaction with allies.

(c) Additional capability to ensure positive control of nuclear forces. This included more survivable electronic countermeasures for satellite communications, submarine communications, and procedures for preserving continuity of command.

(d) Improved security of military, national and allied voice, record and data communications.

(e) A more effective evaluation system allowing testing and determining strengths and weaknesses for timely adjustments and corrections.[98]

(U) With these management improvements outlined in September 1973, various changes were made in the next four years, a new sense of direction was

97. JCS Pub 19, vol III, pp. I-2 to I-3.
98. DOD Annual Rpt, FY 1977, p. 175.

established, but still without a clear-cut structural or "architectural" goal for the NMCS as far as future development planning was concerned.[99]

Communications

(U) An adequate and secure system of communications was not only essential for the administration of national defense in peacetime; it was also vital to the C^2 of military forces in wartime. The evolution in such capability thoughout the commnications spectrum from the mid-1960s on brought about startling technological improvements (see Appendix E). This encompassed message handling by means of automated networks, increased use of satellites, secure voice systems, and greater survivability through the implementation of the Minimum Essential Emergency Communications Network (MEECN), briefly discussed in an earlier account. All these were broad ranging changes from individual command to worldwide dedicated forces making communications more responsive to the global needs of the WWMCCS, particularly by opening avenues for quick reaction to national level decision-makers.

~~(S)~~ In the decade after 1965, satellites played a vital role in detecting and monitoring potential adversary force movements [redacted] (b)(1) [redacted] in the event of need to respond to crises or emergencies. The Air Force Satellite Communications System (AFSATCOM) was one such program element which would use a space segment of several special

99. (S) JCSM-420-73 to SecDef, 25 Sep 73; Dec On JCS 2308/571, 24 Sep 73; JMF 360 (12 Apr 73).

communications carried on "host" satellites (including the Navy's fleet satellite communications), placed in orbit for other missions, plus airborne and ground terminals. Increased ability in this field was to be provided in an evolutionary fashion and in phases.[100]

(U) Overall effectiveness in the WWMCCS network had to also consider essential links with the seaborne arm of the US forces. In that respect, the MEECN subsystem, mentioned earlier, had by 1976 interconnected communications with US ballistic missile submarines (SSBNs) by means of the Submarine Broadcast System (SBS). This consisted of several VLF and LF transmitters at stations and on aircraft located throughout the world. It provided peacetime communications that was not thought to be as survivable as the SSBN force itself. The so-called Take-Charge-And-Move-Out (TACAMO) Airborne Communications Relay Station, on the other hand, consisting of an EC-130 aircraft with VLF transmitters and a trailing wire antenna, was the survivable element of the SBS. Further, in order to maximize the survivability of communications with the NCA, Navy transmitters, including TACAMO, could also be reached via links involved in directing SAC forces.

(U) The disadvantages of LF and VLF communications stemmed from their vulnerability and the requirement for a submarine to place an antenna at or near the surface to receive a message, thus increasing its exposure to attack. Because of this, studies and tests were undertaken to develop Extremely Low Frequency (ELF) capabilities, since these could penetrate sea

100. (S) JCSM-420-73 to SecDef, 25 Sep 73; Dec On JCS 2308/571, 24 Sep 73; JMF 360 (12 Sep 73).

water to depths of several hundred feet and submarines could be better protected. The project associated with this effort was named SEAFARER (previously known as PROJECT SANGUINE).[101]

~~(S)~~ On 23 February 1976, the Joint Chiefs of Staff approved a revised communications plan, initially drafted in April 1972, which provided emergency presidential communications, including satelllites, with a number of major military commanders worldwide.[102] During periods of natural disaster, other contingencies, and limited or general war, the President and/or his advisory staff could be forced to relocate outside the Washington area. If an emergency arose, and he happened to be traveling, the White House Communications Agency (WHCA) would be the element to provide him with special communications support. The WHCA had established Communications Contingency Teams (CCTs) for such purpose. (b)(1)

[redacted]

103

101. (S) WWMCCS and the JCS, 25 Aug 74, p. 37, and Annex L. WWMCCS Handbook, p. III-4, JMF 360 (13 Jun 74).

102. (S) SM-135-76 to Service Chiefs, CINCs, DCA and DIA, 23 Feb 76, JMF 603 (29 Sep 75). Rev JCS Comm Plan 1-72, 13 Apr 76, same file.

103. (S) Rev JCS Comm Plan 1-72, 13 Apr 76, same file.

(TS) An important aspect of the revised JCS Communications Plan was the apparent ability for all major centers operating within the framework of WWMCCS to terminate or relay secure teletype, full-duplex transmissions from and to deployed CCTs by means of satellite links.[104]

WWMCCS Architectural Plan

(U) Projections for the decade ahead began in December 1973, when the Chairman of the Joint Chiefs of Staff instructed the Director, Defense Communications Agency (DCA), to produce what became an NMCS "target architecture" for 1985 and a transition plan to achieve the desired objective. The effort was oriented toward "design for continued improvements in NMCS capabilities to support the NCA in crises and low-level conflicts . . . ." This project became a major effort resulting in the establishment of a task force of 65 professionals.[105]

(U) Following the issuance of the second volume of the NMCS Master Plan efforts were made to obtain JCS sanction for the NMCS target architecture, but they were not successful because there was disagreement among the Services about who was responsible for funding NMCS modifications. They simply could not agree on the architecture. Because of the complexities of detailed coordination among engineers and the Services after the architecture was circulated, the IBM

104 (S) Rev JCS Comm Plan 1-72, 13 Apr 76, JMF 603 (29 Sep 75).

105. (C) WWMCCS Council Dec Memo 2-74, 18 Apr 74, Att to JCS 2308/594, 19 Apr 74, JMF 360 (12 Apr 74). Also, file on selected documents on WWMCCS Architucture 1972-1976, Summary portion, OSD/C3I files, Jun 78.

Corporation was invited after an industry-wide solicitation by the Council at the end of 1973 to provide guidance concerning the future of WWMCCs. The IBM effort was to configure the "architecture" on a 10-15 year projection and develop a transition plan to achieve the desired technical efficiency at an initial cost of $10 million for study. The recommended improvements which were reflected in the transition plan were not, however, sufficiently clear to answer questions about proposed new capabilities. The Joint Staff and the Services, therefore, only reviewed it for what they considered essential.[106]

~~(C)~~ During the period 1973-1974, several approaches were discussed by the Council as to how a balanced program for WWMCCS could be achieved within the broadest possible framework. A clearer perspective of how such program should evolve in the future became necessary. As a result, the Council sought out a means of developing "an architectural plan" by contractual arrangement. The selection of the Architect was awarded and a contract was executed with the IBM Corporation in February 1974. The contract provided for the development of an implementation plan for WWMCCS, achievable by 1985. The aim was to meet the operational requirements and threat environment of this entire period. The Council also recommended the establishment of a WWMCCS System Engineer (WSE) to

106. (C) WWMCCS Council Dec Memo 2-74, 18 Apr 74, Att to JCS 2308/594, 19 Apr 74, JMF 360 (12 Apr 74). Also, file on selected documents on WWMCCS Architecture 1972-1976, Summary portion, ODS/C3I files, Jun 78.

provide integration and technical guidance. After 1974, a major part of the Council's time was spent in evaluating and deliberating on the various documentated products from the contractual effort. This review included deliberations and tentative decisions of varying architectures for crisis management, theater conventional-nuclear war, general war, and limited nuclear war options.[107]

(U) The importance of this architectural plan was apparent in the FY 1977 annual Defense Department Report statement by the Secretary:

> In general, C^3 resources have been introduced sporadically in the past as a quick response to an increased threat, or to take advantage of suddenly available technology . . . in recognition of this situation, a decision was made to develop an architecture, in effect a master plan for the WWMCCS.[108]

Essentially, the WWMCCS Architectural Plan anticipated the requirements for future C^2 activities from the viewpoint of the NCA. It was intended to provide the NCA with a decision-supporting mechanism attuned to the realities and requirements of the late twentieth century. It was a framework for long-term system development. The plan envisioned a cohesive system in

107. (C) WWMCCS Council Dec Memo 2-74, 18 Apr 74, Att to JCS 2308/594, 19 Apr 74, JMF 360 (12 Apr 74). Also, file on selected documents on WWMCCS Architecture 1972-1976, Summary portion, OSD/C3I files, June 1978.

108. DOD Annual Rpt, FY 1977, p. 227.

place by 1985 and beyond through an integrated structure approach that would start in FY 1977.

~~(C)~~ As noted earlier, the WWMCCS Council was responsible for initiating the architectural program, for providing continuing guidance and decision-making, and for chartering the WWMCCS System Engineer (WSE). Improved capabilities were to be time-phased so that the highest priority set of improvements could be achieved in an evolutionary manner. The system had to be flexible enough to cope with changes in the US and the world defense environment through that date, and also had to be able to incorporate identifiable changes in technology, projected even beyond that date. The plan laid out an overall framework for an integrated and interoperable system within the US defense community and with links to NATO, other allied headquarters, and even the Soviet Union through the "hot line."

(U) The architectural plan was formally reviewed by the WWMCCS Council in June 1976, and from that point on the WSE was actively engaged in the actions that supported the Council's decisions. Since the plan itself existed only in a highly classified set of documents,[109] only the most salient features are outlined here. Some idea of its scope and its ultimate effect on command and control can be gained through an understanding of how the plan developed.

(U) The first step in the development process was to research and document the operational military

109. (S) DOD Dir 5100.79, 21 Nov 75. (S) JCS 2308/661, 15 Aug 75, JMF 360 (8 Apr 75). For selected parts of the documentation, see Appendix G at the end of this volume.

environment in which the system had to operate. The major factors considered were the national defense policies; the projected US military force structure; the projected enemy force structure and weaponry; the national-level decisionmaking process; and the definition of WWMCCS structure and boundaries.[110] The national defense policies under which military operations would be conducted in the future were established by reviewing the historical evolution of defense policy, the DOD policy guidance documentation, and the record of consultation with many elements within the DOD, State Department, and the broader defense community of advisers. The results of these reviews were organized into a spectrum of policy alternatives, and were examined by the WWMCCS Council.[111] The outcome was an affirmation of national policy objectives to:

Support a deterrence posture at all levels of crisis and/or conflict.

Control and limit escalation in crisis or conflict to deny any enemy a relative advantage.

Maintain adequate command of forces to fight effectively at chosen levels.

Tailor US-Allied response in accordance with US values, namely, minimize collateral damage.

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110. Eleventh Rpt, Exec Overview of the WWMCCS Architecture, IBM Corp, Arlington, Va., IBM Contr No. 93-076-0191A, 4 Jun 76.

111. Interv, author with Dr. C. Johnson, IBM Corp., WWMCCS Engineering Off., Arl., Va., 10 Aug 78.

Provide capability to shape responses in such manner as to force the enemy to terminate and negotiate at the lowest possible level of escalation.[112]

~~(C)~~ In a series of working sessions between the WWMCCS Support Group and the Architect, a recommendation was made in mid-1976 to the Council to divide the architectural plan into two major segments:

The Selected Architecture (see Appendix G, pp. 139-145 and Figure 5), "consisting of those high priority, additional capatilities which were technically feasible to implement by 1985 . . . ." In addition, two R&D programs were included "to further clarify some decision issues. This segment had an estimated cost for a 10-year program of $1.2 billion."[113]

The Long Range Architecture (also see Appendix G), "consisting of those lower priority capabilities which could be implemented post-1985, plus capabilities not technically feasible to implement for 1985, and capabilities which could be added if the selected architecture R&D programs were successful." The cost of this segment was $2.1 billion, for an estimated 15-year program.[114]

~~(S)~~ In June 1976, a joint overall assessment of the architectural plan was conducted by the members of the WWMCCS Council and the System Architect's organization, and certain findings emerged which emphasized a positive and forward thrust in the

112. (S) WWMCCS Architectural Plan, JMF 360 (18 May 76).

113. Development of WWMCCS Architecture (Summary), p. 8, from selected documents on WWMCCS Architecture, 1974-1976, OSD-C3I files.

114. Ibid.

(b)(1)

system as a whole. The first of these findings indicated that the selected architecture could meet all the technical requirements by FY 1985, as outlined in the plan. This step would significantly improve the capability of WWMCCS in all stages of crisis and conflict. (b)(1)

(b)(1)

(U) The second finding pointed out that the WWMCCS architecture satisfied a very high proportion of the required operational capabilities (ROCs) included by the unified and specified commands, Defense agencies, and Military Departments in their command and control master plans.[116]

~~(C)~~ Thirdly, the selected architecture faced only "a few moderate technical risks" because none of the capabilities in the plans required technological breakthroughs. But, a difficult, continuing system engineering task ahead had to be accomplished. A major facet of both that task and the implementation process was to achieve interoperability among the WWMCCS-dedicated and supporting communications systems.

115. (S) Eleventh Rpt, Exec. Overview of the WWMCCS Architecture, IBM Corp, 4 Jun 76.

116. Submitted in accorcance with JCS Pub 19. Those ROCs not satisfied by the architecture were also not yet validated by the JCS. (S) Eleventh Rpt, Exec. Overview of the WWMCCS Architecture, IBM Corp, 4 Jun 76.

(U) Fourthly, the continuing architectural maintenance, system engineering, and implementation efforts represented a significant management challenge. To this purpose, continuing central focus on the part of the WWMCCS Council was essential if the objectives of the architecture were to be achieved, as well as its monitoring of the funding process. Funding continuity was also crucial if WWMCCS programs were to survive the competitive process of planning, programming and budgeting.

~~(C)~~ As a fifth and final point, estimates indicated that the selected architecture would require a funding increment of approximately $1,153 million over the base line during the period FY 1978-1985. This represented an increase of approximately 12 percent over the projected funding of $9,870 million in the baseline for the same period.[117]

(U) An overall historical perspective of the WWMCCS is graphically portrayed in Figure 6, p. 78.

C2 Performance During Crises

(U) A number of crises during the 1970s involving use of military force have tested the performance of the NMCS apparatus under pressure, and provided both a measure of defense readiness and command and control capability to relay orders to the field by civilian decisionmakers and military commanders. These crises are examined in some detail in Section III of this study, but a brief summary account of the outcome of each is presented in the following table:

117. (S) Eleventh Rpt, Exec. Overview of the WMMCCS Arthitecture, IBM Corp, 4 Jun 76.

