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STUDY S-467

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

L. Wainstein, *Project Leader*

C. D. Cremeans

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June 1975

INSTITUTE FOR DEFENSE ANALYSES
INTERNATIONAL AND SOCIAL STUDIES DIVISION

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INSTITUTE FOR DEFENSE ANALYSES
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PREFACE

(U) In the summer of 1974, the Secretary of Defense requested that a study be undertaken of the strategic arms competition between the United States and the Soviet Union from 1945 to 1972. The purpose of the study was twofold: (a) to provide a comprehensive historical account, hitherto unavailable, of the strategic competition and (b) to provide the basis for examining various hypotheses as to its origins and development.

(U) This extensive research effort, under the direction of the Chief Historian, OSD, was divided into eight discrete studies, each covering both US and Soviet developments, and was assigned to a number of agencies. The subject matter of these studies included: missiles, bombers, space, and warheads; air defense; aircraft carriers and ballistic missile submarines; forces and budgets; US and Soviet chronologies, high-level decisions, organization; and command and control and warning. The eight studies are intended to provide the basic research and analysis from which another study team will prepare an integrated report of US and Soviet developments for the Secretary of Defense.

(U) The IDA study effort was begun in September 1974 and completed in June 1975. The history of US command and control and warning is presented in four parts that cover the time periods 1945-53, 1954-60, 1961-67, and 1968-72. The four parts, in the main, treat similar aspects of the subject, including (1) developments in command and control at the national level; (2) developments at the strategic force level, particularly the Strategic Air Command; (3) warning developments; and (4) command post issues. Part IV also presents an overall view of the US command and control structure as it existed at the end of the time frame of the study.

(U) The parallel study of Soviet command and control and warning required extensive use of special intelligence material and for that reason is being published as a separate IDA study: S-469, *The Evolution of Soviet Strategic Command and Control and Warning, 1945-1972*.

(U) In this study, the term "strategic" refers only to the forces and operations for general nuclear war. It should also be noted that the term "warning" refers to tactical warning, i.e., warning that the enemy has initiated hostilities. We have not considered the interface with intelligence in the area of strategic warning.

(U) A consolidated list of the sources upon which this study is based appears at the end of the volume. Principal sources include the records and official reports of the Secretaries of Defense; selected records of the Joint Chiefs of Staff as made available by them; official histories of the military services and government agencies; governmental and non-governmental reports on command and control; and congressional hearings.

(U) Much of the material in this study dealing with the earlier years has either become public knowledge, has been declassified, or is in the process of being declassified. However, the documents from which data were drawn by the project team were not specifically identified as being declassified and could not be presumed so by the project team. Original classifications, therefore, have necessarily been retained throughout the study.

CONTENTS

EXECUTIVE SUMMARY

(U) This study is a history of the evolution of US strategic command and control and warning from 1945 to mid-1972. The 27 years under review span the development of US nuclear capability from a small number of atomic bombs and specially modified aircraft to deliver them to the large, complex forces and means to control them that exist currently.

(U) Command and control of and warning for US strategic forces have involved the capability to accomplish several basic functions: (1) maintain an up-to-date accounting of the status of forces and nuclear weapons; (2) on the defensive side, secure as early warning as possible of an enemy attack, assess it, and pass that warning to the National Command Authorities and to the strategic forces; (3) communicate the orders to launch strategic forces and maintain contact with them after launch; (4) ascertain the effectiveness of strike forces and the restrike capability of those forces; and (5) maintain the capability to carry out these functions during and after a nuclear attack on the United States.

(U) These functions were to become more difficult to perform with the passing years, both as US strategic forces became larger, more diverse, and more sophisticated and as the Soviet nuclear offensive capability grew. US strategic forces moved from sole reliance on piston-engine B-29s to jet aircraft, both land based and carrier based, and then to a combination of jet bombers and land-based missiles. Finally, missile-launching submarines completed the strategic triad. The burdens of command and control in coordinating these elements grew accordingly.

A. THE COURSE OF DEVELOPMENT

1. 1945-1953

(U) The appearance of atomic energy in 1945 was to transform the US military establishment, and the story of these first eight years is one of grappling with a host of totally new problems deriving from the new force. It was a period of technological groping, of doctrinal turmoil in the Armed Forces, and of a growing Soviet challenge. Because of the many factors impacting on the development of command and control in this period, the subject has to be construed very broadly to include most of the efforts to get a grip on atomic energy for military purposes. Atomic weapons had to be given a place in overall national strategy. Doctrine on when and how to use them had to be created, along with war plans to be implemented. A system of administrative control and custody had to be established to safeguard the weapons. A military force had to be established to deliver atomic weapons. Finally, in anticipation of the eventual Soviet acquisition of atomic bombs, an aircraft control and warning system had to be created for the air defense of the United States.

(U) The US response to the challenge posed by the military applications of atomic energy was, in the early years, filled with many contradictions between aspiration and actuality, words and deeds, policy and implementation. There was only a gradual acceptance by the military, and especially by the Air Force as the service most immediately concerned, of the implications of atomic weapons. Despite the tendency to brandish the atomic bomb politically, there was astonishingly little planning undertaken as to how that weapon might be used. Similarly, there was only a very slow improvement in the physical capability, in terms of aircraft and crews, to deliver atomic bombs. Despite recognition that these weapons were essential to maintaining a military balance in Europe, production of bombs moved slowly.

Indeed, a scarcity of fissionable material conditioned all thinking in the first four years, though this situation was to be totally transformed in the succeeding four years.

(U) Nuclear deterrence was adopted as the national strategy, but it had few teeth in it until after 1950. An atomic blitz concept was developed as the optimum form of an atomic offensive, but the concept could not have been implemented during the first five years. The scarcity of bombs, moreover, made it of crucial importance that they be used against the most critical targets, but intelligence on target systems within the Soviet Union was very poor.

(U) Although the destructive power of atomic bombs was generally recognized, there remained for some time considerable skepticism as to their war-winning capacity. Also, despite the emphasis on deterrence, there was no assurance that the President would indeed authorize the use of these weapons. A system of civilian custody of atomic bombs was carefully established and rigidly defended during the early years, but it was relaxed with surprising speed in the face of operational needs and a growing Soviet threat.

(U) This was an era of fierce interservice dispute over roles and missions, strategy, and shares of the atomic stockpile, yet there was almost universal military agreement on the primacy of atomic offensive forces over defensive measures. Even though it was expected that sooner or later the Soviets would achieve a nuclear capability, the effort to develop an extensive warning system was an uphill fight.

(U) The primary problem during these years was seen as one of building the strategic nuclear strike force itself and the system of bases from which it would deliver its attacks. Compared with this, the problem of developing a specific command and control structure seemed secondary. The Strategic Air Command was created in January 1946, and by 1953 it had developed into a powerful force with a network of overseas bases from which to launch its operations. There was a continual struggle by SAC to develop reliable and dedicated communications, and the period saw the development of a series of communications systems--AIRCOMNET, the Strategic Operations Communications System (SOCS), and the SAC Communications Network. None of these, however, fully satisfied the requirement as seen by SAC.

(U) Because of its strategic nuclear mission, SAC was more tightly controlled by the JCS than were other military commands. Until 1951, strategic command and control concerned SAC only, but after that the development of tactical nuclear weapons brought aircraft carriers and the overseas commands into the nuclear picture. A system of coordination of atomic operations was initiated in 1952 to control this rapidly widening nuclear capability.

(U) Concern over protection of the national command structure in a future war, a concern that increased as Soviet capabilities grew, stimulated the development of command centers and their requisite communications. In terms of positive achievements, however, little was accomplished in this respect in the 1945-53 period. The Air Force Command Post in the Pentagon, not established until 1950, constituted the nearest thing to a national command post to appear in these years. An alternate command post at Fort Ritchie, Md., was also authorized and established. Nevertheless, the survivability of the command authorities under surprise attack was increasingly in doubt by the end of this period.

(U) The years 1945-53 also saw the slow and halting creation of a basic aircraft warning system that was not much advanced over that of World War II. However, there was a growing concern about warning and air defense, stimulated by the outbreak of the Korean war in 1950 and by the NSC 68 estimate that by 1954 the Soviet Union would have the capability to launch a devastating attack against the United States. After years of debate, the decision was finally made in October 1953 (after the Soviet explosion of a thermonuclear bomb) to create a wholly new warning system, which would rely upon automation and include the building of a Distant Early Warning (DEW) Line.

(U) By the end of this period, an initial structure and system had been developed to deal with the problems raised by the military applications of atomic energy. Given the context of the times, the US responses were essentially pragmatic and often *ad hoc*, but those responses did provide a basis for the employment of US strategic nuclear power. Many of the major problems and issues encountered or foreseen in this period, however, were to continue on through the changing context of the years.

2. 1954-1960

(U) This period was essentially one of developing the requisite operational systems for command and control of the nation's rapidly expanding capabilities for waging strategic war. Building on the basically workable but limited structure of forces, communications, procedures, and policies established in the previous eight years, the United States filled out the overall structure, adding new command and control and warning systems with much increased capabilities. Most of the impetus for the improved systems came from the responsible services and, within the services, from the operational commands. This process continued on an evolutionary basis until the discontinuity produced by the appearance of the intercontinental ballistic missile in 1957, which was to transform drastically the concepts of and systems for command and control.

(U) The keynote of the drive for improved capabilities was the attempt to improve speed of reaction while maintaining reliability. These requirements necessitated technological gambles that were often near the edge of the state-of-the-art. Systems became extremely complex, costs spiraled, and schedules were delayed, but from a technical standpoint huge advances were made.

(U) The US capability for acquiring warning of strategic attack also made immense strides during this period. A joint and combined US-Canadian North American Air Defense Command was established in 1954. the DEW Line along the northernmost edge of the North American Continent, authorized in the defense policy reassessment of October 1953, was virtually completed by 1960. The Semi-Automatic Ground Environment (SAGE) computerized system for integrating the entire warning and defense network was also largely constructed by the end of the period. But costs and construction problems encountered with these advanced systems had multiplied, and the old ambivalence about the value of air defense and warning was exacerbated by the imminent expectation of intercontinental missiles. Cutbacks became the order of the day for warning systems against bomber attack, and meanwhile a major start was made in developing, through BMEWS and satellite reconnaissance systems, a capability for warning against missiles.