TABLE II - Command and Control Performance During Crises 1973-1976

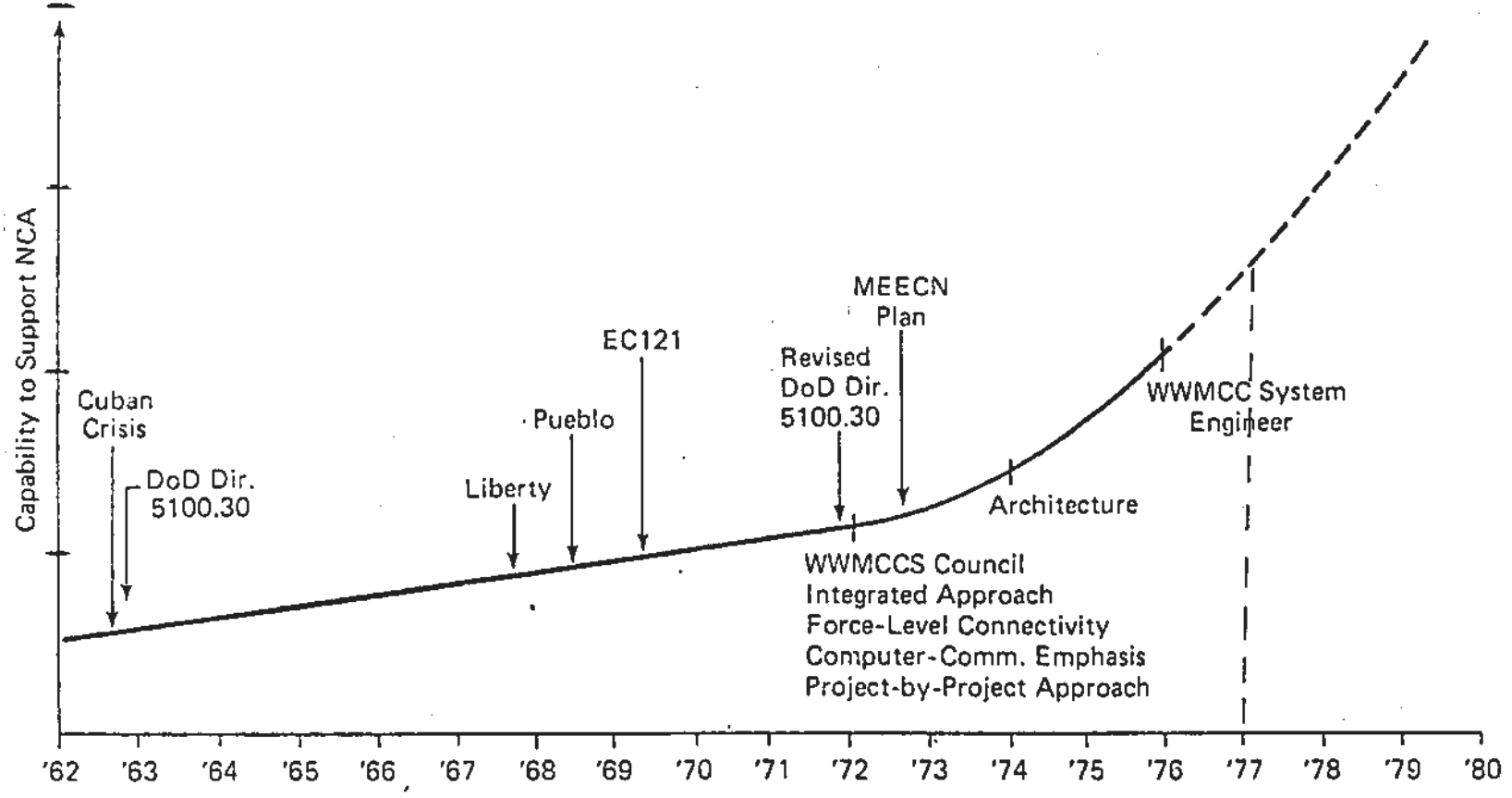
Event	Performance	Comment
M. East War-October 1973	Success	Careful contingency planning and coordinated action between JCS and USEUCOM. Fast moving unilateral US response.
Cyprus War-Jul 1974	Success	Timely warning permitted detailed planning and exchange between two allies. Communications, intelligence, staffing nearly perfect.
Cambodia Evacuation-Apr 1975	Success	2-year planning took 2 hrs, 23 min.to execute. Excellent coordination between military and Embassy Staff.
Saigon Evacuation-Apr 1975	Partially effective	More than 2 commanders plus ambassador. Secure voice conferencing with NCA/NMCC created various perceptions. Ambiguous C2 situations created because of lack of secure communications between senior commands involved in Embassy's final evacuation.
SS MAYAGUEZ Rescue-May 1975	Success	Decisionmaking mechanism between field forces and NCA worked well. Rapid response effective.

TABLE 2 Continued

Event	Performance	Comment
Beirut Evacuation-Jun-Jul 1977	Success	Effective liaison between NMCC, State and rescue task force well maintained. OSD/JCS successfully participated. Crisis Action Teams (CATs) well integrated.
Korea "Tree-Cutting" Incident-Aug 1976	Success	Secure voice network used effectively. Unified commander provided detailed plan to NCA and received aproval. Field force acted rapidly without provocation to enemy. Plan well executed.[118]

118. JDR, Crisis Mgmt Issue, May 1977 (Special Issue 77-1).

FIGURE 6 - WWMCCS HISTORY

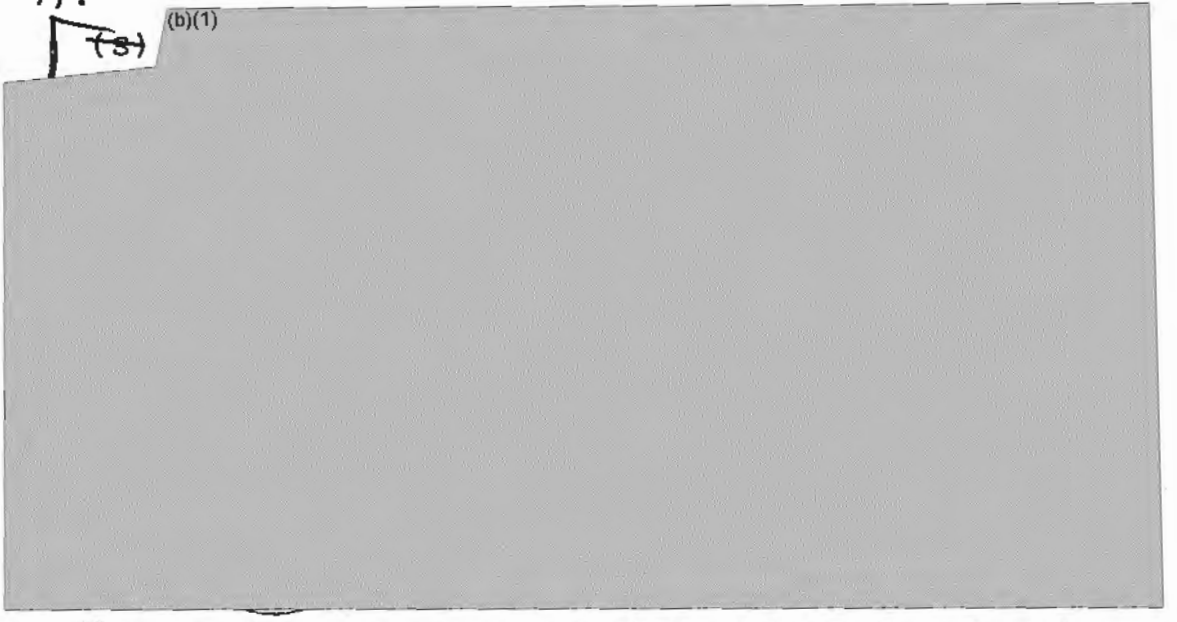


(U) It is worth noting at this point that there is a striking contrast between the "success" rate of the above seven crises and the three previous ones marked as "failures" (p. 45).

WWMCCS Evaluation Program

~~(S)~~ In 1975 a WWMCCS Evaluation Program was instituted.[119] By 1978, there had been five semiannual reports, each containing a summary of performance in the major areas of the system; they also pointed to limitations or deficiencies which needed to be corrected. In addition, a number of major exercises tested and analysed the WWMCCS under conditions of peace, crisis and ultimately nuclear conflict. (See Figure 7).

~~(S)~~ (b)(1)



~~(S)~~ In the early part of 1978, a WWMCCS evaluation report, forwarded to the Secretary of Defense by the Chairman, Joint Chiefs of Staff, contained a number of identifiable problems and deficiencies in need of

119. DOD Instruction 5100.80, 1 Dec 75.
120. (S) CM-1898-78 to SecDef, 22 Apr 78, JMF 360 (22 Apr 78).

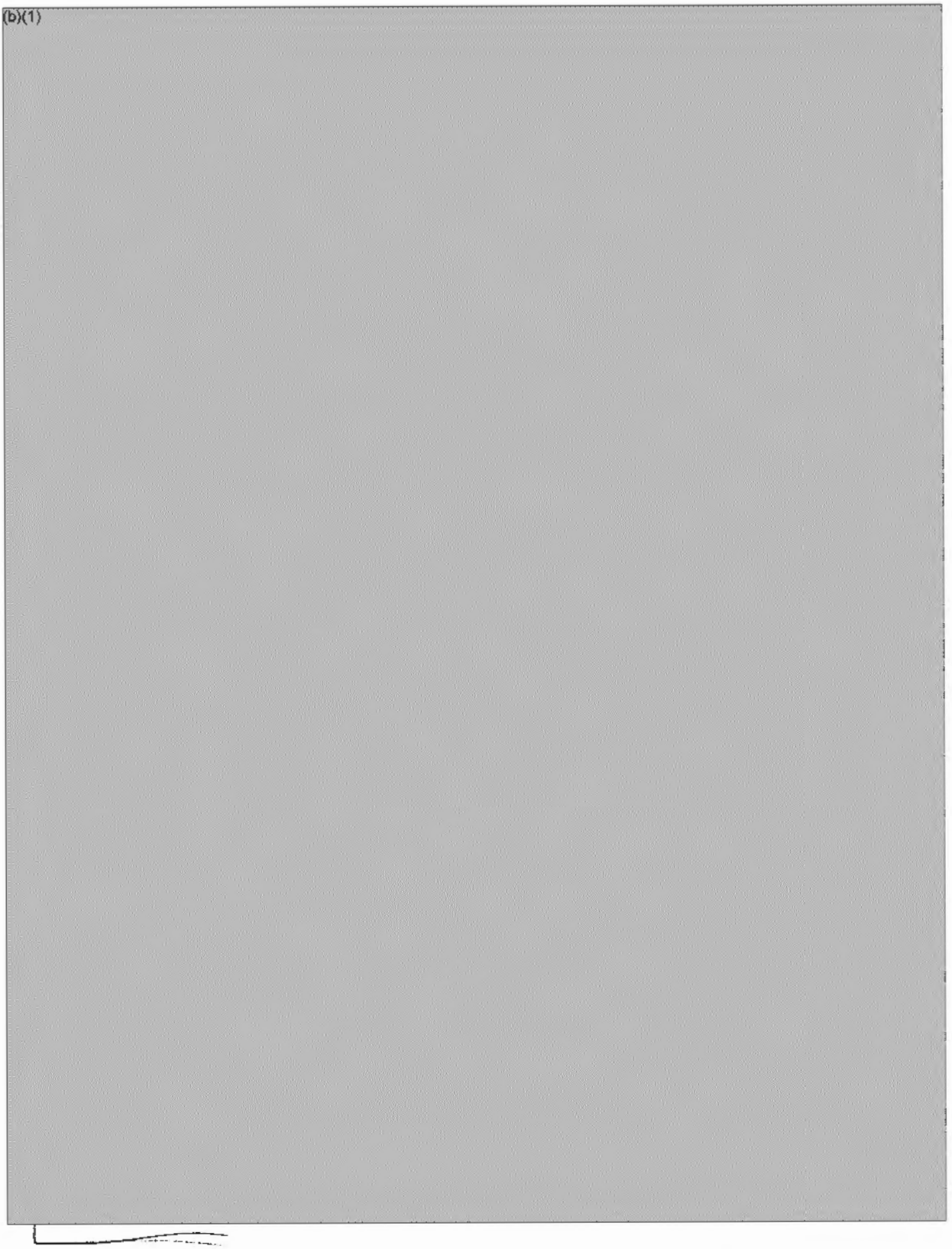


FIGURE 7 - PERFORMANCE EVALUATION TESTS

corrective action. One of them, in particular, had quite serious implications, and because of its importance, it is quoted here:

> Analyses indicated that our national military command facilities would not survive a nuclear attack and that our ability to control and execute forces following an attack would be very limited.

The Advanced Airborne Command Post, already under development, and the ANMCC Improvement Program envisioned under the "Architecture Plan" were both expected to reduce the vulnerability of facilities.[121]

~~(C)~~ From such assessments, objectively set forth by the highest military echelon, it was apparent that although WWMCCS had indeed come a long way in the latter part of the 1970s, much still had to be accomplished to insure its overall functioning and efficiency.

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121. (S) "Problems and Programs," p. 2, Att to CM-1898-78, 22 Apr 78, JMF 360 (22 Apr 78).

SECTION III

WWMCCS LINKS FOR CRISIS MANAGEMENT

Framework for Continuity of the National High Command[1] During Crises

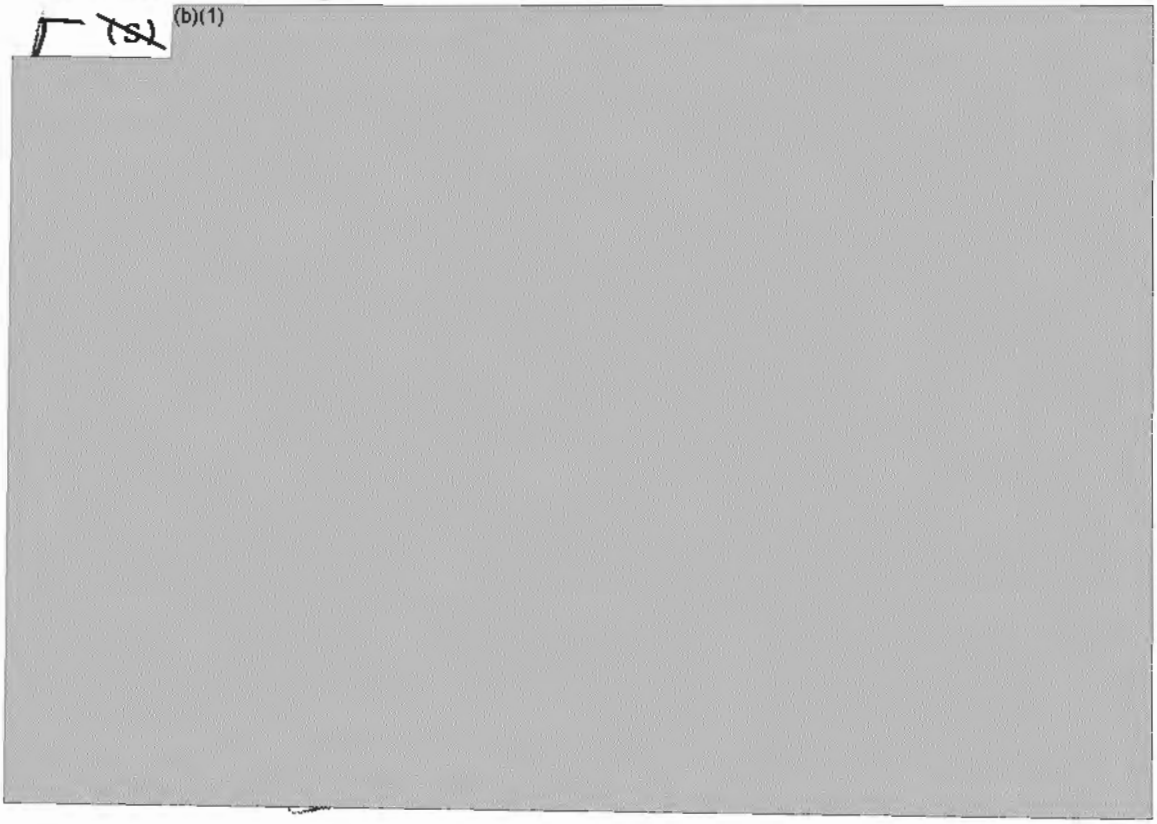
~~(C)~~ Telecommunications (C^3) are designed to permit the secure, timely exchange of information, decisions, and orders to flow both inside and outside the Department of Defense. A telecommunications system must support the National High Command in peacetime and day-to-day management of US armed forces; it must also be capable of controlling those forces in crisis situations and in general war, be it conventional or nuclear. Such capabilities become more necessary with each passing day. It is essential, for example, that in the event an international crisis develops, coupled with a threat of expansion into a general conflict, the C^3 capability be brought into play at once to allow for contacts and exchanges, and to set operations into motion. It should open channels for consultations with other allies, establish contact with the leadership of potential adversaries, and assume clear control of field forces, both conventional and nuclear.

~~(C)~~ Even under extreme conditions of a surprise attack, the C^3 ability must be able to function well. Furthermore, C^3 systems, by virtue of their computerized technology, must be able to transmit

1. The term National High Command is not synomymous with the NCA. It more broadly includes national level civilian leaders, other than NCA, who are designated as successors and alternates in the event the NCA is disabled. The National High Command encompasses such leaders as the Vice President, Speaker of the House, and members of the Cabinet, in pre-established order of succession. See Appendix A.

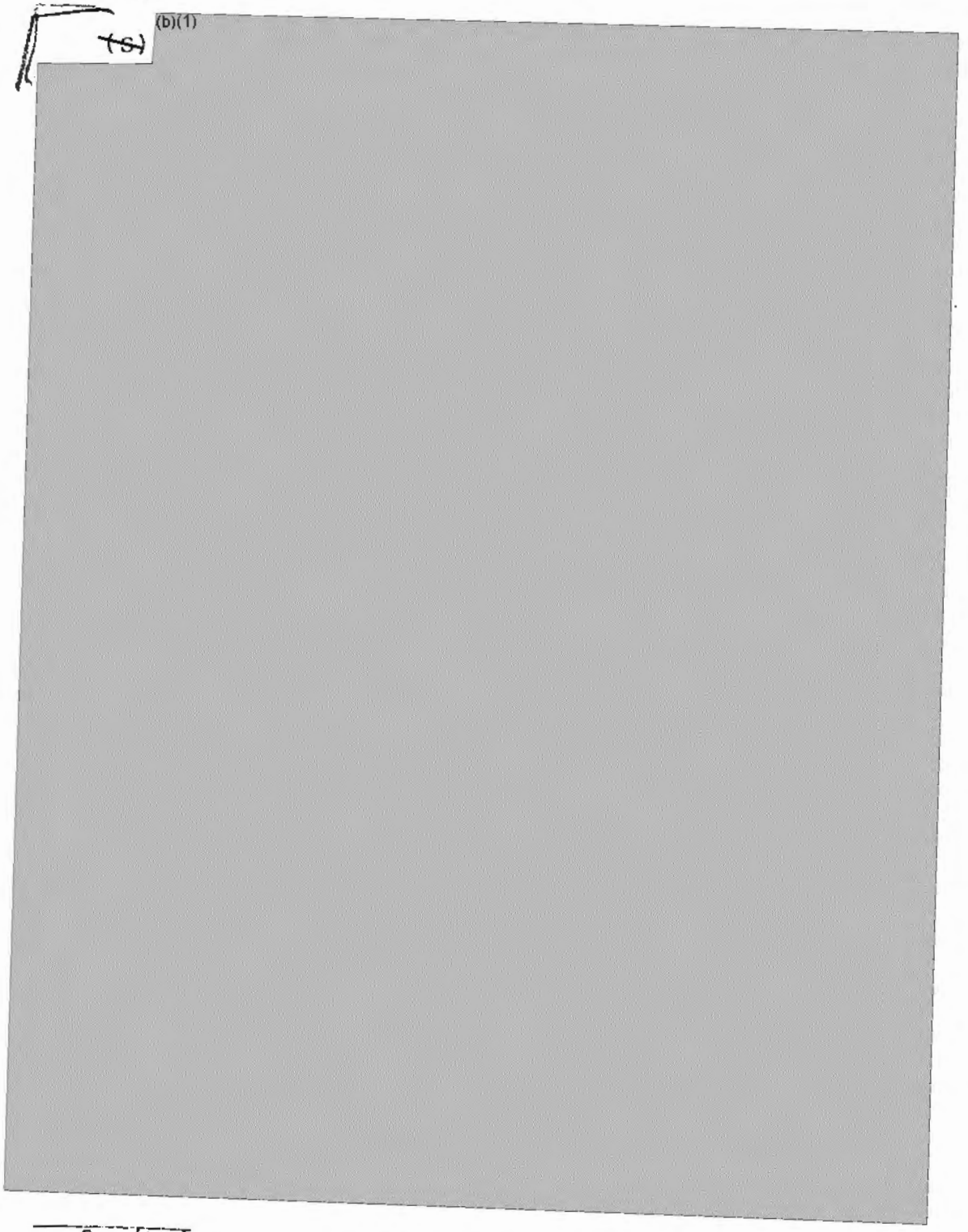
speedily back and forth the latest available information on vital intelligence, and adapt with flexibility to changes in objectives, strategy, deployment and threats. This close interrelationship between C^3 and the command authorities demonstrates that without effectiveness on the part of each, the survival of the national leadership would clearly be in danger in a crisis. And the primary focus of such leadership is concentrated upon the President himself.

(TS) (b)(1)



2. (TS) IDA Study S-467, The Evolution of U.S. Strategic Command and Control and Warning, June 1975, p. 296. This topic is also treated in a study by Arthur K. Marmor, USAF Command and Control Problems, 1958-1961, Ch XVI, pt II, (Hist Div Liaison Off, US Air Force, Jan 1963), pp. 51-53.

~~(S)~~ (b)(1)



3. (TS) "Command and Control of Strategic Offensive Weapon Systems," Encl C to WSEG Rpt No. 50, Evolution of Strategic Offensive Systems, 21 Sep 60, JCS 1620/306,

(b)(1)

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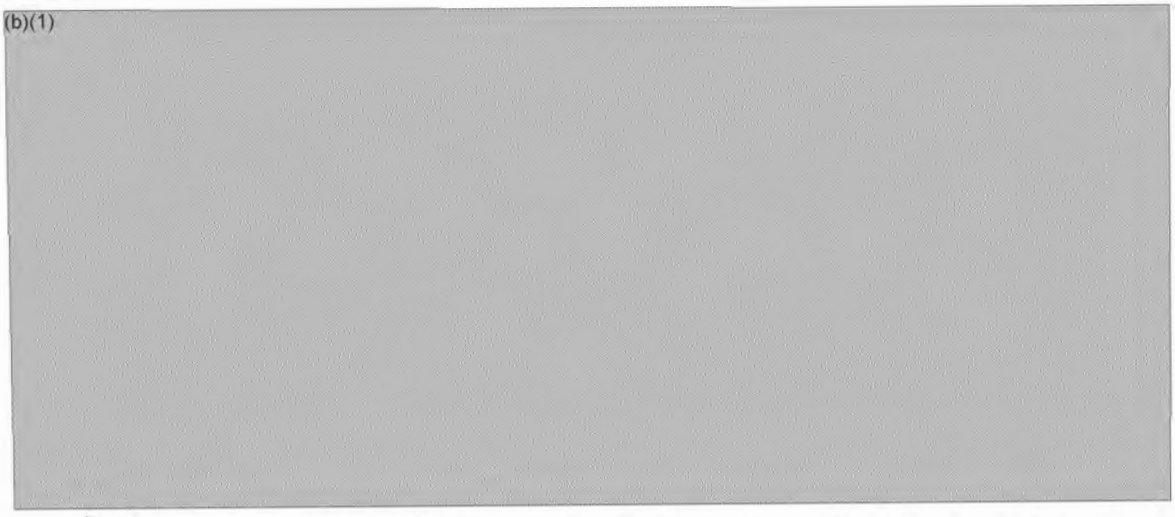
[redacted]

~~(TS)~~ (b)(1)

[redacted]

3 Oct 60, JMF 4600 (29 Sep 60). (S) JCSM-179-61 to SecDef, 22 Mar 61 (derived from JCS 2308/19), JMF 4930 (9 Feb 61) sec 2.

4. (TS) JCSM-250-61 to SecDef, 18 Apr 71 (derived from JCS 2308/28), JMF 4930 (9 Feb 61) sec 3.



~~(S)~~ By the mid-1970s clear solutions to these issues had not been found. The recognition and acceptance of Soviet strategic parity forced a continuing reexamination of C^2 problems during crisis situations, particularly emphasizing ways to upgrade the overall framework of WWMCCS and enhance its pervasiveness. Differences of opinion persisted especially with regard to the issue of survivability of the NCA and how to maintain communications in the period after the attack, that of reconstitution.

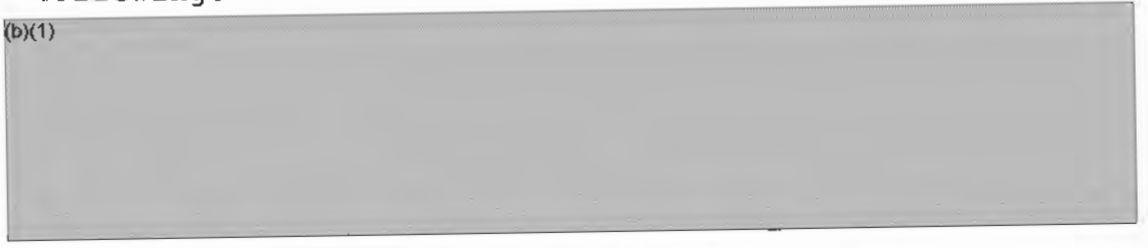
~~(S)~~ The problems of survivability and reconstitution had been under almost constant review since the establishment of the WWMCCS. As early as 1964 plans had been developed for the coordination of actions among NCA, the Joint Chiefs of Staff, major commands, and other outside agencies through a number of NMCS interfaces.[5] Among the participating elements were: the White House Situation Room; Department of State Operations Center; CIA Indications Office; UN Military Mission; U.S. Coast Guard Operations Center; Federal Aviation Administration Executive Communications

5. DOD Directive 5100.44, 9 Jun 64.

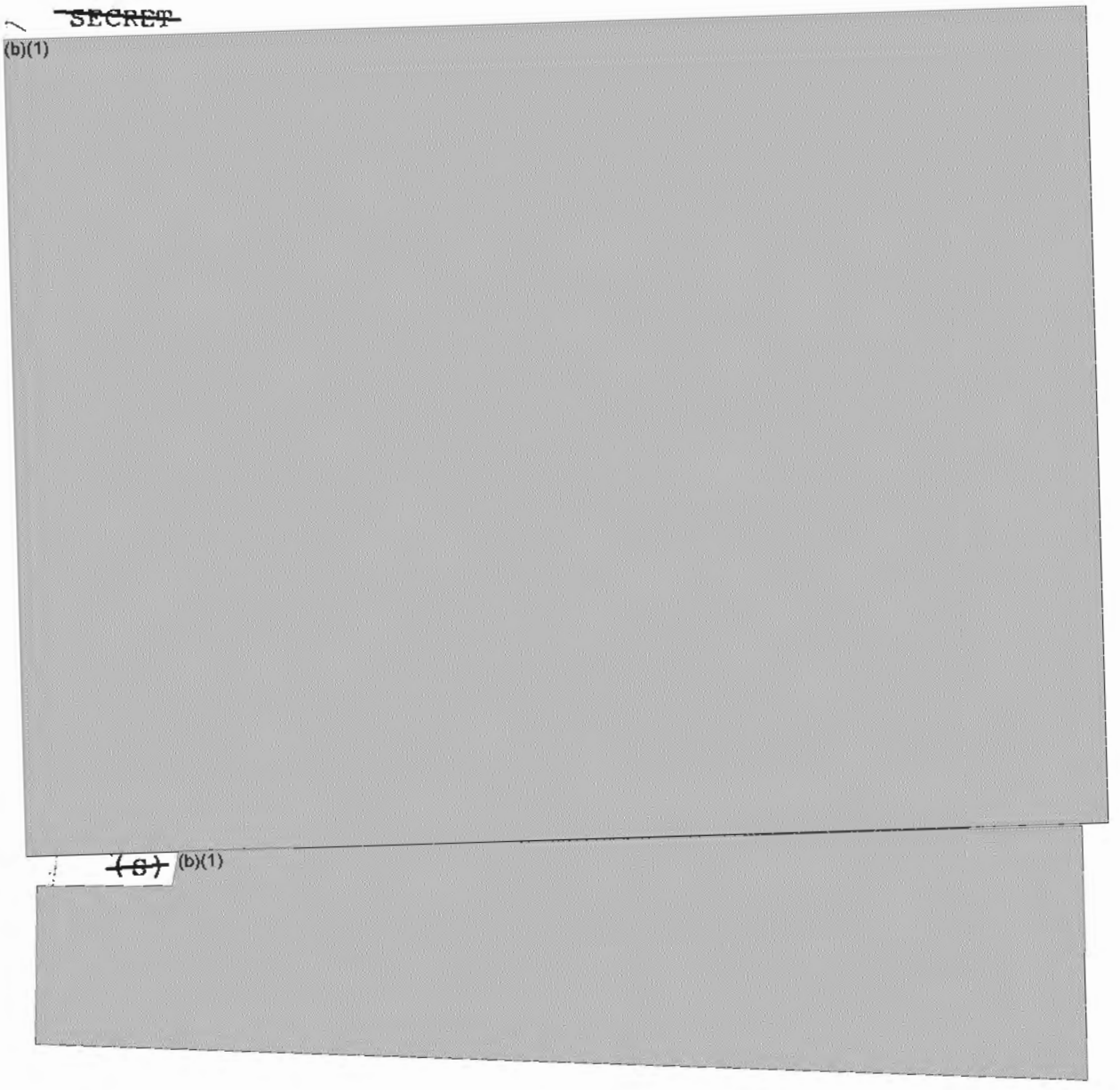
Control Center; Federal Preparedness Agency; and others. Appropriate military information was provided to these agecies through the NMCS. But during periods of crisis or general war, expanded NMCS plans envisioned an interflow of political, intelligence, diplomatic, and economic information among these diversified entities. Furthermore, the NMCS was to be configured in such manner during time of national emergency as to supply communications and working space to key officials. Special arrangements involved the support of White House representatives and other high-priority individuals who would need to use the NMCS for broader politico-military situations affecting the strategic direction of US forces worldwide. In such cases, the Joint Chiefs of Staff would control lateral coordination with US Government activities, external to the Department of Defense, in order to insure necessary interchange of data via the NMCS as the main element of WWMCCS.[6]

(S) Then in February 1974, the Joint Chiefs of Staff developed procedures designed to maintain world-wide C^2 of US military forces and nuclear weapons in the case of a crisis or emergency. Depending upon major categories of response, the procedures encompassed the following:

(b)(1)



6. Ibid. (S) WWMCCS Handbook, Ch IV. (S) J3M 1042-74 to SecDef, 13 Jun 74, JMF 360 (21 Nov 75). (S) JCS 2308/580, 28 Dec 73, JMF 361 (27 Dec 73). (S) JCS Pub 19, vol II, p. 9, Jul 76. (S) JCS 2308/536, vol I, 15 Jun 77, JMF 390 (15 Jun 77). (S) JCS 2308/226, 4 Apr 75, JMF 374 (2 Apr 75).