(U) During this period, SAC evolved from a force totally dependent on overseas bases for launching its bomber strikes against the Soviet Union to a true intercontinental bombing force that could attack from the continental United States. Command and control was further centralized to accord with the new operational concepts. Increasingly larger portions of the force were placed on a 15-minute alert status, and a "positive control" system was established for aircraft already airborne. Increasingly sophisticated communications, data processing, and display techniques were required to maintain control of the strike force under such conditions. Achievement of such capabilities was marked by endless problems and failures, epitomized by the false starts, technical headaches, and eventual changes in the basic concept of the SAC Control System (465L). As the period ended, SAC still felt that the communications and command and control systems available to it were highly vulnerable, and planning was begun on the Post Attack Command Control System with its airborne command post complex.

(U) Coordination of atomic operations, along with the collateral problems of targeting and allocation of nuclear weapons, became increasingly complex with the enormous expansion both of the nuclear stockpile and the means of delivery. The development of the Polaris ballistic missile submarine at the end of the period further complicated the problem and led to the establishment in 1960 of the Joint Strategic Target Planning Staff (JSTPS). After a decade of dissatisfaction with procedures for atomic strike coordination, a major step forward had been taken that eventually resolved the problem.

(U) Throughout the period there was a gradually increasing centralization of top-level control of the Armed Forces, with the roles of the Secretary of Defense and the JCS strengthened by the 1958 Defense Reorganization Act. The creation of unified commands that were directly responsible to the Secretary of Defense, through the Joint Chiefs of Staff, tightened control by the top command over all nuclear operations. These developments improved speed of response, but, while command and control procedures continued to concentrate upon the execution of a swift retaliatory strike in the face of a surprise attack, as the period ended there was growing awareness of the need for a greater degree of strategic flexibility in response to attack.

(U) In 1959, the JCS established their own Joint War Room under the control of the Joint Staff in the Pentagon. The Alternate Joint Communications Center at Fort Ritchie was upgraded and designated as the emergency relocation center for the National Command Authorities and the JCS. However, in view of the increasing vulnerability of fixed-site headquarters other alternatives were sought. The Navy put forth proposals for a National Emergency Command Post Afloat (NECPA), and the Air Force suggested a National Emergency Airborne Command Post (NEACP).

(U) The dominant strategic fact of the period, however, was the appearance in 1957 of the intercontinental ballistic missile and the realization that warning would soon be reduced to minutes, that the aircraft warning system constructed after so much debate and at such great cost would be ineffective against these weapons, and that the US ability to command and control its strategic forces in the face of a surprise nuclear attack was therefore extremely problematical. By the end of the period, the problem of survivability was dominating all other considerations in regard to the exercise of political and military command and control. In the late 1940s, SAC had planned on 45 days to go to war. By the beginning of the 1960s, the time had been compressed to 15 minutes.

3. <u>1961-1967</u>

(U) This period was one of continuing ferment in strategic command and control, although some of the more significant developments of the era traced their origins to the final years of the previous period. Nonetheless, the Kennedy administration confronted the problems of strategic command and control more immediately than either its predecessors or its successors. It acted vigorously to develop a secure retaliatory force structure that could survive a surprise missile attack and strike back and to create a survivable command and control system that could assure an adequate national response. The administration accorded command and control a high priority, perhaps higher than it had ever received previously.

(U) Within the first two months of the Kennedy administration, a program had been outlined to adapt US military strategy and force structures to the era of nuclear missiles and to delineate the requirements of deterrence in a balanced, two-sided strategic situation. A more diversified and flexible strategic posture was sought to accord with the requirements of a more flexible strategic response. The problem of nuclear strike coordination was effectively resolved by the JSTPS through the development of the Single Integrated Operational Plan (SIOP).

(U) While the now familiar problems of survivability and continuity of command authorities received considerable attention, it is not clear that much progress was made on the most intractable issue of survivability. The National Military Command System, composed of those command elements directly supporting the National Command Authorities and the JCS, was established in early 1962. It was composed of interconnected command centers, continuously manned, with specialized communications and other facilities to meet the information and other decision-making needs of the command authorities. The National Military Command Center in the Pentagon was developed as a continuously manned, unhardened facility operated by the Joint Staff to serve the JCS, the Secretary of Defense, and the President. Combined with this were alternates airborne and afloat. The NECPA came into existence aboard the USS *Northampton*, and a number of KC-135 tanker aircraft were converted to airborne command posts, the NEACP.

(U) Nevertheless, unresolved issues about fixed versus mobile command facilities persisted for years. Hardening remained a preferred alternative for high-capacity centers, especially if dispersed, but it was widely criticized as a low-confidence measure against Soviet weapons expected in the 1960s. Technical uncertainties about hardening and doubts about the functional capabilities of mobile centers kept the controversy alive. An effort to develop a deep underground command center (DUCC) in Washington failed to win approval.

(U) Perhaps the greatest uncertainty and most difficult problem in the strategic command and control system inherited from the 1950s concerned the continuity of presidential authority. Attempts to resolve the problem during these years involved again the issue of predelegation of strike authority by the President to his subordinates in the military chain of command. The problem was studied and restudied in these years, without apparent resolution.

(U) In an effort to coordinate the burgeoning command facilities and communications systems, the World-Wide Military Command and Control System (WWMCCS) was established in late 1962. The problems involved in developing an effective WWMCCS were formidable, however, and subsequent years were to see little progress in achieving the capabilities envisioned.

(U) The attempted shift from the single-option strategy of all-out retaliation to one of multiple options and selective controlled responses presented a major command and control challenge. Controlled response required standards of survivability and functional performance that were much higher than those required for the relatively simple transmission of a preplanned "go code." It called for a command and control system with more endurance and toughness in a nuclear environment, during and after an attack, and adaptable to a wide range of circumstances in its ability to assess attacks. Even with the technology coming into use then, it was not clear that such capabilities were achievable, except in the event of limited attacks that deliberately avoided command and control structures. Of all the prerequisites of such a strategy, the survivable and effective command and control system proved the most difficult to achieve and remained the greatest impediment to a credible and practicable flexible response strategy.

(U) During this period, there was a steady cutback of the aircraft warning systems created in the previous decade. Many of the DEW Line stations were closed down by 1963, with most of the radars counted as superfluous, and the remainder were maintained to provide warning of follow-on enemy bombers in a simultaneous missile-bomber attack. The first missile warning system, BMEWS, became fully operational and assumed the early warning function. Other missile warning systems, like over-the-horizon radar and the SLBM Detection and Warning System (747N), were put under development. The Emergency Rocket Communications System (ERCS) came into operation, and the satellite-based, infrared-detecting surveillance and warning system (DSP), which promised such a significantly improved capability, moved toward an operational reality.

(U) In the latter part of the period several factors led to a marked decline in the early high-level preoccupation with strategic command and control. There was increased confidence in US capabilities as a result of the ending of the myth of the "missile gap"; there was the US success in the Cuban missile crisis; the missile buildup planned in the early 1960s had been accomplished; and finally there came the diversion of the war in Southeast Asia. This decline in top-level interest, however, clearly was not a consequence of having solved the major problems of command and control.

4. 1968-1972

(U) The 1968-72 period was marked by continuity in concepts and procedures in the field of command and control and warning and by the changing strategic relationship between the United States and the Soviet Union. The outstanding feature of these years was the final ending of the US nuclear superiority, which had conditioned relations with the Soviet Union for the previous two decades. Yet the impact of that event on the development of US command and control was probably less than might have been expected, because it had earlier been recognized that even without parity the Soviets could cripple the US strategic command and control structure. Thus the problems did not change in kind during the late 1960s and early 1970s. Rather they became ever more intractable.

(U) Recognition of Soviet strategic parity led, however, to a renewed interest in command and control at the top level of government. It became more apparent that almost every element of the strategic command and control structure was vulnerable and that a carefully concerted Soviet effort to confuse or destroy the US warning and attack-assessment capability before a first-strike might make it impossible for the

United States to retaliate. The weaknesses in the system were studied repeatedly in this period, but there was little advance toward their correction.

(U) Controversy continued over the feasibility of doing much of what was put forward as necessary. There was, for example, a revival of interest in a deep underground command center, with some proponents claiming that with enough effort a survivable command authority could be achieved. The greater the expenditure, they claimed, the greater would be the certainty of survival. Opponents continued to challenge the concept on the grounds of political feasibility, cost, and overall reliability.

(U) Nevertheless, steps were taken in these years to rationalize the command and control structure. These efforts were in part inspired by the poor performance of communications during several contingencies in 1967-69 (the USS *Liberty* and *Pueblo* crises), which raised doubts about the adequacy of the entire system, including those elements devoted to strategic operations, and focused high-level attention on command and control problems. The World-Wide Military Command and Control System was reorganized in an effort to make its underlying concept more operative, and the Minimum Essential Communications Network (MEECN) was developed to provide a more reliable emergency backup to the primary and alternate facilities supporting command authorities. The Defense Support Program (DSP), with its satellite detection systems, came into operation in 1971, the newest and most sophisticated addition to the missile warning network.

(U) This period also saw the bitter ABM debate within the United States and the Strategic Arms Limitations Talks with the USSR. The initial SALT treaty of May 1972 downgraded the ABM issue and thereby removed what promised to be a whole new set of command and control problems.

(U) This was a period of much debate but few concrete, lasting changes in structure. There was a refinement and elaboration of concepts and systems begun in the early 1960s. The focus was on doctrine, concepts, and reorganization rather than on the creation of new systems. There was a revival of interest in flexible response toward the end of the period, which led to a reexamination of the same command and control issues that were confronted in the early 1960s. With the subsequent growth of Soviet capabilities, however, the ambiguities in the concept were even more apparent than before.

B. OVERVIEW OF STRATEGIC COMMAND AND CONTROL

(U) Perhaps the dominant impression derived from the account of these years is that of the persistence of most of the major problems of command and control and warning. Several particularly significant threads can be followed through the entire period. One is the survivability and availability of presidential authority. Another is the availability of adequate, survivable command posts for the National Command Authorities and the SIOP-committed unified commanders. A third is the availability of reliable communications from the NCA to the SIOP-committed forces.

(U) While the problem of ensuring the survival of decisionmakers did not become crucial until the Soviet missile threat developed, concern over their survivability began at the outset of the nuclear age and was mirrored in command and control actions, especially after 1950. The difficulty of assuring the survival of commanders, military or civilian, under conditions of surprise attack led first to the development of hardened underground command posts, but the growing power of weapons and the consequent reduction in warning time led eventually to emphasis on mobile and redundant command posts. Even these, however, could not provide assurance that the National Command Authorities would survive or that the command post system would be able to function under nuclear attack.

(U) Continuing concern over the reliability of command and control communications, the third thread, stemmed not only from Soviet attack capabilities but also from a series of unsettling physical phenomena that have been discovered across the years. In the early days of SAC operations in the northern regions, communications were seriously degraded by the auroral absorption zone. Later came recognition of the communication problems associated with fallout, blackout, dust, pindown, electromagnetic pulse (EMP), and TREES (transient radiation effects on electronic systems). Submarine communications raised special problems of reliability. Under conditions of nuclear attack, communications reliability remains uncertain.

(U) Another constant thread, one related directly to the survivability of presidential authority, was the determination of the President to retain sole decision-making authority over the employment of nuclear weapons. This was reflected in the reluctance of chief executives to grant predelegated authority to use nuclear weapons. The development of permissive action links to prevent unauthorized arming of nuclear weapons also reflected this civilian concern.

(U) There was also a steadily increasing centralization and simplification of the command structure. While traditionally command and control systems had been developed, owned, and operated by the individual services, JCS and OSD control was gradually asserted over all elements relating to strategic nuclear operations.

(U) Concern over the timing of nuclear operations was yet another thread. This derived from the fact that US strategy was always predicated upon the assumption of a first-strike against the United States by the Soviets. In the early period, everything was geared to the sole function of launching the retaliatory strike as quickly as possible. This concern led to the airborne alert concept, military custody of nuclear weapons, dedicated communications systems, a preplanned SIOP, and emphasis on warning and rapid decisionmaking and supporting command and control arrangements. SAC was in a constant battle with time. With the coming of the missile and improved communications, a very rapid response seemed possible, but at the same time it was rendered problematical by the fact that the survival of the National Command Authorities, command centers, and communications under an enemy first-strike became less assured. The appearance of the flexible response concept in the early 1960s was a reversal of the long-term trend; contrary to the concept of immediate response, it made a virtue of a cautious reaction to an attack until its full nature could be assessed and an appropriate response selected. Efforts were then focused on ways to buy time for the decisionmakers.

(U) The development of US strategic command and control and warning has been shaped by numerous influences and pressures. The major internal influence on the evolution of command and control has been, of course, its *raison d'etre*, namely, the need to control and coordinate US strategic forces. This fundamental requirement existed irrespective of the size and nature of the Soviet threat, although it clearly changed as the threat changed. In the early period, there were a number of internal influences that have since faded away or become secondary. Originally, the very newness of everything related to atomic weapons and the effort to create a military capability to use them dominated the scene. Disputes over roles and missions, service differences over national strategy and doctrine, civilian custody of nuclear weapons, problems of coordination of atomic operations, and controversies over resource allocation between strategic offensive and defensive-warning forces were all major issues at one time, but they no longer influence the development of command and control.

(U) Other influences have played a role across the years, particularly the abstract nature of strategic nuclear war planning and the lack of any experience by which to judge its validity. This characteristic no doubt accounts in good part for what, over the long term, has been a generally low level of interest on the part of senior political authorities in strategic command and control. It is true that interest was cyclical, but national authorities tended to direct their concern toward strategic command and control only in response to some Soviet move or strategic development.

(U) There was, too, a sense of frustration deriving from the apparent intractability of strategic command and control problems. Added to this was the continuing struggle with technology and costs. The nature of the problems involved in strategic command and control and warning was such that technology was often pressed to its outer limits. This problem was compounded by advances in technology that often made for rapid obsolescence of systems. Sometimes, because of long lead times, systems were obsolescent before they reached operational status. Finally, successful systems often provided little improvement in capabilities for their cost; marginal improvements seemed to be all that was feasible. Thus invariably the question would arise as to whether such improvements were worth the costs; no matter how much money was spent on command and control and warning, the capability to carry out the functions of command and control after a nuclear attack never seemed to become any more certain.

(U) The impact of the "technological imperative" on the development of command and control and warning is clear but unmeasurable. Certainly it led to more rapid obsolescence of systems than might otherwise have been the case. Then, too, individual service interests heavily influenced the direction of command and control, especially in the early period. Finally, domestic political and economic considerations also carried an unmeasurable degree of weight in the choice of systems.

(U) The impact of Soviet actions on the development of command and control is similarly clear but hard to measure. However, the applicability of the concept of "action-reaction" between US and Soviet command and control systems is problematical. At any given point in time, it is probably not possible to judge whether internal or external influences were more compelling. Certainly both were constantly operative and interacting. While the overall US nuclear superiority until the mid-1960s seemed to provide a cushion of time for improvements, there were periods of heightened concern over an increase in Soviet capabilities and their implications for US command and control. This was the clearest evidence of action-reaction with the USSR. In the matter of warning, of course, the entire development was a reaction to the anticipated evolution of Soviet offensive capabilities.

(U) Initially, the development of the cold war and the recognition of an historically unprecedented threat to the nation influenced thinking and planning. Soviet nuclear breakthroughs or actions, like the first Soviet atomic explosion in 1949, the thermonuclear bomb and the ICBM in the 1950s, and the drive for parity or superiority in the late 1960s and early 1970s, provoked high-level interest in strategic command and control and warning. Increasing Soviet capabilities to damage the United States led to heightened interest in protecting the command and control structure. When a situation of mutual assured destruction was fully recognized, US interest arose in ways to preserve the respective command structures as a means of controlling a nuclear war.

(U) Certainly in the early period, if command and control is construed broadly, as it is in this study, the whole process can be viewed as a US reaction to Soviet actions, actual or anticipated. The very slow growth of atomic forces in the first three years reflected the slow development of the cold war and US concern over it. Only after the Czech and Berlin crises of 1948 did the process accelerate and then move into high gear after the first Soviet atomic explosion and the Korean war. The appearance of a potential Soviet nuclear threat to the United States clearly galvanized US efforts more than the existing Soviet conventional threat to Western Europe. The rapid increase in atomic offensive forces to reinforce the US deterrent and the reluctant but eventual major effort to create a vast warning system were the results.

(U) In the 1954-60 period, the rising US concern with survival of the command structure reflected the growing Soviet aerodynamic threat in the middle of the period and the missile threat at the end. Throughout those years, the concern with the speed of reaction by US retaliatory forces was prompted by fear of a surprise attack. In the years after 1960, developments in command and control and warning were impelled both by the growing size and sophistication of the Soviet threat and by the need to manipulate the various elements of the US strategic triad, as well as to fine tune the entire US response, in order to achieve a goal of a multiple-option, flexible-response capability.

PART ONE

1945-1953

(This page is UNCLASSIFIED)

I

THE SETTING

(U) It has been said that although the United States emerged from World War II with unrivaled power and prestige, only a few years later it found itself less secure militarily than at any time since 1815. The events of only three or four years led the United States to reverse its long-standing traditions and to begin the building of a large, permanent military establishment.

(U) It was the appearance of atomic energy that transformed the American military establishment, and the story of the years from 1945 to 1953 is one, in its most crucial essence, of grappling with a host of totally new problems deriving from the fabulous new force. Walter Millis has described the situation well. Referring to the outlook in the fall of 1945, he wrote:

> This background of confusing and conflicting issues, all interrelated yet all unavoidably having to be met on a more or less piecemeal basis, should be kept in mind in any assessment of the decisions of the time. To most in those days the greatest of all was the awesome, the mysterious and the wholly novel issue of atomic energy. It had been presented suddenly and shockingly with the fall of the bombs on Japan in the last days of the war. Nobody understood it, had any grasp of its implications or of what to do about the startling new facts which it had apparently injected into the international world of war and policy. But it was an issue in which clearly military (or strategic) considerations appeared to come most directly into conflict with clearly non military (diplomatic, economic, social and civilian) considerations.*[1]

(U) Atomic weapons had to be given a place in overall national strategy. A concept for their use had to be developed.

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*(U) Footnotes for Part One begin on p. 125.

Doctrine on when and how to use them had to be created, along with the war plans to be implemented. A system of administrative control and custody to safeguard the weapons had to be devised. A military force had to be established to use atomic weapons. Finally, in anticipation of the eventual Soviet acquisition of nuclear weapons, a warning system had to be created.

(U) These are the threads that will be pursued in this study of the growth of command and control of strategic offensive forces and of warning against strategic attack. In these early years, command and control must be construed very broadly to include all the efforts to get a grip on atomic energy for military purposes.

(U) The struggle to fit atomic weapons into the national armory took place against a backdrop of long-term developments that both influenced that struggle and, in turn, were influenced by it. These included the following:

(1) The process of unification of the Armed Forces and, most particularly, the creation of an independent US Air Force. This process, especially between 1945 and 1948, occupied much of the attention of the Air Force leadership.

(2) Service rivalries, especially between the Air Force and the Navy, which quickly became involved with the nuclear weapon issue. The rivalry was both the cause and the product of broader issues that fundamentally impinged on strategy and force structure.

(3) The changing perception and reality of the Soviet threat. The real watershed of the period was the first Soviet nuclear explosion in August 1949. The steady growth of Soviet capabilities provided the background for US developments.

(4) The erratic pattern of military budgets in this period. The years 1945-46 saw a tremendous contraction in the military budget; 1947-48 a modest expansion; 1949 to mid-1950 a contraction; mid-1950 to 1952 a huge expansion; and 1953 on, the end of the Korean war and the Eisenhower New Look with its projected economies. To be sure, the budget for strategic forces never fluctuated as much as the budget as a whole;

the strategic nuclear striking capability showed a steady, if surprisingly slow, increase.