7. (S) JCS 2308/536, vol I, 15 Jun 77, JMF 390 (15 Jun 77). (S) JCS 2308/590-1, 7 Mar 74, JMF 396 (6 Feb 74). Both documents contain a review of DOD emergency operating procedures in support of potential nuclear employment decisions by NCA, the documentation development, and the role of the Washington Special Actions Group (WSAG) in the mechanism required for crisis management, and the commnications between NCA and the Joint Chiefs of Staff.

(b)(1)

Role of WWMCCS in Crises

~~(S)~~ The WWMCCS itself was structured to provide through its command centers a variety of alternatives for managing crisis situations. These encompassed:

1. Perception of damage to the enemy, changes in the patterns of enemy response to US and allied coordination, and the enemy's willingness to negotiate and end the crisis.

2. Positive control of forces if C^2 facilities were subject to attack.

3. Assessment of both US and enemy capability and the effectiveness of countermeasures in deterring escalation of the crisis.

4. Rapid reaction to any harassments or confrontation involving US forces in geographic areas not under US control.

~~(S)~~ WWMCCS, in addition, would use predetermined conferencing networks to link principal authorities formulating decisions during time-sensitive situations. Finally, liaison with the Department of State would establish and support the exchange of crisis management information among various heads of state for purposes of negotiations in expanded international conflict.[9]

8. For a fuller discussion of this plan, see Section II, p. 66. (S) JCS 2308/376-1, 11 Feb 76, JMF 603 (29 Sep 75).

9. (S) JCS Pub 19, Vol II, Jul 76, p. 9.

~~(S)~~ The role of WWMCCS, of course, would become even more crucial if the crisis escalated to the threshold of a limited or all-out nuclear confrontation. It would, for instance, increase the ability of decision-makers to relocate quickly to alternate sites or selected centers, from where they could direct operations. The NCA would evaluate the available data from all sources, and, in turn, would decide what options were to be used. Furthermore, WWMCCS was adaptive enough to support planning for an execution of changes in political-military objectives as the level of conflict increased or decreased.

~~(S)~~ In a period identified as the high or mid-point of a crisis, the NCA would receive through WWMCCS channels warning and intelligence and assess the source, nature, and probable effects of the unveiled attack; based on such information the NCA would then select the type of response, apply the assets of military forces, and provide direction to the field. The location of principal decision-makers, exchanges of additional data developing during the crisis period, and continuous updating of the overall situation, would be key factors. Alternate command facilities, through monitoring, were prepared to assume immediate responsibility for communications in the event primary sites were destroyed. The crucial requisite in this environment would be uninterrupted flow of information through the network among the NCA, advisers to that body, commanders of unified and specified commands, and subordinate elements carrying out the instructions. However, deterioration of communications would be unavoidable due to the intensity of the attack, such as

nuclear effects and electronic warfare. Nonetheless, WWMCCS and its associated systems would provide the capability for the NCA to execute the SIOP under all planned conditions, even though interconnecting links would have to be obtained by such expedients, as switching communications back and forth from an airborne center, or from a land to a seaborne center. In such a case, WWMCCS would prove its mission adaptability to unfavorable conditions during warfare.[10]

(C) In a subsequent phase in which intensity of the attack (hypothesized here as a nuclear attack) had subsided, joint communications would continue to be the critical link, particularly as concerned national reconstitution and redirection of forces, and assumption of responsibilities by the civilian sector. Assuming that hostilities had terminated between governments by means of negotiation, emphasis would continue to be placed on national survival per se. Data results of the executed nuclear retaliatory strike, as well as assessment of damage by the enemy to participating US resources had to be obtained. Worldwide status of operations and a general overview of the situation would then be presented to the NCA as quickly as possible. WWMCCS, consequently, would play a major role in all these undertakings--monitoring, assessing, exchanging, and projecting courses of action through the flow of vital information in order to achieve a recovery effort which would lead the nation gradually back to a state of normalcy.[11]

10. (S) JCS Pub 19, Vol II, p. 10
11. Ibid.

~~(S)~~ A DCA report in 1977 on the subject of reconstituting communications in the terminal phase of a crisis, yielded the following general findings:

1. There was generally lack of post-attack scenarios useful in projecting ways to improve on the current WWMCCS concepts as regarded forces' reconstitution.

2. There was lack of adequate guidelines and procedures to reconstitute communications in the post-attack period which facilitated the C^3 function from the NCA to the forces.

3. There were decentralized data banks with information which when properly organized helped in the post-attack problem of reconstituted communications.

4. There was no analytical mechanism to predict C^3 performance in the reconstitution period (2 to 60 days after the attack) or to examine the effects on system performance.[12]

~~(S)~~ All this clearly emphasized that C^3 had to remain at all times, but particularly in times of crisis, so interwoven with top-level national leadership, that their effectiveness reached all layers of institutional centers simultaneously. Basic concepts in the design of the WWMCCS took this into account. Command center facilities had to criss-cross in such a manner as to provide what was called "interconnectivity"; and for time-sensitive situations, the WWMCCS had a built-in capability to carry out a conference simultaneously with the NMCS, intervening headquarters, designated task force commanders, and, in case of nuclear options, with the executing authorities.

12. DCA Phase 1 Rpt, "Post-Attack Reconstitution of Communications," Sep 77, JMF 360 (19 Apr 77).

~~(S)~~ Alternate centers had facilities in place to assume, if needed, a primary communications role on a "non-notice" basis. Also, for contingency operations, secure, high-capacity mobile equipment provided support for the deployment of forces in minimum delay. The Joint Chiefs of Staff controlled the use of these communications assets.[13] Parallel conferencing was, on the other hand, available to senior officials in the decision-making process. As in a conventional war, so in a crisis situation there was need for videographic displays, and message conferencing capabilities, and these were available between the NCA, theater, and battlefield commanders. Characteristics of such conferencing included secure voice, jam-resistance, and survivability. But no effective means was found within reasonable resources to harden theater command centers against a nuclear attack. Instead, survivability was improved by reducing dependence on overseas fixed facilities whenever possible, and more heavy reliance on mobile and transportable equipment which included satellite terminals.[14]

Ten Crises Examined: Cases and Results

(U) Past crises involving the use of military force have tested both the readiness and the responsiveness of the WWMCCS and its principal component, the

13. The policy for deployment and utilization of these assets is contained in JCS MOP 167, Ch I, 14 Nov 75, JMF 390 (14 Jun 77). (S) JCS 2308/674, 25 Nov 75, JMF 606 (21 Nov 75).

14. DOD Annual Rpt FY 1978, p. 260.

National Military Command System. What follows in this section is an examination of ten actual crises which, in the course of the last decade, provided a yardstick as to how well the US national security apparatus performed under stress, with particular emphasis on C^2.[15] The cases present a wide variety of contingency situations.[16]

June 1967 - Middle East War[17]

~~(S)~~ The war began on 5 June 1967. Towards the end of the conflict, hostilities between the Israelis and the Egyptians had ceased while the Israeli Army was still driving toward Damascus. The Soviets were anxious to avoid the fall of the Syrian capital and they sent a message to President Johnson threatening to intervene directly on behalf of Syria if a cease-fire was not in effect in six hours. President Johnson replied to the Soviets calling for a solution worked out by the UN Security Council. He also ordered the Sixth Fleet to steam for the Syrian Coast as a signal that the United States would neither be bluffed nor dictated to. He assumed that the message to the Sixth Fleet would cause an almost immediate US naval response. It took the Sixth Fleet 18 hours to start its movement toward the coast. Consequently, the intended signal to the Soviets lost its effectiveness. Fortunately, the United Nations arranged a cease-fire within

15. Analysis of a number of events described here was conducted by the Defense Advanced Research Projects Agency (DARPA) by an outside contractor, Battelle Columbus Laboratories.

16. Rpt to SecDef on the Nat'l Mil Cmd Structure, under the direction of R. C. Steadman, July 1978.

17. For the crises examined here, see Tables I and II, Section II, p. 45, and pp. 76-77.

the Soviet time limit, and so a confrontation between the United States and the Soviet Union was avoided. The incident demonstrated the necessity for the NCA to dispatch a decision to a field commander as quickly as possible and for rapid execution of the decision in order to avert a confrontation between the superpowers.[18]

June 1967 - USS LIBERTY Incident

(S) When the Israeli attack against Egypt took place on the morning of 5 June 1967, the USS LIBERTY, an intelligence gathering vessel, was cruising in the Mediterranean. Her mission was to intercept Arab and Israeli communications traffic so that the United States would know what was going on. Both the US Sixth Fleet and the Soviet Fleet were in the Mediterranean. After the Israeli attack on Egypt, the Sixth Fleet was ordered to operate no closer than 100 miles from the coasts of Egypt and Israel. This restriction was not applied to the LIBERTY and she subsequently moved to a position 12 1/2 miles off the Egyptian coast. Only on 7-8 June was a series of four messages dispatched to the LIBERTY to comply with the 100-mile restriction and to move back from the coast. The first of these messages was released by the sender

18. (S) Journal of Defense Research, May 77, p. 14 (hereafter cited as JDR). This special crisis management issue was prepared for the Defense Advanced Research Projects Agency by Battelle Columbus Laboratories. This document highlights many areas of crisis management with particular focus on the technology applications of C^3, and the role of decision-making at the national level in terms of the strategic-warning-planning process. It also provides analysis of many other crisis situations in the post-WW II period, and factors to be considered in the future.

about 13 hours before the ship was attacked on 8 June, while the last was released for transmission 3 1/2 hours before the attack. Because of a number of transmission errors and misroutings, none of the messages reached the LIBERTY in sufficient time to allow her to move to a safety zone. Events in this episode vividly illustrate the kinds of communication difficulties and failures that can occur, particularly with respect to timing of critical exchanges. Delay in sending the messages was basically responsible for the undesirable results.[19]

23 January 1968 - The Capture of the USS PUEBLO

~~(C)~~ The USS PUEBLO, an intelligence ship, while in international waters off the coast of North Korea was fired upon and captured on 23 January 1968. No US forces were in a position from which they could rescue the ship before it was taken into Wonsan Harbor, North Korea. As a result, US reaction was limited to moving

19. (TS) Rpt of JCS Fact Finding Team, USS LIBERTY Incident, 8 Jun 67; (S) JCSM-379-67 to SecDef, 1 Jul 67 (derived from JCS 2308/378-1); JMF 898/392 (8 Jun 67) secs 1 and 1A. (S) Msg, JCS 7578, 092300Z Jun 67. JDR, May 1977, pp. 13-14. Also, material was extracted from a summary working paper, made available by the task force group responsible for the preparation of a report to SecDef directed by Mr. R. C. Steadman on the National Military Command Structure (hereafter cited as the Steadman Report, July 1978).

the USS ENTERPRISE closer to Korea and repositioning Okinawa aircraft to strengthen the US posture in the area. The PUEBLO had a solid and valuable communications link to shore stations in Japan all during the crisis. Teletype "chatter" over the open link provided valuable information on events aboard the PUEBLO throughout the crisis. The emergency communication arrangement designed specifically to give the White House early notification of a crisis (CRITICOM) worked well. As a matter of fact, the White House Situation Room received the critical message sooner than did CINCPACFLT, CINCPAC, and the NMCC.

(U) Even though the PUEBLO capture occurred because no US forces were available to come to her assistance in time, the incident illustrated certain command and control deficiencies. The commander who had operational control over the PUEBLO's mission, closest to the situation, and in constant touch with the ship, was the Commander, Naval Forces Japan. He did not have, however, the means for two-way conversation with the White House and his chain of military command extended through three vertical layers. He had no prompt way of finding out the position of the USS ENTERPRISE or ascertaining the readiness of US aircraft in Korea. The commanders who did have this information--CINCPAC and CINCPACFLT--both in Hawaii, were not abreast of the PUEBLO situation. They did not have the "real-time" information that Commander, Naval Forces Japan had. He had to rely on the Air Force which, although responding well, could not provide a timely force option.

(U) Here, there was a crucial requirement for information at the primary national crisis center, in this case the White House Situation Room. The NCA did not have rapid access to data which was already in the pipeline of the WWMCCS but not consolidated. Therefore, the NCA found it difficult to make decisions. Rapid, secure conferencing was necessary in Washington to allow all pertinent data and information to be brought together quickly. In the field, a requirement existed to locate appropriate forces and construct force options rapidly. Construction of these options depended on rapid access to tri-Service crisis information and secure conferencing among those force commanders who were potentially involved.[20]

6 October 1973 - Middle East War

~~(C)~~ The war erupted on 6 October 1973 when Egypt and Syria attacked Israel. The major US effort in the war revolved around the delivery of arms and materiel to Israel, and the crisis management aspect focused on security for US ships and aircraft carrying out the resupply. The Joint Chiefs of Staff directed USCINCEUR on very short notice to provide warning and surveillance for the transiting cargo aircraft. Consequently, units of the Sixth Fleet were repositioned to provide radar and escort coverage all across the Mediterranean.

~~(C)~~ The situation took on a graver nature when Israel violated a UN cease-fire on 24 October, and the

20. JDR, May 77, pp. 10-13.

Soviet Union threatened unilateral intervention. In reaction, the United States directed Defense Condition (DEFCON) 3 for its forces worldwide on 25 October, alerted the 82d Airborne Division for movement, and ordered the movement of various ships and aircraft closer to the Mediterranean. Meantime, however, a new UN cease-fire held and no further US action was required.

(U) In terms of C^2, the US response to the 1973 Middle East war was a success. Needed information and possible options were constantly available to the NCA. This fact, combined with careful contingency planning, enabled the United States to mount a successful resupply effort for Israel in a sensitive environment.[21]

15 July 1974 - Cyprus Crisis

~~(S)~~ Long-festering tensions between the Greek and Turkish communities on the island of Cyprus reached a breaking point in mid-1974. On 15 July, the Greek Cypriot National Guard attempted a coup to overthrow the government of President Makarios. This action prompted Turkey, on 20 July, to counter by landing troops from its mainland, in order to protect the Turkish minority population on the island.

~~(C)~~ During the period 15-19 July, USEUCOM C^3 facilities were used to provide a number of recommendations to the Joint Chiefs of Staff on the basis of earlier intelligence information, concerning evacuation of non-combatants (b)(1) (b)(1)

21. (S) JDR, May 77, pp. 32-33. Int'l Institute of Strategic Studies, Strategic Survey, 1973 (London, 1974), pp. 52-55. (TS) USEUCOM Historical Report, 1973, pp. 198-202.

(TS) Before, during, and after the crisis ended, there was adequate coordination of C^3 resources not only among US elements but also with participating allies, i.e., the British. Communications-electronics (CE) support was provided throughout the period of the crisis for command and control to the Commander, US Army, Southern European Task Force (USASETAF) in the event. (b)(1) (b)(1) Actions were also taken to assure that the reconstitution of the Defense Communications System (DCS) was ready to be put into effect, if needed. Furthermore, the US Air Force Commander in Europe was prepared to use Quick Reaction Communications (QRC) at appropriate task force headquarters.

(U) In this crisis, the results were successful because USEUCOM was able to keep abreast of a fast moving situation, largely because of adequate C^3 arrangements.[22]

12 April 1975 - Cambodia Evacuation

(U) Against the backdrop of a Vietnam cease-fire and the withdrawal of US combat forces from South Vietnam, it was obvious to responsible US commanders that plans would have to be developed for the possible evacuation of noncombat Americans under emergency conditions in Cambodia. In April 1973, CINCPAC assigned the Commander, US Support Activities Group (USSAG), Thailand, the responsibility for planning and conduct of noncombat emergency evacuation of Cambodia. Operational control of the forces committed to the evacuation would be exercised by USSAG through its Airborne Battlefield Command and Control Center (ANCCC).