(5) The continuing battle over resource allocation between offensive striking forces and air defense. While the JCS disagreed bitterly among themselves on the issue of overall budget allocations, they usually stood together in supporting the primacy of a strategic offensive capability over a strategic defensive capability and tended to resist the expenditure of large funds on air defense and warning.

(U) In terms of the breadth and speed of US developments, the eight-year period divides into two parts, from 1945 to the outbreak of the Korean war in June 1950, and from mid-1950 through 1953. Through most of this period a military stalemate existed between the American atomic bomb and the Soviet ground forces. Soviet forces held Western Europe hostage against American pressure on the Soviet Union, while, in turn, American atomic airpower held Soviet cities and industry hostage against any Soviet attempt on Western Europe. Yet, the US Armed Forces grew slowly from a 1946 demobilization low point. By June of 1950 there were only 10 understrength Army divisions and 48 air wings. Nevertheless, Winston Churchill articulated the generally accepted truth when in March 1949 he declared that it was certain that Europe would have been communized and London under bombardment some time ago but for the deterrent in the hands of the United States.

(U) The Soviet development of the nuclear bomb in mid-1949 threatened to undermine this balance. Henceforth, American cities would be at risk. The Korean war provided another shock, for the war seemed to make perfectly clear to US decisionmakers the Soviet willingness to use force. In all the crises of the preceding three or four years, the Soviets had been cautious. Now it appeared that they might be changing. Thus, Korea led to a major expansion of the active forces and especially of the strategic atomic forces. The first step, in concert with the creation of NATO, was aimed at building something of a counterbalance to the Soviet ground forces in Europe. The second was designed to increase the probability of deterrence by making the atomic striking forces sufficiently strong to absorb any Soviet atomic attack. The great growth of the strategic offensive forces and increasingly elaborate machinery to control them came after 1950.

(U) The incompatibilities between the two efforts soon became obvious, however. Advocates of strategic airpower pointed out that the United States was attempting to maintain a precarious and very costly balance between two basically distinct concepts of war--atomic deterrence and containment with ground forces large enough to block the Soviets in a land battle. Achievement of the latter objective was turning out to be much more problematical than achievement of the first, both financially and politically. This fundamental disagreement over broad strategic concepts permeated the second part of the period into the Eisenhower administration, when the disagreement reached its peak.

(U) The chapters that follow cover two main topics. The first, Chapters II-VI, deals with the efforts to develop an offensive capability. The second, Chapters VII-IX, concerns certain of the defensive measures taken by the United States in response to the Soviet atomic offensive capability.

II

THE IMPACT OF ATOMIC ENERGY AND THE CONCEPTUAL FRAMEWORK FOR ITS MILITARY EMPLOYMENT

(U) The abrupt ending of the war in the flash of two atomic bombs gave the military leadership of the United States little time to contemplate the new force. While the political leadership clearly recognized the new dimension in war and national power equations, as was evidenced by the activity to establish some international control of atomic energy, the leadership of the Army Air Forces (AAF), those most immediately concerned among the military, was generally much more conservative in its approach. For many, the real remaining question for the future was how to perfect a better delivery system in the form of a very long range bomber.

(U) In 1945-46 and, to a lesser degree, even into early 1948, there were two groups of strategic thinkers in the AAF/USAF. The majority held that the atomic bomb, despite its power, did not fundamentally transform the nature of war or its strategy. Furthermore, it was a relatively unknown weapon and was and would be scarce. The minority view held that the potential of atomic weapons was immense and incalculable.

(U) It was not until 1948 that there was a general awakening to the significance of atomic weapons.[1] Even then, ambivalence continued to exist in some surprising quarters. For example, the Chairman of the Atomic Energy Commission (AEC), David Lilienthal, recorded that at a 30 June 1948 meeting with Secretary of the Army Royall, Secretary of Defense Forrestal "said again that the American public has a mistaken idea of the value of atomic weapons. In his view they are powerful but not decisive." Royall felt they might be decisive.[2]

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([redacted]) General Arnold, the commanding general of the Army Air Forces, in September 1945 had appointed a board under General Spaatz to consider the impact of atomic weapons on the AAF, its deployment, size, organization, and composition. The findings and recommendations (for the period 1945-55) were quite conservative. The board found that atomic energy did not warrant a major change in the nature of the postwar AAF or in the concept of the strategic air offensive. It stressed the need for all types of air forces with nonnuclear weapons and for outlying bases. However, the report did stress, as an assumption, a fundamental change--that the United States would not have the time to arm after a war began, and thus required a force in-being.[3] The board's conclusions actually dealt mostly with air defense, the need for an intelligence warning system of unprecedented effectiveness, and the need for a large R&D program. Curiously, the Spaatz board failed to recommend specifically the creation of an atomic striking force, although it did state that the United States would have to be prepared to take retaliatory or preventive action.[4]

(U) By early 1946, the more farsighted of the AAF leaders had come to recognize the fundamental change in strategic concepts that was required. No longer could the United States rely upon a small military force in-being that could be enlarged after war began. Both offensive and defensive forces had to be war-capable at all times.

(U) Among political authorities and scientists, the initial reaction in late 1945 and early 1946 to atomic energy was one of grave concern. The wartime relationship with the Soviet Union was rapidly breaking down, and while international controls were generally favored, the US secret could not be given up until such controls were certain. Even General Spaatz at this time advocated world government and international control of atomic energy.[5]

(U) In view of Soviet hostility and the unlikelihood that the United States could continue to maintain a nuclear monopoly, the prospect of an atomic arms race with the Soviets was soon anticipated. Accordingly, AAF leaders began to plan on the basis of three key assumptions: that the atomic bomb was essentially a strategic weapon; that the United States would have to maintain undisputed leadership in strategic air weapons development; and that such primacy would depend on major programs of R&D.

(U) The Bikini tests of mid-1946, Operation CROSSROADS, led to significant results. The final JCS evaluation did not become available until June 1947, but its findings were earlier apparent. The report stated three main theses: (1) that US security required a policy of instant readiness to defend the United States against atomic attack, until it became certain that there would not be an atomic war, presumably because of international controls; (2) that offensive strength would be the best defense; and (3) that as long as atomic bombs could be used against the United States there ought to be a continuing production of fissionable material and an R&D program in all phases of atomic war.[6]

(U) The CROSSROADS tests indicated to the AAF leadership the need for an effective means of delivery in the form of a specialized atomic striking force, a coordinated development of weapons and delivery vehicles, and a greater involvement of the AAF in the atomic energy program. Lt. General Curtis LeMay even felt that the JCS evaluation of CROSSROADS suggested both a need to redefine an aggressive act and a US readiness to launch a striking force to prevent another and greater Pearl Harbor. This was one of the rare instances when a senior air officer seemed to suggest the possibility of preemptive attacks, although the Spaatz board had hinted at the point as well.[7]

A. CONCEPTUAL DEVELOPMENTS: DETERRENCE

(U) It was early sensed that an atomic striking force, no matter how powerful, could not guarantee the nation security from attack. With few exceptions, both political and military leaders recognized that the United States would never strike first in an atomic war and that a determined enemy could get through any air defense system. As for the defense of Europe, there was no assurance that atomic destruction of Soviet cities and industry would hamper or prevent a Soviet advance to the English Channel.

(U) The dilemma grew with time. Because there appeared to be no real alternative, military planners seemed to find a solution in the concept that a US capability to strike with great force and speed would deter an enemy from attacking in the first place--the costs ultimately would outweigh any expected benefits. A concept of "deterrence" had first been mentioned during the war and began to appear in formal JCS papers by early 1946. By the following year, it had gained wide acceptance in the AAF.

(U [redacted]) The concept received final sanction as national strategy at the highest levels of government with the publication of NSC 20/2 on 25 August 1948. The document, a statement of US objectives concerning relations with the Soviet Union, stated that "the US defense effort must be based on the principle of the deterrent."[8] Another NSC document, NSC 20/4, approved 24 November 1948, also declared that attainment of US security required military readiness, maintained as long as necessary "to act as a deterrent to Soviet aggression."[9] While deterrence thus became the keystone of US national strategy, the concept did not go unchallenged. Linked as it was to the concept of atomic blitz, it came under attack by the Navy in the interservice controversies that culminated in the B-36 hearings of late 1949 (see Chapter V). In a sense, the concept was predicated to a considerable degree on wishful thinking about a preferred course of enemy action. Theoretically, deterrence should have been most effective during the period of the US nuclear monopoly. In reality, the US atomic capability was so small that the US ability to destroy the Soviets in an exchange for Western Europe was very questionable. An intriguing question can be raised on this point. Did the Soviets have knowledge of the weakness of SAC in these years and of the smallness of the atomic stockpile?

(U) As the weakness in the concept of deterrence was overcome, a second was to appear with the development of a Soviet nuclear capability and the inevitable growth of a situation of mutual deterrence.

B. CONCEPTUAL DEVELOPMENTS: THE ATOMIC BLITZ

(U) Little was done by the AAF in 1946 and early 1947 to develop operational concepts and procedures for the fledgling atomic strike force. Neither specific war plans nor target lists were readied. Organization of the atomic energy program in the Air Force had yet to be accomplished by early 1948. An Air Force study in January 1948 called for the enunciation of a policy giving atomic warfare an overriding priority and for steps to ensure that the Air Force would acquire the necessary knowledge of atomic affairs.

(U) The weakness of the overall atomic program was due in large part to the fact that some program elements had been deleted in earlier budgets, apparently because they were not considered of sufficient priority to retain. On 1 March 1948, the Air Force Aircraft and Weapons Board, in a report to the Chief of Staff of the Air Force (CSAF) stated that:

> the USAF has not established complete strategic and operational plans for carrying out its mission of strategic atomic warfare, and does not have an integrated high priority program for its own development which is based on these plans.[10]

The report further stressed that atomic warfare must become the business of the Air Staff and the commands and not be relegated to one agency, such as the Air Force Special Weapons Group.

(U) The surprisingly slow movement toward the creation of an atomic doctrine (and fighting force, too, for that matter) was the result of many factors, such as widespread ignorance about atomic matters among the military because of tight civilian control; the greater emphasis placed on the R&D part of the overall atomic program; the often difficult relations with the Manhattan Engineering District (MED), which had created the bomb during the war and controlled the program until the establishment of the AEC in 1946; and the confused organizational picture of those early years. Because of the widespread belief in 1945-46 that control of atomic energy should be removed from the military, the JCS themselves were somewhat isolated from the process of atomic energy policymaking until late 1946.

(U) The number of AAF officers familiar with atomic affairs in 1946 was very small, and the tight security of the Manhattan Engineering District made it difficult to start training programs. For the Bikini tests, only one AAF bomb commander was selected and trained; five senior and five junior officers were trained in bomb assembly, preparation, testing, loading, and dropping.[11] This hesitant approach to atomic energy matters was typical and very self-defeating. Curiously, the Navy reportedly played a surprisingly active role in the atomic weapon training program in these early years, and Navy weaponeers were perhaps more numerous than those from the AAF.[12] In both cases, of course, the numbers were extremely small. Even in the newly created Strategic Air Command, most attention was being given to developing logistical programs.

(U) There also was apparently confusion within AAF headquarters over just who had the responsibility for writing and promulgating doctrine for the new weapon and for determining the extent to which that doctrine differed from ordinary strategic bombing doctrine and procedures.

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(U) Prior to 1947, the AAF had only a very hazy view of war operations. There were no war plans either at AAF headquarters or at SAC. It was during late 1946 and early 1947 that the AAF began to develop a concept of bombing with atomic bombs, which were regarded as purely strategic weapons to be used only when they could contribute decisively. For several years, the stockpile of weapons was to be limited by the availability of fissionable material. It was not until the demonstration of new technologies at the Eniwetok nuclear tests in early 1948 that it began to appear that scarcity of weapons might be only a passing problem. The early shortages, nevertheless, dictated targeting policy for some years, as will be described later, so that only the most critical enemy targets would be hit.

(U) A pioneer study by the AAF War Plans Division in April 1947 on "Strategic Implications of the Atomic Bomb on Warfare" foresaw the long-range bomber carrying atomic weapons as the surest way to fight an atomic war for the indefinite future, although the study prophetically foresaw the ultimate replacement of the bomber by a long-range guided missile. The study enunciated what came to be known as the Spaatz principle, a concept of mass attack at the beginning of hostilities with a sufficient number of atomic bombs to achieve the complete defeat of the enemy. The report stressed the need for adequate intelligence and for a citizenry prepared to face the results of such an atomic blitz.

(U) While the scarcity of weapons and the concept of atomic blitz were to influence all atomic planning, it was recognized that an atomic blitz would in actual fact not be a practical objective for some time because of the lack of adequate logistic arrangements, such as the availability of personnel trained to handle atomic bombs. It was soon clear that solution of these problems would have to precede detailed war plans.

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(U) It was also recognized that target studies would be particularly significant in atomic operations, because of the limited number of bombs and the need for a decisive campaign to avoid an extended atomic war. The first major target study prepared by the Air Staff in the summer of 1947 consisted of a list of cities in Europe and Asia on which the Soviet Union relied for military supply and equipment. Forty-nine of the most important targets, a combination of industrial areas and the oil industry, were chosen as the basis for calculating the number of atomic bombs required. The results showed a requirement for 100 bursts. The Air Staff, however, allowing for heavy operational losses (possibly up to 50 percent), felt that 200 bombs would actually be required. This estimate was used later in the year by the JCS in a report to the AEC on military stockpile requirements.

(U) The atomic campaign was not expected to begin until sometime after actual hostilities had begun, possibly as much as six months later, after a period of Soviet advance into Western Europe. Bases from which the atomic campaign would be launched would be located in the United States and around the Eurasian periphery. The provision of escort fighters for the atomic bombers would not be possible because of the required depth of penetration and the enormous numerical superiority of the Soviet fighter defenses. Therefore, darkness and bad weather would have to be relied upon as the chief defenses of the bombers. No simultaneous massive assault--no atomic blitz--was considered possible at the time or in the near future because of the technical limitations of the atomic bombs. As a result, the atomic campaign would likely follow the pattern of a drawn-out series of moderate-scale missions, with tactics based primarily on single aircraft sorties. An all-out effort would be made to launch the maximum number of aircraft, both diversionary aircraft and actual bomb carriers, each night and to compress the entire campaign as much as possible.

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([redacted]) The Air Force Tactical and Technical Liaison Committee developed three tactical delivery plans using B-29s. The first called for night saturation, which involved single atomic attacks at night against a general area and the employment of many diversionary aircraft that would fan out from a central point to maximize confusion and disruption of the defenses. The second plan used extremely long-range attacks past the point of no return, with the crews either ditching their aircraft or bailing out.[13] The third tactical plan involved a daylight formation attack by a single bomb carrier with B-29 escorts or a multiple bomber attack on a single target.

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([redacted]) During the winter of 1947-48, planners in the Air Force Directorate of Planning developed the concept of "killing a nation" in the process of drawing up target lists. Recognizing the depreciation of World War II AAF population attacks in the US Strategic Bombing Survey reports, the planners concentrated instead on industrial targets. These were found to be located in 70 Soviet cities, and this led to the suggestion that the attacks be against cities as a whole rather than against specific targets therein. The concept then grew that the objective might well be to destroy not just specific industrial targets but the governmental control mechanism and the industrial mobilization base.

(U) The "nation-killing concept" was also implied in a letter by the first commanding general of SAC, General Kenney, in August 1947. His letter is interesting not only as a reflection of his thinking but as a criticism of the slowness of the Air Force to think hard about the problem.

> A war in which either or both opponents use atomic bombs will be over in a matter of days, so our target analysis system should change. Bombing of targets which will affect enemy production in a few months is meaningless. There is no time to destroy the enemy air force. The air force that is superior in its capability of destruction plays the dominant role and has the

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> power of decision. The inferior air force has no role. Before it can be built up, the war will be over.
>
> The advantage accruing to the aggressor who makes a surprise attack has become so great that it can almost be considered decisive. I believe this should be studied, analyzed, and discussed far more than we are doing today.[14]

U ([redacted]) Nation-killing, however, was strongly opposed by elements within the government and was rejected by senior military authorities. General Spaatz, too, did not subscribe to the concept; he felt that it should be possible to cripple Soviet industrial power by precision bombing of a few hundred square miles of industrial areas in a score of Soviet cities. For this decisive application of atomic power, Spaatz stressed the need for secure forward bases.[15]

C. EARLY ATOMIC WAR PLANS

U ([redacted]) On 21 January 1948, the Joint Chiefs approved JCS 1745/5, which stated a requirement for 53 atomic bombs (20 kilotons each) by that month. The document also enunciated the principle that best results could be achieved by the earliest delivery of bombs on target rather than by a protracted campaign. The JCS paper stimulated a buildup of nuclear forces and the preparation of the first formal atomic emergency and intermediate war plans.

U ([redacted]) The target date for the intermediate plan, DARK HORSE, was 1 January 1951. The plan emphasized the atomic strike as the first and decisive phase--an embodiment of the "Spaatz concept." Operations were to begin with a massive blow against the Soviet urban-industrial complex immediately upon the opening of hostilities, if possible, within less than 48 hours. Thereafter, the atomic campaign would continue at maximum possible pace for six months, during which time a decision could be expected or hoped for. (A less definite third phase of the plan involved the forward movement of US forces to seize bases

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and lines of communication preparatory to occupying strategic centers of the Soviet Union. The plan was to be changed continually as capabilities changed.)

(U[redacted]) The bases required for the atomic campaign were to be primarily in the United Kingdom and Okinawa. Later use would be made of Alaska, the Mediterranean area, Iceland, the Near and Middle East, India, and Spain.

(U[redacted]) The attrition rates presented in the plan were lower than previously projected. The plan called for masking the bomb carrier with 10 other bombers for a probability of bombs-on-target of 70 to 80 percent. The number of targets was reduced to the 20 most vital, for which a total of 53 bombs, their delivery insured by the launching of 83 bomb carriers, would be sufficient. It was felt that if completely successful, the attack would be decisive in ending the war, and even if only partly successful, would be so devastating and disruptive as to halt the westward advance of Soviet ground forces.

(U[redacted]) Work on the current/short-range emergency war plan, HARROW, also began in early 1948, but the plan was much more problematical than the intermediate one. Given current capabilities, it was thought that 30 bombs could be delivered by D+30. It was later decided to aim for 50 bombs by D+46, given the continued availability of forward bases. The most critical problem in this regard was the availability of bomb-assembly teams. Only two were available for the immediate future, and the estimated turnout rate was one bomb per team per 24-36 hours. The plan called for loading all operational aircraft in the United States, flying them with bombs in a ready state to the forward areas, and delivering the bombs from there. The limited life of ready-state bombs would demand delivery within a short time after arrival at the forward bases.

(U[redacted]) On 19 May 1948, the JCS approved a Joint Emergency War Plan, called HALF MOON, for the period 1 July 1948-1 July 1949, and HARROW became the Air Force portion of it.

([redacted]U) The commander of SAC, General Kenney, called at this time for planning to be geared to a capability to mount a single massive attack of 200 bombs delivered simultaneously. He pointed out that there would be a delay of up to 5 days before a single bomb carrier could take off, and a delay of up to 30 days before an attack by a full bomber group was possible. Kenney stressed that solution to the problem lay in simplification of the bomb, fabrication of a stockpile of 200 bombs, training of sufficient USAF bomb-assembly teams, and control of the stockpile by the USAF.