22. (S) JDR, May 1977, pp. 33-35. (TS) USEUCOM Historial Report, 1974, pp. 120-121.

(U) By early 1975, the situation in Cambodia began to deteriorate rapidly. On 28 February 1975, and for the next 43 days, Marines and sailors took up station in the Gulf of Thailand in order to be ready to execute the Cambodian evacuation contingency plan. The US Ambassador to Cambodia directed fixed-wing evacuations to take place between 4 and 10 April 1975. By 10 April, the Phnom Penh airfield was so heavily interdicted by fire that fixed-wing evacuation was halted. The communists were in control of the east bank of the Mekong River. A decision was made to use landing zones closest to the Embassy on the west bank of the river at a soccer field. On 12 April 1975, Marines landed to secure the landing zone. As evacuees arrived from the Embassy, the waiting helicopters were called down and loaded. The entire operation that had taken 2 years in the planning, took 2 hours and 23 minutes to execute. Although the event came suddenly and without warning, the handling of the crisis was very effective primarily because command and control precedures could rapidly be executed due to careful preplanning and coordination between the military and the US Embassy staff.[23]

29-30 April 1975 - Saigon Evacuation

(U) In March 1975, as a South Vietnam retreat turned into confusion and panic, ships of the US Seventh Fleet began gathering in the South China Sea to support an evacuation from Saigon. The basic plan for the evacuation of Saigon had been issued by the United States Support Advisory Group-7th Air Force (USSAG)

23. (S) JDR, May 1977, pp. 65-66.

with headquarters in Thailand. Extensive coordination between the Defense Attache Office (USDAO) Saigon, COMUSSAG, COM Seventh Fleet, and other subordinate commanders had taken place. The Joint Chiefs of Staff had charged CINCPAC with assisting the Department of State in the protection and evacuation of US noncombatants and designated aliens located within the PACOM area.

~~(C)~~ Nearly all Navy and Marine forces available in the western Pacific theater were involved in the operation. In late April US Air Force jet transports began frantically carrying out the last Americans and tens of thousands of Vietnamese from Saigon's Tan Son Nhut airfield. At Ambassador Martin's urgent phone call, President Ford on "29 April set in motion Operation FREQUENT WIND, the final evacuation of Saigon by helicopter. About 67,437 Vietnamese were evacuated on American ships. Unexpectedly, there was a requirement to evacuate more that 2,000 people from the American Embassy instead of the 100 that was originally planned.

~~(C)~~ There were several lessons to be learned from the Saigon evacuation. One of the most important was that operational control of all military forces committed to an embassy evacuation crisis operation should be exercised by a single commander. Instead, there were two commanders, plus the US Ambassador. Commanders participating in secure voice conferences with the NCA and the NMCC had varying perceptions of the purposes of the conferences. If crisis operations were to receive direction from Washington, via secure voice conferences, then the purpose and operational procedures of the conference had to be well defined.

Each echelon participating in the conference needed thorough familiarization of the plans for the operation. In a multicommand operation, parallel echelons of command were included in the conference. All participants were responsible for the information and direction passed over it.

~~(C)~~ Once the operation was ordered, it became the responsibility of the military commander to insure successful accomplishment of the mission. In this case, the US Ambassador continued to levy evacuation requirements and to report remaining personnel to his Washington counterparts. This created ambiguous command and control situations and complicated evacuation from the Embassy.

~~(C)~~ Rapid, secure communications were needed between senior commands directly involved in Embassy evacuation operations. There were none between COMUSSAG, COM Seventh Fleet, and subordinate units, although there were many non-secure voice links.[24]

12-15 May 1975 - The SS MAYAGUEZ Incident

~~(C)~~ On 12 May 1975, Cambodian gunboats fired upon and seized the merchant ship SS MAYAGUEZ, sailing 60 miles off the coast of Cambodia enroute to Thailand from Hong Kong. It was subsequently escorted to Koh Tang Island, 30 miles from the Cambodian mainland. Since diplomatic means failed to have the ship released, orders were issued by the Joint Chiefs of Staff on 14 May 1975, following a meeting of the NSC, to begin a military operation for the recovery of the MAYAGUEZ and its crew.

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24. (S) JDR, May 1977, pp. 66-67.

~~(S)~~ The operation, based on JCS planning guidance, began on 14 May 1975 with the first insertion of Marines by USAF helicopters on Koh Tang Island, and a boarding party from the USS HOLT on the SS MAYAGUEZ. Although the ship was deserted and little time was expended to bring it under control, the Marine assault force on the island met with fierce opposition from the beginning. Their ordeal lasted 14 hours. Simultaneous close tactical air support from the carrier USS CORAL SEA substituted for initially planned B-52 strikes against mainland targets, while naval gunfire provided coverage against all Cambodian small seacraft. Later on 14 May, the destroyer USS WILSON reported that the crew was picked up, all accounted for and in good condition.

~~(S)~~ The Koh Tang phase of the operation involved 15 USMC, USAF and USN killed in action, 49 wounded, and 3 Marines missing. Helicopters incurred 3 combat losses, 4 were severely damaged, and 6 received slight damage.

~~(S)~~ On 15 May 1975, the President, through the Joint Chiefs of Staff, notified all participants to cease all offensive operations relating to the seizure of the SS MAYAGUEZ.

(U) The lesson learned from this incident was essentially that the United States and other great powers could expect to be tested in their resolve from time to time by lesser powers. Clearly, there was a standing requirement for a crisis decision-making mechanism to be ready, and also to be practiced in confronting the unexpected.

~~(S)~~ Intelligence gathering and analysis had to be able to provide precise, up-to-date information to the crisis decision-makers. During the crisis, it was

reported that President Ford was upset when intelligence sources provided him with a total number of ships sunk that was in excess of the total number of enemy ships at sea. This, however, was a high risk, short-planning, successful operation in terms of C^2.[25]

June-July 1976 - Beirut Evacuations

~~(S)~~ Deteriorating conditions in Lebanon and the slaying of the American Ambassador, his economic adviser, and his driver caused high concern both in Congress and the Administration for the safety of Americans in that country. As a result, on 17 June 1976, President Ford directed the US Embassy in Beirut to evacuate by land or sea those American citizens who wished to leave Beirut. On 18 June, the Joint Chiefs of Staff directed COM Sixth Fleet to station a powerful Joint Task force over the horizon from the Lebanese coastline, ready to provide support when needed. On 19 June, aware that land routes might be aborted, the NCA prepared for a possible sea evacuation.

~~(C)~~ On 20 June, the evacuees were picked up by an American naval unit for further transfer to a safe haven in Athens. The same day, the Chairman of the Joint Chiefs of Staff terminated the Lebanon evacuation operations and directed repositioning of the naval forces involved 50 or more nautical miles off the coast of Lebanon.

~~(C)~~ The Lebanese civil war continued unabated through June and into July. Still, 4,000 American civilians were in that country needing to be evacuated.

25. (S) JDR, May 1977, pp. 67-68. (TS) App VI to CINCPAC Command History, 1975.

But of this number, only 300 chose to leave on 27 July. They were provided with assistance from a naval unit of the Sixth Fleet to depart, and two days later, they, too, reached Athens, Greece.

~~(TS)~~ During both of these evacuations, effective liaison between the NMCC and State Department Crisis Action Teams (CATs), activated in July, was maintained. The evacuation of US and foreign national personnel from Beirut was the first crisis which used the new NMCC Emergency Crisis Room for OSD and JCS principals in other than an exercise situation.

~~(TS)~~ The established operational chain of command was used during the crisis. The NMCC was the focal point for the NCA guidance. The NCA exercised close and continuous control of all participating elements in this operation, nicknamed FLUID DRIVE. Three primary networks were established to provide timely voice and teletype communications among all the commanders involved in the crisis. A secure voice C^2 net provided communications among the decision-makers and the NMCC, USCINCEUR, CINCUSNAVEUR, and Commander, Joint Task Force Lebanon. A secure voice reporting network was used to obtain direct voice reports from the commander at the scene. Secure record communications were also provided by multipoint teletype network among, USCINCEUR, CINCUSNAVEUR, COM 6th Fleet, and Commander of the Task Force. The State Department was in secure voice communications with the Deputy Chief of Mission at the Embassy in Beirut. Situation updates were passed over this net.[26]

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26. (TS-RD) USEUCOM Historical Rpt, 1976, pp. 85-92.

17-21 August 1976 - Korea "Tree Cutting" Incident

~~(S)~~ On 17 August 1976, North Korean military personnel made an unprovoked attack on United Nations Command personnel who were engaged in pruning a tree in the Joint Security Area (JSA) in the Demilitarized Zone (DMZ). The attack resulted in the deaths of two US Army officers and injury to four American and five ROK military personnel. The Joint Chiefs of Staff directed CINCUNC to set DEFCON 3, which was attained on 19 August 1976. They approved a CINCUNC plan to cut down the tree involved in the initial incident and destroy vehicle barriers at no added risk or interference to the tree-cutting mission. The operation as conducted on 20 August 1976 without incident.

~~(S)~~ As a result of standing computerized procedures, triggered when there is a change of DEFCON, DOD sent out instructions to the Chief Military Representative in each NATO country to inform the Minister of Defense about the move to DEFCON 3 in South Korea, upon authorization by the Chief of Mission. The secure voice network communications available continued to be effective and provided redundant circuits to insure rapid and reliable high quality exchange of information.[27]

Findings and Recommendations

(U) The Steadman group, which studied the national military command structure in the fall of 1977 at the request of the President, reviewed all the above crises and reached the following general conclusion:

27. (TS-RD) CINCPAC Command History, 1976, Vol I, pp. 99-101; also pp. 49-50, regarding communications during crises.

> Each of these crises was unique: some were large and some were small (in terms of forces required); some fast-breaking and some slow; some had tight, centralized control and some were decentralized; some could be foreseen and pre-planned in detail and some could not. In other words, these ten crises provided a broad spectrum for analysis and an indicator of the range of situations to be expected in the future. . . . Deficiencies noted in one crisis were generally corrected before the next.[28]

(U) The Battelle study reached a number of more specific findings and recommendations based on a review of these same crises concerning C^2 effectiveness. These included:

(1) There was no substitute for flexible, well-trained, forces under competent leadership exercising the C^3 capability via secure, reliable channels of exchange.

(2) In any crisis it was essential that the Commander in Chief, the Secretary of Defense, and the Joint Chiefs of Staff be kept fully and promptly informed of the changing situation and of all significant details.

(3) Leadership at the NMCC constituted an effective intermediate echelon for any communications link from the NCA civilian leadership to the operating forces.

(4) Civilian leaders had to be properly and thoroughly indoctrinated on the capabilities, characteristics, and limitations of operating forces upon taking office and before they became involved in crisis management.

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28. Steadman Rpt, pp. 26-32.

(5) There was absolute necessity for the latest available intelligence information to insure strategic early warning of situations which led to crises affecting national security.

(6) The ability to control the air space over crisis areas was imperative.

(7) If either major power, the United States or the Soviet Union, intended to press an issue far removed from its own shores, it had to be able to establish naval and air supremacy with conventional weapons in the area of confrontation.

(8) Washington was at the end of a global communications chain stetching many thousands of miles. Crisis information on conditions at the scene was sometimes inaccurate. First reports were likely to be incomplete. The NCA in Washington attempted to coordinate the actions of thousands of men, and too many and frequent changes of direction were likely to engender confusion in the field. The NCA's role was not to issue specific operational guidance; it was to define the objective and insure that plans were correctly coupled to political objectives, and also adaptable to changes.

(9) In a crisis, it was preferable that Presidential orders be written and verified. In the absence of such a procedure, there were too many opportunities for loose interpretation, and, as a result, participants were exposed to error. Of very great importance was the avoidance of multiple sources for orders going to the field. A single channel for the final action was most desirable.

(10) It took time for messages to flow through a complicated command structure. Therefore, in a crisis situation, all the military forces committed should be under the operational control of an on-scene joint task command, with direct communications to the NMCC, in order to receive NCA directions via the Chairman, Joint Chiefs of Staff. The CINCs' views during a crisis were crucial. The CINCs needed to have the ability to monitor and participate, as necessary. They had to be prepared to assume direction of a crisis operation at any time.

(11) The current structure and process for crisis management in the NMCC was considered adequate, if properly carried out. Crisis management problems had frequently proven to be more a matter of faulty communications between participants in a crisis. The important thing was to get the right people exchanging information. The establishment of secure communications networks as was done during recent crises, had been both useful and successful, providing high quality and reliable exchange of information.

(12) It was essential to practice techniques of response to the "what is" and "what if" type of questions that could come from the NCA during a crisis. These responses were produced on a "real time" basis, or concurrently, by all echelons of command through appropriate automatic data processing programs. Most of the NMCC-centered command post and readiness exercises had followed a stereotyped scenario without the exigencies for immediate response generated during a real crisis.

(13) The value of contingency plans was in the fact that staffs at all levels anticipated their arrangements to meet various war-crisis situations, thus increasing the efficiency of the NMCS reaction to crises. Contingency plans were prepared for all of the ten crises summarized in this study.

(14) There were also technological developments that helped improve the process of crisis management. Examples:

> - Development of the synchronous graphic depiction of information at all echelons for expeditious visual assessment.
> - Development of computer systems able to distribute new information and alert recepients to its significance; manage data and resources; help produce documents; help conduct teleconferences and briefings; and assist in the thinking of crisis managers.[29]

~~(C)~~ In July 1976, a report on the overall development, status, and performance of the WWMCCS was prepared by OSD (Office of the Director, Telecommunications and Command and Control Systems) for the Senate Appropriations Committee, in anticipation of budget hearings. Among its many comments, the report had this to say regarding communications progress within the WWMCCS framework:

> In general, it can be said that the performance of the WWMCCS in actual crisis situations improved over time. Some of this is no doubt attributable to satellite communications and the ability to deploy portable terminals. Since the early 1970's communications failures have

29. JDR, May 1977, pp. 17-20, 27-29, 40-41, 46-49, 81-84, 136-144.

considerably decreased in number. Policymakers can now reasonably expect to obtain timely information from the field, and to have their instructions quickly and accurately relayed to the appropriate military forces. The military command structure has changed little since it was established in 1958. Yet, communications capabilities have improved to a point where it now is possible for a remote decisionmaker to talk directly to an on-scene commander.[30]

30. (S) WWMCCS Report to the Senate Appropriations Com, prepared by DTACCS(OSD), July 1976, sec V, pp. 6-15, OSD Files.

SECTION IV
CLOSING OVERVIEW

(U) The origins of the WWMCCS and some of its inherent command and control problems were the result of the 1958 DOD reorganization and amendments to the National Security Act, which, on the one hand, retained the existing concept of decentralization in the military structure while, on the other, called for tighter management at the top. Operational control of military forces was given to the unified and specified commands, but the Services retained their role in development and support of these forces. Both the commands and the Services remained, however, under the authority and direction of the Secretary of Defense who in turn delegated duties to the Joint Chiefs of Staff as his military staff and advisers.