([redacted]U) The last suggestion, as will be seen later, reflected an issue that would become a matter of controversy among the services and between the AEC and the Armed Forces. Kenney's efforts did lead to increased training of bomb-assembly teams and a much increased expected rate of assembly by the following year.[16]

([redacted]U) Early in 1949, the USAF rewrote its intermediate war plan, now called COWLICK, for a war during FY52. The plan called for the greater part of the atomic campaign to be completed before D+45. Atomic bombing on a greatly reduced scale would continue throughout hostilities, depending on the effect of the initial assault. Non-atomic bombing would continue until Allied forces could invade Europe. The atomic offensive would be launched from the northeast United States, Alaska, the Philippines, and the United Kingdom. The latter would be heavily used for the attack.[17]

([redacted]U) These early plans for atomic war came under question from the political authorities. Apparently on 23 and 25 October 1948, Defense Secretary Forrestal had asked the JCS for their evaluation of the probable success of strategic bombing operations. Secretary of the Air Force Symington assured him that the Chief of Staff, General Vandenberg, was "absolutely certain" that the Air Force would be able to drop the atomic bomb when and where it wanted. Forrestal was well aware that the Navy thought differently and asked that the studies go on.

(U) On 20 April 1949, the President was briefed by General Vandenberg on SAC plans. He then sent a request to Defense Secretary Johnson:

> Yesterday afternoon I listened with interest to an Air Force presentation of plans for strategic bombing operations, in the event of war, against a potential enemy. I should like to examine an evaluation by the Joint Chiefs of Staff of the chances of the successful delivery of bombs as contemplated by the plan, together with a joint evaluation of the results to be expected by such bombing.[18]

On 27 April 1949, Secretary Johnson notified the JCS that he had received the request from the President on 21 April for a joint evaluation of strategic bombing operations. Reminding the JCS of the earlier Forrestal request, the Secretary urged expedited studies and periodic reports for the President, since the JCS had claimed that such an evaluation would take considerable time.[19]

U [redacted] The Secretary reported to the President on the matter and informed him of the earlier Forrestal request and that:

> an interim report of 17 February 1949 indicated a serious difference of opinion among the several Chiefs, not necessarily with respect to the appropriate conclusions, but rather with the type of evaluation which should be attempted and the validity of the intelligence data on which to base such an evaluation.

On 14 April 1949, the Secretary continued, the JCS had informed him that it was their unanimous conclusion that a very thorough evaluation of the intelligence data on which strategic air offensive plans were based must be undertaken and that the plans had been referred to the newly created Weapons Systems Evaluation Group (WSEG) for such joint evaluation. (The JCS had said the evaluation would take a full year.[20]) However, WSEG was not formally tasked by the JCS to undertake the evaluation until 1 September 1949, and the report finally appeared in February 1950.

([redacted] U) WSEG Report 1, *Evaluation of Effectiveness of Strategic Air Operations*, was carefully hedged; the JCS request for the study had "specifically excluded from consideration the effect such bombing would have upon USSR military capabilities and upon its will to wage war." The basis for WSEG's evaluation was the emergency war plan, OFFTACKLE, which was then being considered by the JCS. The OFFTACKLE plan called for the main weight of the attack to be delivered by medium bombers (a total of 370 B-29s and B-50s), mostly from UK bases; more distant targets would be struck by the heavy bombers (54 B-36s) from bases in US territory. The B-50s would go for 51 percent of the targets; the B-29s for 35 percent; and the B-36s for the remainder. The major portion of the atomic bombs was to be delivered in the first 30 days, and delivery and evaluation of results were to be completed within three months. The plan revealed the total dependence of SAC upon overseas bases, primarily the British ones. Yet British bases were very vulnerable, and the British would need 30 days warning to set up an antiaircraft defense for the bases. Coupled with the physical vulnerability of the British bases was the lack of a firm political agreement with Britain on base use.

([redacted] U) The WSEG report was pessimistic. The findings were that logistics deficiencies and expected bomber attrition precluded an offensive on the scale called for in OFFTACKLE. In view of the infeasibility of carrying out the OFFTACKLE bombing program as a whole (including the conventional, high-explosive portion), the report recommended a re-examination of the whole target system.

([redacted] U) The report stated that the atomic portion of OFFTACKLE could be carried out, provided Soviet air defense capabilities were not substantially better than the higher level assumed in the study and that actions were taken:

(1) To acquire both operating and staging bases, especially in the United Kingdom. (These would have to be defended, too. The study stressed that it had not yet been demonstrated that refueling techniques could obviate the need for bases in the near future.)

(2) To prepare to employ nearly all available military airlift to support the bombing offensive.

(3) To establish major aviation gas stocks in operating areas, since present stocks were not sufficient to support the needs of the offensive.

(U) The WSEG report also stressed heavily the serious inadequacy of good intelligence on Soviet capabilities and target systems.[21] This problem was to remain for the next dozen years. Air Force planners had so little data that in considering Soviet capabilities and strategies they were compelled to rely upon simple projections of US experience.

(U) By the time of the publication of WSEG 1, more bombs were becoming available and separate low- and high-yield families of weapons were being developed. The anticipated availability of fissionable material seemed to indicate the eventual end of the scarcity problem that had conditioned previous campaign strategies.

(U) Despite the watershed of the Soviet atom bomb explosion in August 1949 and the opening of the Korean war in June 1950, US strategic forces ended 1950 still weak. Decisions aimed at a huge buildup had not yet begun to take effect. The Air Force realized it could not prevent attack on and damage to the United States and that NATO could not hold Europe. There was also widely expressed doubt in Air Force circles that current capabilities could indeed deter a major Soviet attack on the United States.

(U) During a general war starting in 1950, Air Force planners believed they could complete only the atomic phase of the strategic air offensive outlined in the OFFTACKLE plan, which would require about three months because of the lack of proper

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aircraft, prepared overseas bases, and overseas stocks of fuel. While it recognized that for shock effect it would be best to strike massively and quickly, the Air Force felt that it could do no better at the time.[22] In these opinions, the Air Force agreed with the findings of the WSEG report.

(U) The Air Force problem was complicated, too, by the additional requirement laid on SAC. Until the summer of 1950, the limited atomic capabilities had been committed solely to a strategic air campaign against war-supporting targets within the Soviet Union. The North Korean attack, however, generated concern that the Soviets might use Korea as a distraction under cover of which they would attack NATO. It was recognized that some form of direct atomic support for the defense of Western Europe would have to be found. Following Air Force instructions, SAC sent a revised atomic war plan to the Air Force on 12 August 1950. It set up three tasks:

(1) The BRAVO campaign to blunt the Soviet long-range air capability.

(2) The ROMEO campaign to retard the advance of Soviet ground forces into Western Europe.

(3) The DELTA campaign to destroy vital elements of the Soviet war-making capability.

(U) The requirements of the retardation effort would clearly degrade severely the capabilities for executing the other two missions, and SAC assumed the mission with misgivings. The atomic stockpile was still modest and the nature of some of the targets was such that aircraft would be at serious risk in searching for them, aircraft that SAC preferred to preserve for the strategic attack. Retardation targets, however, had not been selected or even given some order of magnitude. An incident a year and a half later illustrated the problem. During a December 1951 visit to Europe, General LeMay, the commanding general of SAC, discussed retardation targets with General Norstad, commander of the Allied Air Force Central

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Europe. They first considered giving General Eisenhower, then SACEUR, certain stockpile data to assist him in evaluating the military significance of retardation targets, but they decided against the step. LeMay asked Norstad how many retardation targets might develop in Europe and was told that the Army was thinking in large numbers, but that Norstad would initially recommend to Eisenhower about 20.[23]

(U) A new factor entered the equation at this point, in that the retardation plan made provision for eventual Navy participation in an expanded atomic offensive.[24]

(U) The development of war plans was easier than the creation of an instrument to execute them, but even paper progress was slow. For example, no standard operating procedure (SOP) for the atomic striking force as part of a coordinated national emergency procedure was in effect as late as August 1948. A tentative SOP had been prepared in SAC in November 1947 for an exercise, but it never became official. The situation remained complicated by the fact that the AEC held actual custody of the weapons while the Armed Forces Special Weapons Project (AFSWP) would accept, assemble, and deliver them to the Air Force.

(U) A commentator described the painful process of creating the doctrinal and procedural basis of an atomic air force in these words:

> The development of plans and techniques for employing atomic weapons proved to be so slow that air leaders worked in a continuous state of alarm. In 1945-46 the AAF found itself in possession of a revolutionary weapon it was not prepared to employ. In addition to having only a few planes modified to carry the bomb and only six weaponeers to arm it, the AAF had no realistic plans or programs for exploiting the potential of atomic energy. This situation resulted from the extreme secrecy surrounding development of atomic weapons that allowed the AAF little familiarity with what was destined to be its primary weapon. Secrecy remained a difficult problem and hampered the AAF in achieving a

> thorough understanding of the implications of atomic energy as they related to strategy, tactics, development, and planning.[25]

(U) While certain aspects of problems mentioned above did improve by mid-1950, the overall capability of SAC to carry out its concept of an atomic blitz remained dubious. Almost five years after the appearance of atomic energy, the United States was still not prepared to use it effectively as the weapon on which US strategy was based. Neither the forces, facilities, doctrine, tactics, nor communications had been adequately developed. However, rapid development was to occur in the next three years.

III

CUSTODY OF ATOMIC BOMBS AND THE AUTHORITY TO USE THEM

(U) The organizational and procedural problems deriving from the issue of custody of atomic weapons were among the earliest and most difficult encountered in the development of an atomic striking force. They presented a very special and, indeed, unique command and control problem, but one that, unlike many of the other early problems in command and control of strategic forces, has since disappeared. The controversies and problems in regard to custody were not only between the AEC and the DoD, but also within DoD itself at times, between the Executive and Legislative branches of the government, and lastly, between the United States and its allies.

(U) The degree of control to be exercised by the newly created AEC aroused serious controversy. The McMahon Bill of 1946 required a purely civilian AEC, and this seemed to be favored by both the public and Congress. Nevertheless, it seemed clear that the limited supply of fissionable material, the unique military value of atomic energy, and the deteriorating international situation would combine to concentrate atomic energy activities in the weapons field for the foreseeable future.

(U) In order to coordinate AEC activities with the military, the Atomic Energy Act of 1946 established the Military Liaison Committee (MLC), which enabled the military to monitor the AEC without being a member of it. The AEC was directed to advise and consult with the MLC on all military applications of atomic energy.