~~(C)~~ The WWMCCS came formally into existence in October 1962. Its mission was to provide the NCA with the information on world situations needed for accurate and timely decisions, as well as the communications needed for reliably transmitting those decisions with a minimum of delay in peace or war in order to direct US military forces positioned anywhere in the world. Essentially, then, the WWMCCS fulfilled the requirements for sustaining the chain of command.

(U) In the early 1960s, at the time of the issuance of DOD Directive 5100.30 many of the C^2 facilities were already in existence or were under development to support the unified and specified commands, but the directive's intention was to relate and provide greater responsiveness to the needs of the NCA. Some of the

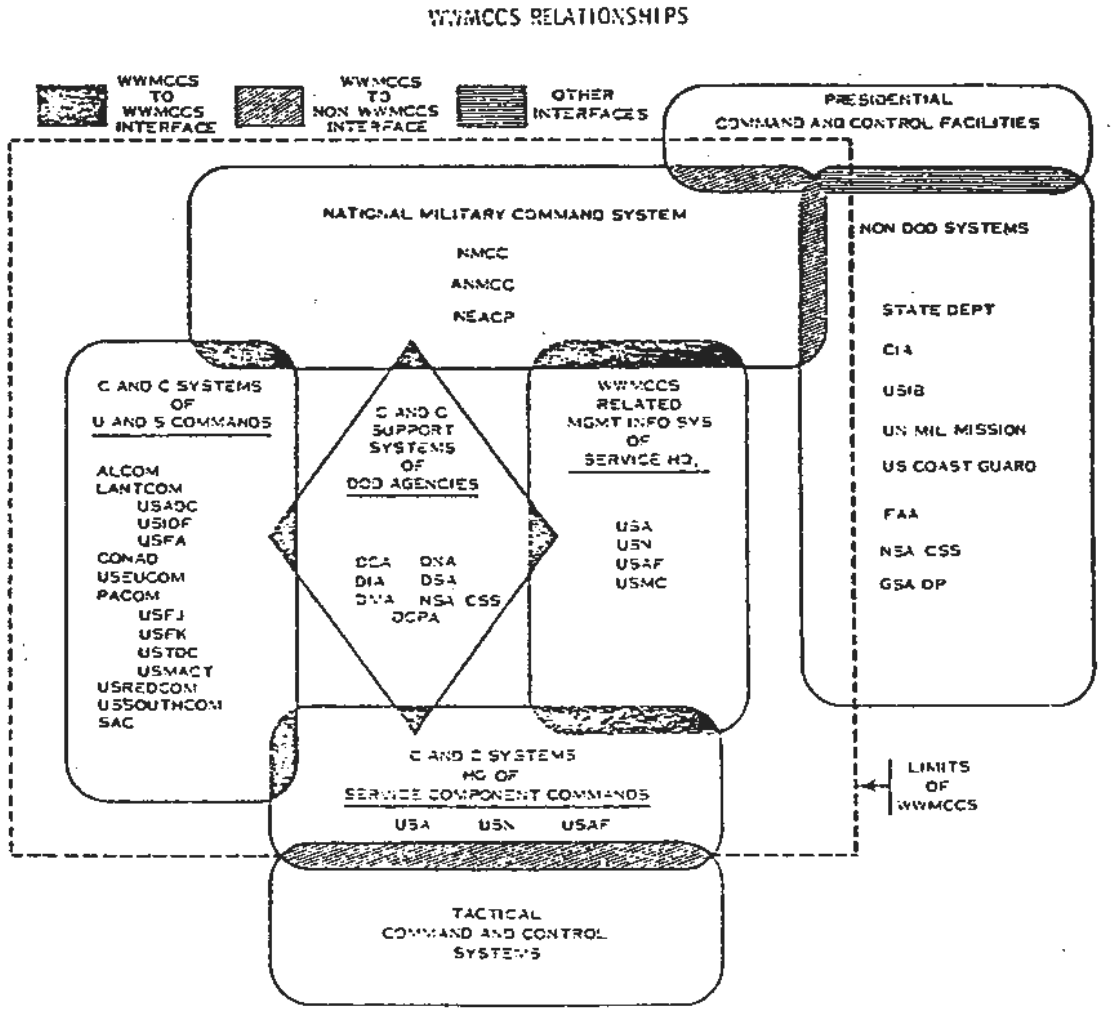
commanders of unified and specified commands were already using established command centers from which to direct assigned forces. The major change in facilities happened in 1962 when, after extensive study by the Joint Chiefs of Staff, Secretary of Defense approval was given to use KC-135 aircraft as airborne command posts for the commanders associated with the Single Integrated Operations Plan (SIOP). These airborne command posts were alternates from which the SIOP execution message could be relayed if the ground command centers were destroyed. Previously, the Strategic Air Command (SAC) had evaluated the utility of airborne command posts and had introduced a continuously airborne command post operation in 1961. The total number of airborne command posts grew to a fleet of 42 aircraft by 1973. The Navy also indicated a similar interest in this aircraft role to relay emergency messages to the Fleet Ballistic Missile Submarines, and as a consequence developed the Take-Charge-and-Move-Out (TACAMO) aircraft (Modified C-130). In addition to the airborne command posts, several underground command centers were completed during the 1960s, with the North American Defense Command (NORAD) Cheyenne Mountain facility being the most notable. These underground centers were basically designed to counter the anticipated Soviet threat of the 1960s.

(U) From the beginning--in late 1962--the problems involved in developing an effective WMMCCS were formidable and complex. Shifting from a single-option strategy of all-out retaliation to one of multiple options and selectively controlled responses presented perhaps one of the biggest challenges to command and

control. Flexible response demanded criteria of survivability and functional performance that were much harder to achieve than earlier methods. This strategic concept called for development of a C^2 system with built-in endurance in a nuclear environment, during and after attack, and adaptable to a wide range of circumstances in its ability to make assessments before, during, and after a crisis or emergency. But this was easier to enunciate than to accomplish. Of all the prerequisites for such a concept of controlled response, it appeared that survivability was the most difficult to achieve, and remained perhaps the most serious impediment to the system through the years.

(U) By 1967, the WWMCCS, already five years old, had accumulated a large number of resources; but these consisted mostly of independent subsystems grouping together some 37 activities, not truly integrated in any formal sense. It was essentially a sprawling giant network of primary and alternate command facilities and interconnected communications that served various headquarters. The structure accommodated the chain of command from the Joint Chiefs of Staff 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 comand. While this composite reflected the functioning of command relationships (Figure 9), it did not focus on centralization, an attribute necessary during periods of crisis. The combination of several failures during contingencies and the need to develop a

Figure 9 - WWMCCS RELATIONSHIPS



Source: (S) WWMCCS Handbook, 1974, JMF 360 (13 Jun 74).

technologically responsive and organizationally cohesive system, eventually brought top-level attention from the Office of the Secretary of Defense and the Joint Chiefs of Staff. A new direction and momentum was established in 1971 with the new WWMCCS directive, but much still remained to be accomplished.

(U) Although basic development guidelines were set in the decade of the 1960s, they formed only a rudimentary foundation for the WWMCCS of future years. Difficulties were unprecedented, and problems were complex. Despite great strides toward overall integration between 1971 and 1974, WWMCCS had not yet achieved the centralization and "interconnectivity" which went hand in hand with technological innovations. Existing cross-interests were part of its weakness. But, on the other hand, there was some tangible progress. The WWMCCS was transformed in capability, mission, and potential to support effectively the NCA--its primary objective. Also, the Chairman and the Joint Chiefs of Staff received and began fulfilling a new and unique responsibility for worldwide C^2 of US military forces. And, most importantly, in the long run, WWMCCS concepts strengthened and emphasized the rising new discipline of C^2 so indespensable to the developments and conduct of twentieth century warfare. The complexity, speed, and destructiveness of modern weapons through the evolution of computerized technology in the last two decades, as well as the size and diversity of US military forces everywhere, brought home the necessity to restructure telecommunications in a world where the element of time was constantly shrinking while geopolitical developments on a global scale were increasingly posing threats to peace.

(U) In the early 1970s, the need had become even greater that the President as Commander in Chief and other top-level government officials be provided with the ability to manage the US armed forces as well as to react quickly to crisis situations through worldwide telecommunications. In addition, the network would allow for consultations with other allies, contacts with the leadership of potential adversaries, direction of all deployed theater nuclear elements, and, most crucial, control of US strategic forces. A portion of WWMCCS, called MEECN, in late 1972 was particularly designed to incorporate features for survival under attack in a nuclear environment.

(U) An important development in the period 1968-1972 was the changing strategic relationship between the United States and the Soviet Union (see Appendix B). Those years marked the end of US nuclear superiority, and the beginning of an era characterized by what was termed nuclear "equivalence" or "sufficiency." This stark reality did give new impetus to reexamine systematically and improve both the technology and procedures of WWMCCS, although earlier there was recognition that even without parity the Soviet Union possessed the capability to cripple the US C^2 structure if it so chose.

(U) Admission of vulnerabilities, on the other hand, in the system created a renewed interest at the top echelons of government, and an effort was mounted emphasizing the priority mission of WWMCCS to the NCA, focusing management responsibilities to the Joint Chiefs of Staff, and changing a confederation of communications networks into a cohesive, integrated

whole. A major stimulus to more centralized management was the mixed performance of the system during several contingency and crisis situations that revealed weaknesses both in warning time and rapid response. Crucial C^3 links provided the bond on the issue of continuity in the high command. The key was to test the system often on a "real-time" basis against hypothetical crises and even nuclear war simulations.

~~(C)~~ As the threat increased into the 1970s, a mix of airborne, ground and seaborne command posts was developed as a countermeasure. Ships also could provide mobility and survivability.

~~(S)~~ Various JCS-WSEG analyses during this period also pointed to the necessity for specific capabilities: (a) more flexibility than was available in the SIOP; and (b) the ability of the Joint Chiefs of Staff to send execution orders directly to SIOP forces. Also, the National Security Council, in reviewing strategic assessments within the framework of the NATO alliance, as well as a number of weapon system evaluation reports--all basically pointed out that, although the United States was prepared to execute a preplanned attack or retaliatory strike, there were no assurances that its command centers possessed a combination of survivability and flexibility necessary to conduct limited strategic nuclear war. Those that were deemed survivable had limited flexibility; those with the required capability were not deemed survivable. Such considerations raised doctrinal questions concerning the efficacy of C^2 and the ability to execute command decisions in a sustained fashion under conditions of nuclear crisis or war.

~~(TS)~~ In the early 1970s, a WSEG Study summed up the problem in these words:

> It seems to be accepted universally that the existing DOD C&C system was not structured to accommodate limited strategic nuclear operations and that capabilities in this area are extremely poor. At the same time, however, and for reasons which are not clear, there seems to be traditional acceptance of the position that the C&C system has an adequate capability to provide whatever support is needed in order to enable the President to decide how and when to execute the SIOP. It is concluded in this study that there is no basis for such a position. A more accurate appraisal would seem to be that our warning assessment, attack assessment, and damage assessment capabilities are so limited that the President may well have to make SIOP execution decisions virtually in the blind, at least so far as real time information is concerned. This situation will become even more acute if the Soviets continue to modify their force structure so as to increase their overall capability to launch a "zero" warning attack on the US and also to attrite our forces if we do not respond rapidly.[1]

It was apparent, then that, the main problems and concerns did not go away nor did they change in nature; rather they persisted. From the end of 1975 when the WWMCCS Evaluation Program went into effect, through early 1978, there were five semiannual reports, each summarizing performance in the major areas of the

1. (TS) WSEG Report 159 (Feb 1971) vol IX, pt. II, pp. 102-103.

system and pointing to limitations or deficiencies that needed to be corrected. In addition, a number of major exercises provided an environment within which WWMCCS was periodically exercised, tested, and analysed, under conditions of peace, crisis, or nuclear conflict.

~~(S)~~ Experience continued to demonstrate that much still had to be done in various elements of the WWMCCS to insure its proper functioning and to improve its efficiency. But perhaps the one aspect that could not be tested or guaranteed was its survivability under true nuclear conditions. Although almost $7 billion was programmed in the Five Year Defense Program for WWMCCS general war capabilities, the projected growth of the Soviet threat was predicted to outpace US survivability programs in the 1980s.

(U) By the end of 1973, WWMCCS had grown into an aggregate of C^3 facilities encompassing approximately 100 command centers, 60 communications nets, eight warning systems, 70,000 people and funding in excess of $3.5 billion. Still, technological improvements were clearly needed, and so it was proposed to develop a system "architecture" in early 1974. Such a plan would update facilities for the 1980, 1985,and 1995 time periods; would assist the decision-making process; and would accommodate changes in policy, threat concepts, and force structure. These objectives were set forth in the NMCS Master Plan, the WWMCCS Architecture Plan, and the multi-volume WWMCCS Objectives and Management Plan (JCS Pub 19), which guided the individual development programs. However, parallel to these aims, a number of difficulties had arisen for several reasons: the piecemeal acquisition process; divergency of views as to cost, interoperability, and effective mix; and

more strenuous demands on such aspects as C^3 survivability and selective response in times of national emergency.

(U) In the face of these difficulties, the redirection given in 1971, together with able management by the WWMCCS Council structure, helped the system make great strides forward. Nevertheless, the hope of creating a system that would be effective against all conceivable or potential threats proved overly optimistic. In 1979, an assessment of strategic command and control by the International Institute for Strategic Studies had this to say:

> On balance, the survivability and endurance of C^3 systems is likely to remain no better, and often worse, than those of the strategic forces they support. While it should be possible to maintain a minimum degree of communication between the national command authorities and the strategic forces, it is unlikely that political and military leaders would receive sufficient information to enable them to exercise full control over events once a nuclear exchange had escalated beyond 50-100 nuclear detonations.
>
> This has profound implications for current strategic doctrines. If the threat of massive retaliation is no longer a credible means of deterring attack in an era of strategic parity, the doctrines which replace it envisage a limited and gradually escalating nuclear exchange directed against an array of specific targets. Without the certainty that the command-and-control mechanisms will work as planned during such an exchange, however, it is questionable whether those in command will be

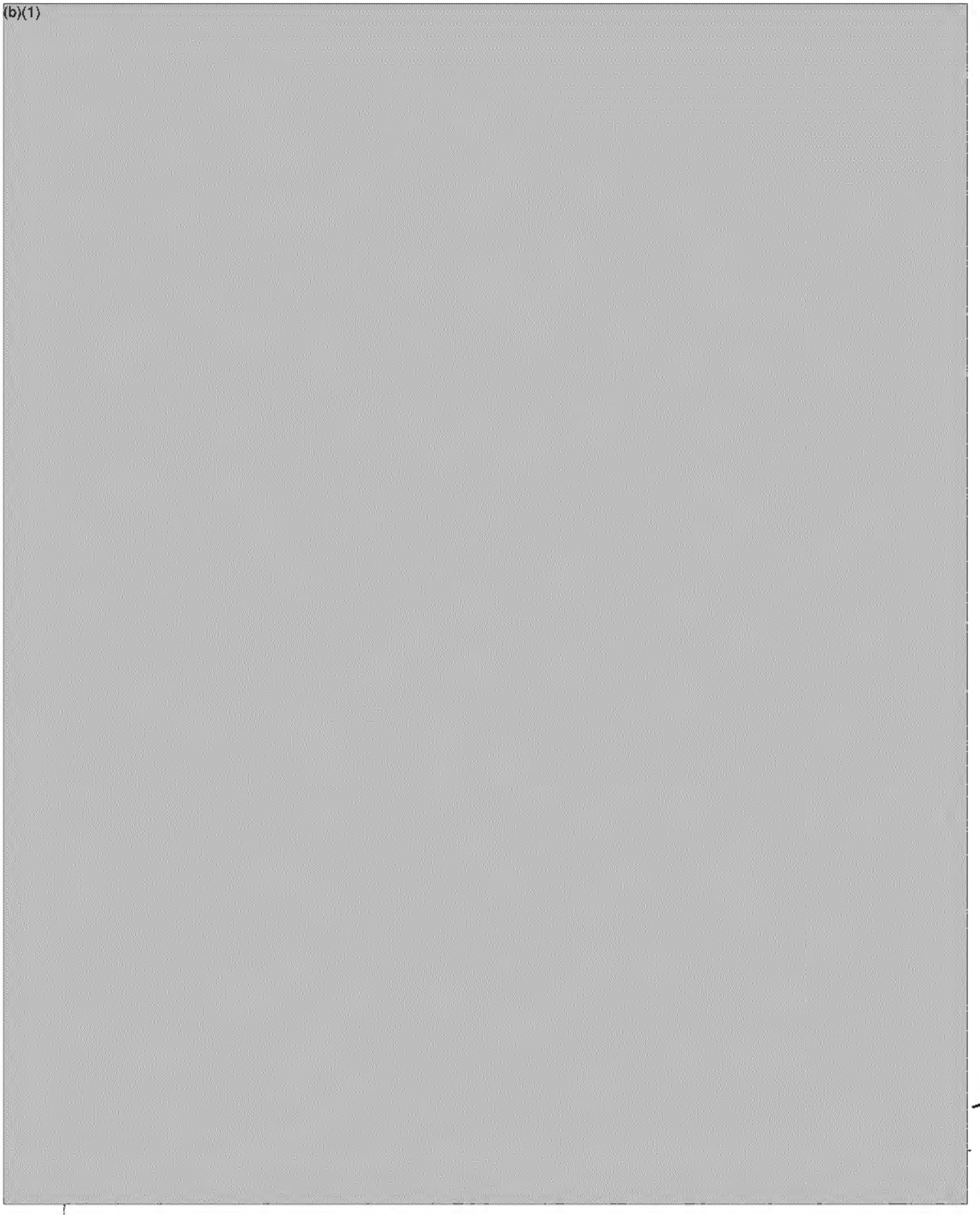
> willing, or able, to follow the course the new doctrine prescribes. Despite all the resources now being devoted to C^3, therefore, the uncertainties that inevitably remain make the use of nuclear weapons for controlled escalation no less difficult to envisage than their use for massive retaliation.[2]

(U) It becomes clear, then, at this point that no one, not even the greatest scientific genius, can predict how the most technologically advanced system of communications ever created would function and survive during an actual all-out nuclear exchange, one in which civilization itself would receive an enormous setback, and few clues would be left behind for man to retrace his past miscalculations.

2. Int'l Institute of Strategic Studies, Strategic Survey, 1979 (London, 1980), p. 15.

A P P E N D I C E S

(b)(1)



APPENDIX B

THE PERCEIVED SOVIET THREAT

(Reference Section IV, p. 117)

~~(S)~~ When the Nixon Administration took office in 1969, there was initial concern that the speed and scope of the USSR's buildup indicated its intention to pursue a first-strike capability. The United States was also concerned lest the Soviets develop a true ABM system from the rudimentary GALOSH system in place around Moscow.

~~(S)~~ Often the Soviet Offensive forces becoming operational in a given year exceeded previous US projections for that year. The projections for ICBM and SLBM strengths were revised upward steadily as additional information on Soviet deployments became available. In early 1970, Secretary Laird illustrated the trend with the following tabulation:

Year of Estimate	Estimated strength (mid-year)				
	1967	1968	1969	1970	1971
ICBM					
1966	420-476	514-582	505-695	509-792	499-844
1967	423-484	670-764	805-1,010	775-1,027	805-1,079
1968	536-566	848-924	946-1,038	949-1,154	939-1,190
1969	570	858	1,038-1,112	1,158-1,207	1,181-1,270
1970	570	858	1,028	1,262-1,312	1,360-1,439
Actual	570	858	1,028		
SLBM					
1966	24-30	24-42	24-78	24-114	30-138
1967	21	29	37-53	61-85	85-117
1968	24-27	43-46	75-94	123-158	187-238
1969	27	43	94-110	158-238	222-366
1970	27	43	110-126	184-248	296-376
Actual	27	43	104-120		

Only the Soviet strategic heavy bomber force declined in strength, dropping from 155 aircraft in October 1967 to 140 by mid-1972. The Soviets also had a force of some hundreds of medium bombers, some of which could be refueled for strikes against North America.

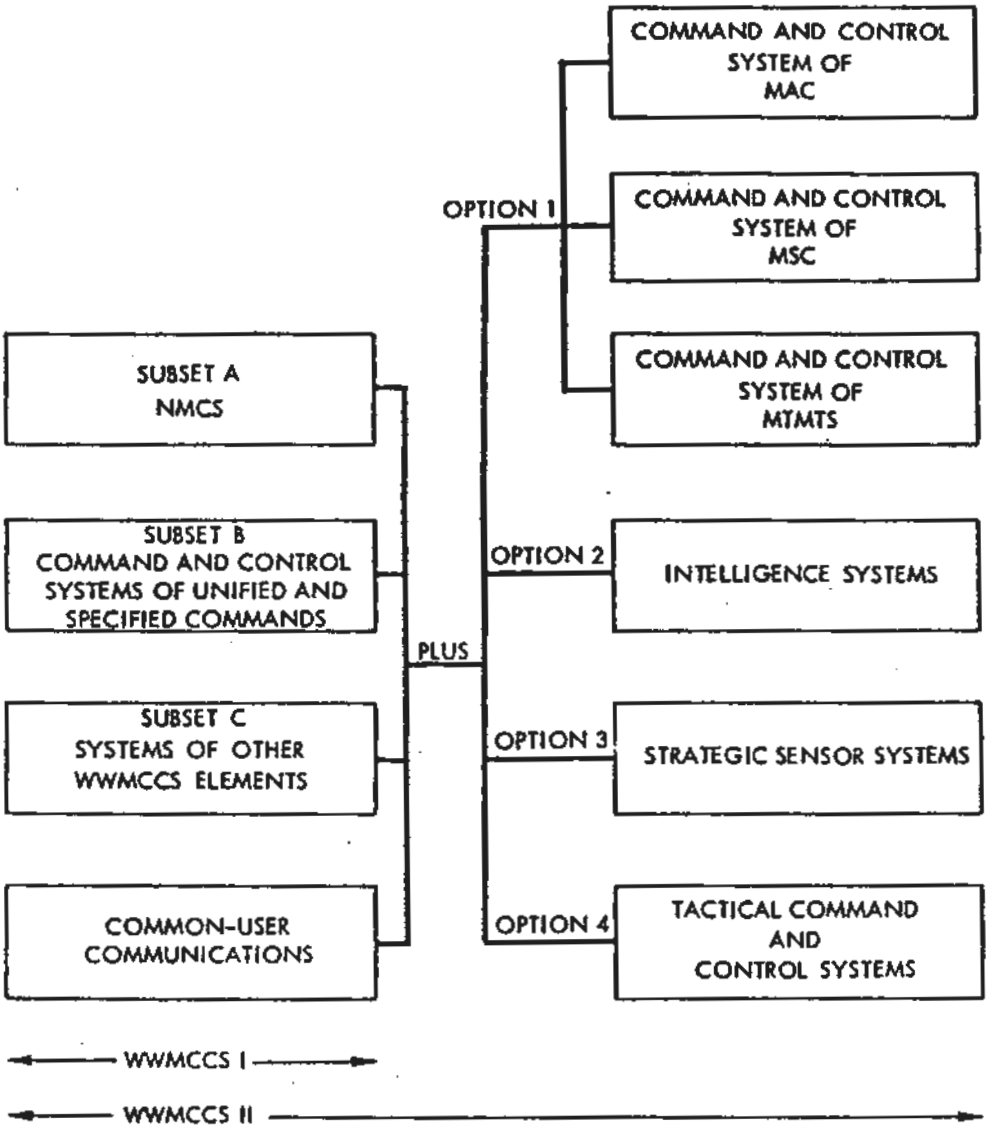
~~(S)~~ The Joint Chiefs stated in the Joint Strategic Objectives Plan for 1972-1979 that while strategic nuclear war was the least likely of all levels of warfare,

> The most dangerous threat to the United States is the strategic nuclear force of the Soviet Union which has continued to grow at a rapid pace. The Soviet strategic nuclear threat to the United States is so serious in its potential consequences, regardless of estimated Soviet intentions, that it must receive primary consideratrion in the formulation of military strategy, including the development of force levels.

Source: (TS) IDA Study S-467, The Evolution of US Strategic Command, Control and Warning, June 1975.

APPENDIX C

WWMCCS I AND II INSTITUTIONAL FRAMEWORK



Source: WSEG Report 183, WWMCCS Institutional Framework Study, Vol. I, P. 8, Apr 1972.

APPENDIX D

JCS PUB 19
VOLUME IV

CHAPTER V

WARNING SYSTEMS (U)

1. (U) General. The performance qualities and characteristics that have potential application to warning system evaluation include design adequacy (including alternate means of verification, geographic coverage, and presentation of information), reliability, availability, capacity, accuracy, responsiveness, timeliness, survivability, and security.

2. ~~(S)~~ The below listed standards are contained in ADCOM 55-series regulations: (U)

a. ~~(S)~~ Defense Support Program (DSP) Performance Specifications

(1) Mission A, Launch Detection

Overseas Ground Station

System availability

Probability of detection

Report time from launch

CONUS Ground Station

Dual availability

Simplex availability

Probability of detection

Report time from launch

- Quick Look region

- > 1700 nm from CONUS

(b)(1)

(2) Mission B (nuclear detonation detection)

System availability .95

Probability of detection (PD)

(b)(1) [redacted]

b. ~~(S)~~ DSP Augmentation

System availability As required for tactical warning

Probability of detection (ICBM only) (b)(1) [redacted]

Report time from launch

c. ~~(S)~~ Ballistic Missile Early Warning System

System availability (b)(1) [redacted]

Probability of detection

Reporting time from launch (b)(1) [redacted]

d. ~~(S)~~ Sea-Launched Ballistic Missile Detection and Warning

System availability (b)(1) [redacted]

Raid detection probability*

Reporting time

* Recognize one missile in an attack of five missiles penetrating system coverage within a 5-minute period.

3. ~~(S)~~ The below listed standards are contained in NORAD Regulation 55-8, 15 July 1976 (U):

~~(S)~~ DISTANT EARLY WARNING LINE SPECIFICATIONS

System availability

Probability of detection

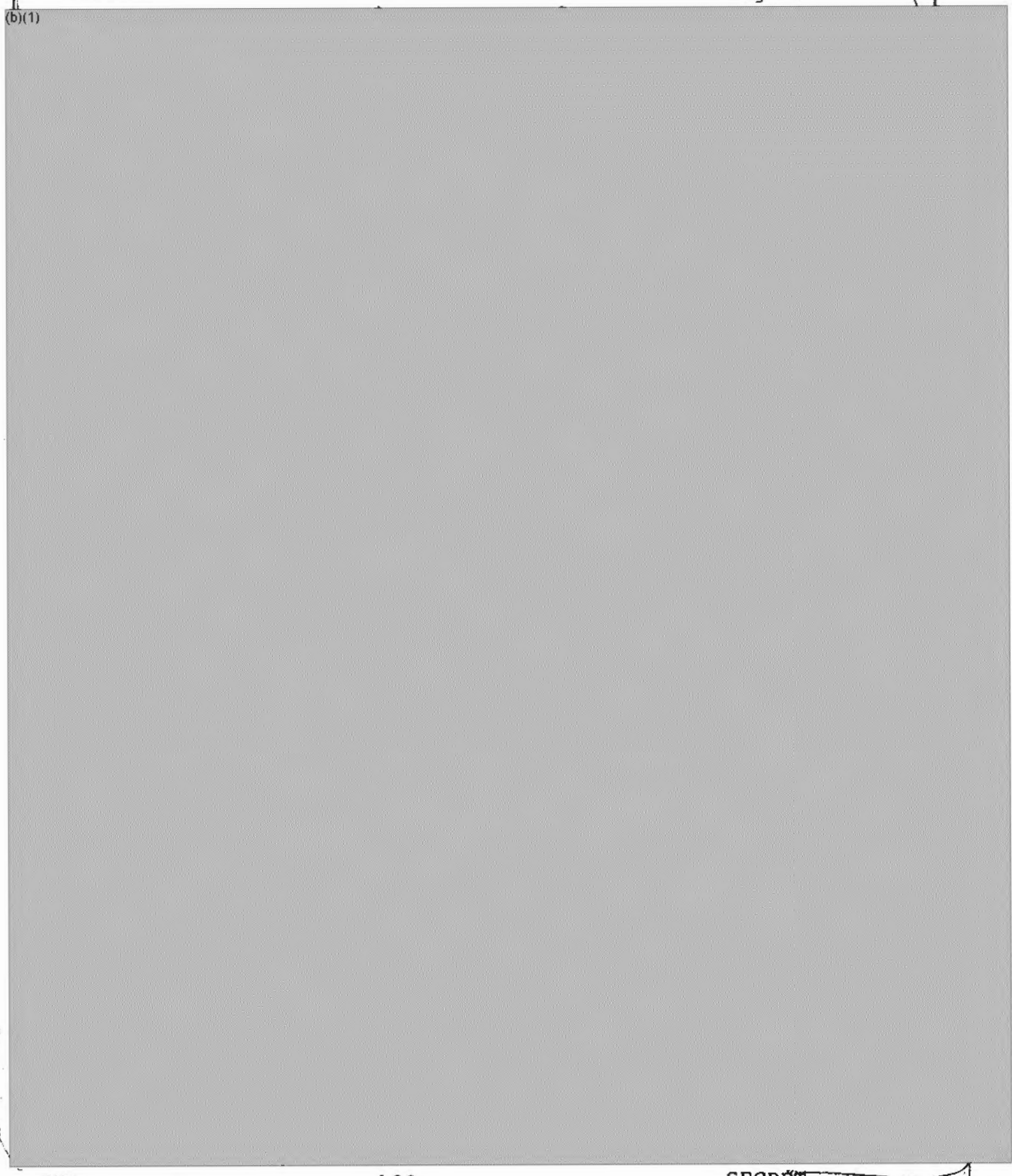
Reporting time

(b)(1)

APPENDIX E

(b)(1)

(b)(1)