(U) The issue of custody arose during negotiations in December 1946 between the War Department and the AEC over the transfer of the assets of the Manhattan Engineering District. The military asked that some bombs and fissionable material be transferred to them for storage, but the AEC did not feel it necessary to decide the matter then.[1]

(U) The next month, when the AEC began to function, the Joint Armed Forces Special Weapons Project was established to assume the purely military functions of the old MED. The AFSWP, responsible to the service chiefs of staff individually, was to consolidate the technical atomic energy functions of the National Military Establishment.[2] The AFWSP was charged with the security of nuclear weapons, but the AEC held custody. It should be noted that the separate service command and control arrangements for the AFSWP were also to lead to an interservice controversy over the same issue of control of the stockpile.

(U) The military argued for custody on the basis of a need for centralized responsibility for atomic weapons in order that they be readily available for instant use. What was urgently needed was that the bombs be placed in locations where the military could reach them quickly.

A. EARLY ATTEMPTS TO CHANGE THE CUSTODY SYSTEM

(U) With the rise of tension over Berlin in early 1948, which was to culminate in the blockade, the issue of custody became a paramount one. The Air Force still faced the triple problem of obtaining a better designed bomb, training more assembly crews, and building storage sites for bombs, and the Military Liaison Committee had to admit that the Armed Forces were not yet adequately staffed or trained to assume responsibility for the weapons. The military were nevertheless determined to try to gain custody of the atomic bombs through an Executive Order of the President. In the course of three or four months of discussion, the major elements in the debate were delineated.

(U) The military based their case on two main arguments: (1) that the user of the bomb should have custody of it, and (2) that centralization of authority was necessary. The AEC, on the other hand, in the person of Chairman Lilienthal, based its objection to the transfer of custody on the general theory that the atomic bomb was not just another weapon but a unique instrument of war that carried the widest international and political implications; that the law that created the AEC dealt with certain constitutional relationships and prerogatives of the President; and that greater efficiency in terms of surveillance and R&D could be achieved by leaving custody with the AEC.

(U) Lilienthal saw the dispute in broad terms. He felt that by forcing the technical issue of custody, the military were also looking for answers to very broad issues of policy, such as whether or not the bomb would be used, against what targets, and under what general circumstances. As will be seen, these questions remained unresolved and continued to hamper efforts to develop an atomic war capability. Apart from the fact that the question could not be answered with any precision, the President also clearly thought it inexpedient, for both domestic and international political reasons, to attempt to codify atomic war policy.

(U) The President made no secret of his sentiments. White House Counsel Clark Clifford raised the custody issue with Truman on 30 June 1948 and was told "as long as I am in the White House I will be opposed to taking atomic weapons away from the hands they are now in, and they will only be delivered to the military by particular order of the President issued at a time when they are needed." The AEC, however, felt it expedient to allow a full airing of the issue in company with the representatives of the military.[3]

(U) Defense Secretary Forrestal met with the President and Secretary of State Marshall on 15 July 1948, and in the course of the meeting asked the President for another hearing on the custody issue. Forrestal recorded that the President said that he wanted to go into the matter very carefully and proposed to keep in his own hands the decision to use the bomb, that he did not propose "to have some dashing lieutenant colonel decide when would be the proper time to drop one."[4] Forrestal replied that the military had no thought of denying him freedom of action on the subject, but that there was a serious question as to the wisdom of relying upon an agency other than the user of such a weapon to assure its integrity and usability. At Forrestal's suggestion of a general meeting, the President set 21 July to hear both sides of the custody issue.

(U) Secretary Forrestal and AEC Chairman Lilienthal presented their cases to the President as scheduled on 21 July. Forrestal's memorandum to the President reviewed the current custody arrangements and recommended, "with the support of the JCS and the Service secretaries, that the AEC be directed to deliver the atomic stockpile to the custody of the Armed Forces," as provided by law, to be held in readiness for instant use by the President.[5]

(U) Forrestal's reasons were several. First, present arrangements resulted in a basic division of authority and responsibility. Custody and control lay with the AEC, but responsibility for final assembly and delivery lay with the National Military Establishment. Prompt transfer of the weapons to the Armed Forces was essential to full military preparedness. An enemy attack in force would expose the United States to unreasonable risk of mistake, confusion, and failure to act with necessary speed and precision. This risk could be removed by the transfer of custody to the Armed Forces.

(U) Second, those who were charged with delivery of the bomb should be familiar with it. They must know its possible defects and the alterations that might be necessary under emergency conditions. They must have confidence in the weapon and in their own ability to use it. Custody was required for the training of atomic units. Third, custody would permit storage in the most favorable strategic locations, thus speeding up preparations when needed. Fourth, military custody would further R&D possibilities as the users became familiar with the weapon and its characteristics. Forrestal concluded by stating that the Armed Forces needed four months to prepare to assume custody and maintenance.

(U) Lilienthal then presented the AEC case against military custody, as outlined above, after which the President made the observation that the responsibility for the use of the bomb was his and that was the responsibility he proposed to keep.[6]

(U) The President decided two days later against the military case and gave as his reason "considerations of public policy," the necessarily close relation between custody and weapon research, the efficiency of existing methods of custody and surveillance, and the world situation.[7]

(U) According to Forrestal's diary, the President told him personally that his negative decision was based upon political considerations connected with the forthcoming election. He said, however, that after the election it would be possible to take another look at the question.[8] The President made a public statement on the issue the next day.

(U) As a result of the President's decision, steps were taken by the military, through the AFSWP, to have more people trained for custody, and means for rapid transfer were revised. The presidential veto did not end military efforts to gain custody, however, but only temporarily suspended them. The political authorities clearly felt no great incentive to change the existing system. Forrestal raised the issue again at a meeting with the President and Secretary Marshall on 16 September, but Truman deferred it.[9]

(U) Truman remained adamant on the issue of military custody. David Lilienthal reported being told by Robert Oppenheimer of a meeting between the President and the General Advisory

Committee to the AEC (of which Oppenheimer was a member) on 6 April 1949. Truman said he had received the day before a letter from Senator Tydings in which the Senator recommended military custody and military control of weapon production. The President told the General Advisory Committee explicitly that he had decided both of those questions and that they would stay decided that way so long as he had anything to do with it. He stated that he firmly believed in civilian control and had no reason to believe he would change his mind.[10]

(U) Truman's attitude on the custody issue may well have been adversely affected by the swirl of interservice controversy that marked the first two years after the 1947 Defense reorganization legislation. A revealing episode was reported to Lilienthal by Director of the Budget James Webb. On 25 May 1948, Webb had attended a White House meeting with the President, Forrestal, and the Joint Chiefs. The President had previously given instructions that Forrestal apparently had been unable to enforce on the Chiefs and so Truman had called them in and given each Chief written instructions containing a reprimand. Webb found the situation very disturbing and said to Lilienthal, "with that kind of situation, the idea of turning over custody of atomic bombs to these competing, jealous, insubordinate Services, fighting for position with each other, is a terrible prospect."[11]

B. LATER DEVELOPMENTS: OVERSEAS DEPLOYMENT OF ATOMIC WEAPONS AND THE DIVISION OF CUSTODY

(U) In these years, all atomic weapons were of the capsule ball type in which the nuclear component was separate from the nonnuclear component and mating was necessary before use. This technological feature actually was the key to the ultimate resolution of the custody issue, in that it permitted the problem to be divided and to be resolved on a more gradual basis.

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(U) Until the spring of 1950, both nuclear and nonnuclear components remained under AEC custody, except for short periods of maneuvers or training. By this time, however, there was no longer any doubt about the technical competence of the military in surveillance, inspection, and maintenance activities because the military were in fact already performing the three functions. They carried out most of these functions as a demonstration of competence at the storage sites. The AFSWP by then had 1,500 trained personnel. Consequently, in March 1950 the AEC proposed that it turn over to the DoD custody of the stockpile of nonnuclear components, and on 14 June 1950, 90 nonnuclear components of the Mark 4 bomb were transferred to the DoD for training purposes.[12]

(U) At this time the question arose of overseas deployment of weapons. The first step in this direction had really occurred in July 1946 when General Spaatz had arranged with the Royal Air Force to have two airfields in Britain equipped for the storage of special weapons.[13] After the outbreak of the Korean war, the DoD requested and received presidential authority to receive nonnuclear components from the AEC for storage at overseas bases. The deployment of medium bomber wings to overseas bases logically imposed a requirement that the largest element in the bomb, the nonnuclear component, be immediately available. By authorizing the transfer, a partial forward step had solved a most difficult logistical problem.[14]

(U) The nonnuclear components were transferred to DoD and from there to specific services for custody. The nuclear components for them remained under AEC authority within the continental United States and were to be flown to the overseas bases when needed. By the end of July 1950, 89 sets of nonnuclear components were in place in Britain to support SAC units there, and the following month 15 sets were sent to the aircraft carrier USS *Coral Sea*. The JCS recommended this action in September for the vessel bound for the Mediterranean.

The Air Force had concurred reluctantly in this action and expressed opposition to further storage aboard carriers unless they were placed under the control of SAC.[15] However, nonnuclear components were authorized also for storage abroard the carriers USS *Franklin Delano Roosevelt* in May 1951 and the USS *Midway* in December of that year.[16] Following a request by the JCS in November 1951, the President in January 1952 also authorized the storage of nonnuclear components at the SAC bases in French Morocco.[17] (The French were not to be informed of the move.)

(U) The first transfer of complete bombs--nine in number--was authorized by the President on 6 April 1951 under unusual circumstances. The weapons were assigned personally to General Vandenberg, who was designated the personal representative of the President for custody of the weapons, acting as executive agent of the JCS.[18]

(U) By this time, the custody issue had become quite clouded, to the extent that the Chairman of the AEC stated at an AEC-Military Liaison Committee meeting in March 1951 that the concept of AEC custody was empty since the military were already doing so much in the custody area. He felt that the real issue remaining was the proper division of responsibility in view of existing realities.