APPENDIX F

WWMCCS ARCHITECTURE DOCUMENTATION

APPENDIX F

NUMBER	TITLE	CLASSIFICATION	IBM CD NUMBER
Seventh Report	WWMCCS Architectural Alternatives and Decision Considerations for Nuclear War		
Volume 1	Architectural Alternatives and Decision Considerations for Nuclear War	TOP SECRET	93-075-A072A
Volume 2	Architectural Alternatives for General War	TOP SECRET	93-075-A073A
Volume 3	Detailed Cost Information	SECRET	93-075-0902
Eighth Report	Architectural Alternatives and Decision Considerations for Crisis Situations	SECRET	93-075-0990A
Ninth Report	Candidate Broad Architectural Alternatives and Decision Considerations for WWMCCS	TOP SECRET	93-076-A001A
	Executive Overview	TOP SECRET	93-076-A002A
Tenth Report	WWMCCS Final Report	TOP SECRET	93-076-A006A
Eleventh Report	WWMCCS Architectural Plan	SECRET	93-076-0190A
	Executive Summary	SECRET	93-076-0191A
Annex 1	Interface and Baseline Definition	SECRET/FRD	93-076-0060
Annex 2	WWMCCS Functions, Actions, and Information Categories	SECRET	93-076-0062
Annex 3	Situations Options and Functional Activities Overview	SECRET	93-076-0063
Part 2	Crisis Situations Options	SECRET	03-076-0064
Part 3	Theater War Situations Options	SECRET	93-076-0065
Part 4	General War Situations Options	SECRET	93-076-0066
Annex 4	Streamlined Command Center Relationships for Theater Nuclear War	SECRET	93-076-0067

NUMBER	TITLE	CLASSIFICATION	IBM CD NUMBER
Annex 6	Communications Element Analysis	SECRET	93-076-0069A
Part 2	Supporting Appendices	SECRET	93-076-0070 A
Annex 7	Analysis of WWMCCS Informations Requirements and Joint Reporting Structure Support	SECRET	93-076-0071
Part 2	Executive Aids Element	SECRET	93-076-0072A
Part 3	Concepts and Goals for the WWMCCS Automatic Data Processing Architectural Evolution	Unclassified	IBM DOC 0368
Part 4	Automatic Data Processing	SECRET	93-076-0074A
Annex 8	Requirements and Solutions for the WWMCCS Warning Element	SECRET/RD	93-076-0075A
Annex 9	Requirements and Solutions for the WWMCCS Facilities Element	SECRET/RD	93-076-0076A
Annex 10	Implications of Tactical Battlefield Situations and Systems on the Requirements for the WWMCCS	SECRET/RD	93-076-0077A
Annex 11	WWMCCS Technology Assessments	SECRET	93-076-0078A
Part 2	Information Processing System	SECRET	IBM DOC 0369
Part 3	Advanced Sensor Technology Assessment	SECRET	93-076-0080
Part 4	Theater Nuclear War	SECRET	93-076-0081
Part 5	General War	SECRET	93-076-0082

APPENDIX G

DEVELOPMENT OF THE WWMCCS ARCHITECTURE

Summary

The Need

DOD Directive 5100.30, World-Wide Military Command and Control System, dated 2 December 1971, was issued under the personal direction of the then Deputy Secretary of Defense, Mr. Packard, to achieve several objectives:

> to emphasize that the primary mission of the WWMCCS is to support the President and the Secretary of Defense (the NCA);
>
> to establish the WWMCCS responsibilities of the JCS, the OSD staff, the services and the commands;
>
> to provide for the establishment of the WWMCCS Council with responsibility for: policy guidance, system evaluation and recommendations on planning, programming and budgeting.

The establishment of the WWMCCS Council brought together the previously disparate management structure under which the WWMCCS was being developed and guided from a policy point of view.

After approximately 18 months of operation, the Council in mid-1973 found that the issues they were being asked to decide were difficult to place in any context--ranging from approving funds for flight suits for members of the crew of the airborne command post to reviewing the program to authorize a new satellite surveillance system. As a result, they employed a consultant from AT&T to review the WWMCCS and make appropriate recommendations for means to improve the Council's effectiveness.

Source: OSD/C^3I, File on selected documents on WWMCCS Architecture, 1974-1976. Reproduced in abbreviated form.

The consultant's oral report noted the absence of any coherent system plan for WWMCCS and recommended that an architectural plan be developed to provide a framework for future Council decisions.

The Council accepted the recommendation to develop an architectural plan. It decided to competitively contract for the development of the plan. IBM was selected as the WWMCCS Architect. Work commenced in February 1974.

Management

The Architect is responsible to the Council. The Council was, and has continued to be, the major driving force during the Architecture Plan development period and in the subsequent implementation planning. The need for central, high-level direction, as originally contemplated by Deputy Secretary of Defense in issuing DOD Directive 5100.30 has been amply demonstrated throughout this activity.

Technical contractual direction is furnished by DTACCS. Operational guidance is furnished by the JCS. During the detailed planning process a Joint Review Group was established. This group consisted of representatives of the key Joint Staff organizations (primarily J-3, J-5 and J-6), each of the military services, the Defense Agencies, and each of the Unified and Specified Commands.

During the requirements development phase, the group met weekly with the Architect. Thereafter, until the plan was completed in April 1976, it met when needed, usually prior to and after the issuance of each of the Architect's draft reports.

In addition to the Joint Review Group, which reviewed and commented on each of the Architect's draft reports, the key contents of these reports were personally briefed to: each of the Commanders-in-Chief of the Unified and Specified Commands; the Operations Deputies of the JCS; the WWMCCS Council Support Group and the WWMCCS Council. Comments from all of the report reviews were appropriately incorporated in the final version of each of the reports.

The work of the Architect was also reviewed in a series of four Technical Review meetings. These meetings included not only the Joint Review Group organizations but also representatives of each of the major DOD system development organizations concerned with WWMCCS and selected consultants invited by DTACCS. DTACCS also sponsored the establishment of a WWMCCS Science Advisory Group, its members being well-known DOD scientific consultants in the fields of surveillance systems, communications and data processing. This group reviewed, and commented to the Architect and DTACCS, on each of the major milestone results of the planning process.

Approach and Results

The work on developing the plan was phased. Major analytic efforts were focused first on theater nuclear warfare, then on general nuclear warfare, and finally on crisis and conventional warfare capabilities. These phases enabled the identification of major capability tradeoffs which were structured as decision issues for the Council.

(S) For the theater nuclear phase, the decision issues were:

Theater facility survivability--the level (against nuclear and/or conventional weapons threats) of survivability which should be planned for command centers in Europe and the Pacific area.

Communications survivability--the degree of reliance on satellite communications both between the CONUS and theaters of operation and within the theaters. Also included consideration of techniques to protect satellites against an anti-satellite weapon threat.

System Reaction Time--the degree of timeliness and method of transmission of timely information among key commanders and the NCA.

Level of NCA control--the specific control techniques which the NCA would impose on the use of nuclear weapons in theater warfare.

The decision charts, for these issues were presented to the Council. The Council decided that, for the theater nuclear phase, the architectural alternatives would not include:

> achieving facility survivability through deep underground command centers in Europe; transportable facilities prepositioned in the theater; or an E-4 capability,
>
> real-time, all weather imagery for target acquisition for either the system reaction time or the level of NCA control issues.

(S) For the general or total nuclear war phase, the decision issues were:

> National Command Center survivability--the level to which the National Military Command System (NMCS) would be hardened against nuclear attack on the CONUS.
>
> Communications survivability--the level to which ELF communications transmitters to nuclear submarines, and communications satellites would be hardened against physical (nuclear) attack.
>
> Bomber Warning--the necessity for continuing to operate and maintain all of the currently planned (baseline) bomber warning systems.
>
> Attack Assessement--the addition of capability to specifically make impact point predictions of nuclear weapons launched against the CONUS prior to their detonation and to improve detection of nuclear detonations (NUDETS) after impact.

Dynamic Battle Management--the capability to alter the targeting of U.S. strategic nuclear weapons under stress conditions of nuclear warfare.

The Council decisions on these issues were that the architectural alternatives should not include:

The addition of significant resources to enable increased survivability of communications satellites;

Dynamic Battle Management Capabilities.

The Council decided to consider R&D for forward basing approaches for increasing the level of survivability of ELF communications and the NMCS. They also decided to defer, to later architectural phases, decisions on hardening the Alternate National Military Command Center and on attack assessment. Additional studies on bomber warning and communications to submarines were requested of the Air Force and Navy, respectively. The bomber warning study was completed and briefed to the Council. The Council decided to retain the baseline bomber warning program. Progress briefings were given by the Navy to the Council regarding communications with submarines.

~~(C)~~ Similarly for the crisis and conventional warfare phase, the decision issues were:

Interoperable secure communications--the ability of the currently planned secure communications systems to interoperate so as to make the resources of diverse systems available to WWMCCS.

On-line ADP support--the capability to use ADP beyond its currently planned day-to-day operational support role.

Mobile/Transportable Facilities--the capability to rapidly deploy command center and communications facilities to remote locations.

Crisis Alerting--the capability to rapidly notify the NCA of a potential or fast-breaking crisis situation.

Independent Forced Tracking--the capability to determine the location of U.S. forces, particularly in remote locations, without the necessity for formal reporting by the forces.

Real-Time Imagery--provision of real-time imagery from aircraft reconnaissance systems.

The Council decisions were that the architectural alternatives should not include:

Independent Force Tracking

Real Time Imagery

The remaining issues were deferred to the later phases.

(U) Once preliminary guidance on these issues was obtained from the Council a series of broad architectural alternatives was developed and reviewed through the management process described above. They ranged from minimal capability improvements in current plans through various intermediate capability levels to a maximum capability system which would have required an additional expenditure of approximately $7 billion over a 10-year period. The capabilities in these broad alternatives, which represented technically viable alternatives but which were not in the form of recommendations, were referred by the Council to their Support Group for recommendation.

The Support Group, based on Council guidance, then held a series of working sessions with the Architect. These sessions resulted in the recommendation to the Council that the Architecture Plan be divided into two major segments:

The Selected Architecture--consisting of those high priority, additional capabilities which were technically feasible to implement by 1985. In addition, two R&D programs to further clarify some decision issues were included. This segment had an estimated 10-year program cost of $1.2 billion.

The long range Architecture--consising of those lower priority capabilities which could be implemented post-1985, plus capabilities not technically feasible to implement before 1985 and capabilities which could be added if the selected architecture R&D programs were successful. This segment had an estimated 15-year program cost of $2.8 billion.

In addition, based on the prior direction of the Council, the Support Group recommended that all other capabilities identified by the Architect be documented in a "corporate memory" segment of the Architecture Plan. The corporate memory would enable the Council's decision on the Plan to be augmented if necessary at later decision meetings.

The Support Group recommendations were presented to the Council by the Architect in April 1976. The Council decision on that presentation and document was issued in June 1976. The Deputy Secretary of Defense directed the implementation of the selected architecture . . . .

Current Activities

The Council in December 1974 recognized that an organization would be needed to oversee the implementation of the Architecture Plan and to provide a system engineering focus to the entire WWMCCS. As a result of recommendations from the OSD staff, the JCS and the Services, the Council chartered the WWMCCS System Engineering Organization and established the position of the WWMCCS System Engineer.

As a result of the approval of the Architectural Plan, the WWMCCS System Engineer (WSE) has been working, with the cognizant agents for the items in the Selected Architecture, to develop detailed implementation plans. The WSE is also starting the overall WWMCCS system engineering process.

The WWMCCS Archictect has been retained contractually with a small nucleus group. This group is providing a more detailed examination of several WWMCCS capabilities and is supporting the Council in continuing maintenance of the Architecture Plan.

APPENDIX H

MAJOR WWMCCS MILESTONES

DoD DIRECTIVE 5100.30	1962
(Revised)	1971
SAC COMMAND CENTER (Underground HQ SAC)	1957
DISTANT EARLY WARNING (DEW) LINE (Greenland 1961)	1957
ALTERNATE NATIONAL MILITARY COMMAND CENTER (ANMCC)	1959
SAC AIRBORNE COMMAND POST (CONTINUOUSLY AIRBORNE)	1961
NATIONAL EMERGENCY AIRBORNE COMMAND POST (NEACP)	1962
TAKE CHARGE AND MOVE OUT (TACAMO) - NAVY EC 130 AIRCRAFT TACAMO	1962
BALLISTIC MISSILE EARLY WARNING SYSTEM (BMEWS)	1963
NATIONAL EMERGENCY COMMAND POST AFLOAT (NECPA) (Phased Out 1970)	1963
AUTOMATIC DIGITAL NETWORK (AUTODIN) (CONUS)	1963
AUTOMATIC VOICE NETWORK (AUTOVON) (CONUS)	1964
NATIONAL MILITARY COMMAND CENTER (NMCC)	1965
CINCPAC AIRBORNE COMMAND POST	1966
NORAD CHEYENNE MOUNTAIN COMPLEX	1966
WWABNCP NETTING PLAN (Revised 1973)	1966
DEFENSE SATELLITE COMMUNICATIONS SYSTEM (DSCS) (Phase I)	1966
EMERGENCY ROCKET COMMUNICATIONS SYSTEM (ERCS) (MEECN)	1967

APPENDIX H (continued)

SAC AUTOMATED COMMAND CONTROL SYSTEM (SACCS)	1968
SATCOM (LES-6) SHUT OFF 9176 REPLACED BY GAPFILLER)	1968
CINCEUR COMMAND CENTER (CURRENT FACILITY)	1968
CINCPAC COMMAND CENTER (CURRENT FACILITY)	1969
SEA LAUNCHED BALLISTIC MISSILE (SLBM) WARNING AND DETECTION SYSTEM	1970
CINCLANT COMMAND CENTER (CURRENT FACILITY)	1970
LOW FREQUENCY/VERY LOW FREQUENCY (LF/VLF) (MEECN) (FOR WWABNCP)	1972
440L-OTH MISSILE WARNING & DETECTION (Phased out 1975)	1972
DEFENSE SUPPORT PROGRAM (DSP)	1972
WWMCCCS ADP	1972-74
CINCLANT AIRBORNE COMMAND POST	1974
WWMCCS ARCHITECTURE (Complete in June 76)	1974-76
WWMCC SYSTEM ENGINEER (DoD Dir 5100.79)	1975
WWMCCS EVALUATION PROGRAM (DoD Instruction 5100.80)	1975

GLOSSARY

AABNCP	Advanced Airborne Command Post
ADP	Automatic Data Processing
AFSATCOM	Air Force Satellite Communications System
AJCC	Alternate Joint Communications Center
ANIP	Alternate National (Military Command Cener) Improvement Program
ANMCC	Alternate National Military Command Center
CCT	Communications Contingency Team
CINC	Commander in Chief
CINCUSCOM	Commander in Chief United States Command
DCA	Defense Communications Agency
DODDAC	Dept of Defense Damage Assessment Center
DUCC	Deep Underground Command Center
ELF	Extremely Low Frequency
ERCS	Emergency Rocket Communications System
JACE	Joint Alternat Command Element
JCCDG	Joint Command Control Development Group
JCCRG	Joint Command and Control Requirements Group
JCCSG	Joint Command and Control Study Group
JOPREP	Joint Operational Reporting [system]
LF	Low Frequency
MEECN	Minimum Essential Emergency Communications Network

NCA	National Command Authorities
NCCTF	National Command and Control Task Force
NEACP	National Emergency Airborne Command Post
NECPA	National Emergency Command Post Afloat
NMCC	National Military Command Center
NMCS	National Military Command System
NMCSSC	National Military Command System Support Center
NMIC	National Military Intelligence Center
OSD	Office of the Secretary of Defense
ROC	Required Operational Capability
SAC	Strategic Air Command
SI	Special Intelligence
SIOP	Single Integrated Operations Plan
SSBN	Fleet Ballistic Missile Submarine
TACAMO	Take-Charge-and-Move-Out (Airborne Communications Relay System)
USSAG	US Support Activities Group
VLF	Very Low Frequency
WHCA	White House Communications Agency
WSE	WWMCCS System Engineer
WWABNCP	Worldwide Airborne Command Post
WWMCCS	Worldwide Military Command and Control System