(U) The next month the AEC and Military Liaison Committee jointly proposed the transfer to DoD of nuclear components in numbers to match the nonnuclear components already under DoD custody. However, the JCS--without explanation--disapproved the proposal as untimely.[19]

(U) In December 1951, after the Chairman of the JCS had reopened the custody issue with the Chairman of the Military Liaison Committee by recommending an effort to delineate more clearly the responsibilities of the AEC and the DoD, the JCS put forth their views to the Secretary of Defense. In a memorandum of 11 December 1951, they expressed the view that the

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current system of divided responsibility was not in the best interests of the nation, and that the Armed Services should have a sufficient number of atomic bombs in their custody to assure operational flexibility and military readiness.

(U) The proposal was forwarded to the President, who in turn requested a study by the NSC's Special Committee for Atomic Energy. The study, entitled "Agreed Concepts Regarding Atomic Weapons," was approved by the President on 10 September 1952. The new guidelines provided that DoD would have custody of any stocks of atomic weapons outside the continental limits of the United States and of any such numbers of weapons within the continental United States "as might be required to assure operational flexibility and military readiness." The rest of the stockpile was to remain under the custody of the AEC.[20]

(U) The matter of overseas deployment of nuclear components was first raised by the Navy in January 1952 and led to a lengthy JCS dispute. By October 1952, the JCS agreed it was an essential step and on 8 May 1953 they recommended to the President that nuclear components be deployed along with nonnuclear sets to overseas locations where the decision to deploy rested solely with the United States. After consideration by the NSC's Special Committee for Atomic Energy, the proposal was approved by President Eisenhower on 20 June 1953. Nuclear components equal in number to the nonnuclear sets abroad would be deployed and would be transferred to the custody of the DoD. The President's approval meant that nuclear components went to Guam and to carriers, the only locations that met the prescribed restrictions and where storage facilities were available.[21]

(U) Authority to deploy complete weapons to Britain and Morocco was obtained in April 1954, and storage of both nuclear and nonnuclear components was approved for West Germany two months later. Only nonnuclear components, however, were authorized for Japan.[22] By mid-1954, half the authorized 183 weapons had been dispersed abroad.

(U) The following tabulation illustrates the slow growth of custody-sharing in terms of nuclear weapons in possession of the AEC and the DoD:

	AEC	DoD[23]
1947	13	0
1948	56	0
1949	169	0
1950	298	0
1951	429	9
1952	823	9
1953	1,152	9
1954	1,463	167
1955	1,499	781
1956	2,262	1,358
1957	3,578	2,250
1958	3,385	4,017
1959	3,968	8,337

(U) Despite the advances made in the custody situation in regard to overseas deployments, there still remained problems in regard to the main AEC stockpile within the United States. In March 1953, the Secretary of the NSC, Robert Cutler, forwarded to Secretary of Defense Wilson the AEC's "Plan for Action by the AEC for Emergency Transfer of Atomic Weapons to the Department of Defense." Cutler reported discussing the plan and the transmittal letter from the Chairman of the AEC with the President. Cutler was clearly concerned over what seemed an AEC optimism about the responsiveness of the transfer system:

> I have been informed that the AEC advises that it takes twelve minutes from the time the President acts until the order to transfer arrives at the storage plant and that the mechanics of the plant are regularly tested. I assume the President would like to have the opinion of the Department of Defense as to whether in an emergency this plan would successfully operate or whether some other plan or modification of this plan would be better.[24]

(U) A month later, Deputy Secretary of Defense Roger Kyes reported to Cutler on the DoD review of the AEC plan. Kyes stated that the elements required for the transfer of atomic weapons from the AEC to the DoD were issuance of a presidential directive; notification of the principal AEC and DoD field agencies; further notification by those agencies to storage sites; and the physical transfer of the weapons at the storage site.

(U) The AEC plan constituted the AEC portion of the second element and merely outlined a notification procedure whereby principal AEC field agencies would be directed to initiate existing atomic weapons transfer plans. As such, Kyes reported, the DoD found the plan satisfactory and had similar plans for notifying its field agencies. The plans by which atomic weapons were transferred physically at storage sites were worked out in great detail among the Santa Fe Operations Office, the AFSWP, and the Air Materiel Command, and at each storage site between the local AEC custodian and the service agency operating the site.

(U) Kyes' chief concern with the AEC plan also concerned its optimism:

> The estimate of the AEC of twelve minutes from the time the President acts until the order to transfer arrives at the storage plant is apparently based on ideal conditions. For planning purposes, such estimates should take into consideration, among other things, the difficulties involved in notifying many individuals at widely scattered locations under emergency conditions.[25]

(U) Kyes pursued his concerns a few days later, categorically telling Cutler that the DoD considered the transfer of all completed weapons to be necessary for the assurance of the operational-readiness flexibility so essential to war plans and that the current division of responsibility was not responsive to that need. He presented what he termed cogent reasons for for DoD's position: atomic weapons were part of a larger weapons system and should not be separated from the whole; the

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current custody arrangements involved much duplication of effort; there were always possibilities under divided responsibility for a security leak of war plans; and with the number of weapons increasing, current arrangements would become more complicated.[26]

(U) A meeting of the NSC to discuss the issue was planned for 11 May, but was postponed.

(U) It is interesting to note that the arguments raised by the Deputy Secretary of Defense were the same as those raised by Defense Secretary Forrestal five years before. But, while the basic problems were the same, they had become more acute with the changed strategic context. The Soviets by 1953 had both a stockpile of atomic bombs and the means to deliver them, so that the danger of a surprise nuclear attack was real instead of theoretical. Because of this, the time available to reach a decision had been compressed and the DoD was clearly not convinced that the existing arrangements could be accommodated to the new situation.

C. THE IMPLICATIONS OF PRESIDENTIAL CONTROL OF ATOMIC WEAPONS

> (U) If ... [the] problems and issues in military doctrine were not enough, there was overhanging all of them the possibility that, in the actual event of war, the President might decide for political reasons not to let the A-bomb be used at all. The services, it must be remembered, did not even have physical possession of the weapon that bulked so large in their disputes. It was in the hands of a civilian agency subject only to the authority of the President, but not the military, and the only clear national policy with regard to the bomb was that, under proper conditions, it would be given up.[27]

(U) Thus has an analysis of the times described one of the underlying dilemmas of planning and command in those years. Early in 1948, uncertainty about the use of the atomic bomb had

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begun to grow, creating the novel situation in which the weapon that seemed central to US strategic policy and planning was wrapped in ambiguity as to the time and circumstances of its use.[28] Custody and the issue of weapon release were basically two parts of the same broad issue, the unprecedented tight civilian control over a crucial weapon and thereby over the entire body of doctrine and the organization that had been created to use it.

(U) The sole authorization that specifically placed the responsibility for control of nuclear weapons in the hands of the President was the provision of the Atomic Energy Act of 1946:

> The President from time to time may direct the [Atomic Energy] Commission (1) to deliver such quantities of fissionable material or weapons to the armed forces for such use as he deems necessary in the interest of national defense or (2) to authorize the armed forces to manufacture, produce, or acquire any equipment or device utilizing fissionable material or atomic energy as a military weapon.[29]

This provision was interpreted as constituting a special authority vested in the President for the use of atomic weapons. This could be viewed as redundant, since that authority was already vested in the President as Commander in Chief. The uncertainty at any rate was probably increased by a statement the President made on 30 November 1946:

> Consideration of the use of any weapon is always in the very possession of that weapon. However, it should be emphasized that, by law, only the President can authorize the use of the atomic bomb, and no such authorization has been given. If and when such authorization should be given, the military commander in the field would have charge of the tactical delivery of the weapon.[30]

(U) Although strategic war planning could and did go on, the final decision as to whether the prime weapon would be used remained with the President. Truman insisted on keeping the

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decision-making power on atomic use to himself; he made clear his willingness to employ atomic bombs--but under circumstances he refused to define in advance. The special command prerogative attached to atomic bombs was recognized by the military leadership from the start. Lt. General Vandenberg, then the assistant chief of the Air Staff, in a memorandum in early 1946 on "The Establishment of a Strategic Striking Force," stated:

> Without doubt the times of attack and targets for atomic bombs will be determined at a very high level--probably by the President--and the Strategic Air Force Commander will be charged with the responsibility of carrying out the operations. Actual operational instructions as to time and place will doubtless come from Washington.[31]

(U) Discussion by the National Security Council of possible use of atomic weapons occurred for the first time at the ninth NSC meeting, 2 April 1948, but the Council deferred further consideration. Secretary of the Army Royall, who was apparently among the most concerned with the problem, sent a memorandum on the subject to the NSC in mid-May, noting with alarm its recent deferment of the issue and stressing that the US position on atomic weapons and proper organization for expeditious application of atomic weapons required an early and careful review in the interest of national security. Royall urged that a decision be made as to the intention of the United States to use atomic bombs in the event of war, pointing out that there was much doubt about whether the use of atomic bombs was indeed a "firm" policy of the United States, given that issues other than military ones were of prime importance. Part of the ambiguity arose over the question of who should authorize their use and against what targets. Still another important issue was how the military should organize their relatively limited resources for possible atomic war. Also unresolved was the kind of command structure that could best provide for use of the atomic bomb.[32] Royall's efforts to secure a decision evoked no response.

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(U) Illustrative of the doubts on the part of the military concerning the certainty of the use of atomic bombs, even in clear case of need, were comments made by Secretary of State Marshall before the Senate Armed Services Committee in March 1948. Marshall pointed out that strategic bombing meant the killing of noncombatants but that the United States had countenanced such actions in the war because of prior actions by Japan and Germany. He said, in the context of atomic weapons:

> it was a terrible thing to have to use that type of power. If you are confronted with the use of that type of power in the beginning of the war you are also confronted with a very certain reaction of the American people. They have to be driven very hard before they will agree to such a drastic use of force.[33]

(U) Lilienthal, the AEC chairman, recalled a meeting in early March with Defense Secretary Forrestal, Air Force Secretary Symington, and Army Secretary Royall that illustrated the confusion in thinking on the potential role of the bomb. Royall stated that the thought of using atomic bombs disturbed him greatly, while Symington commented that the American public was completely misinformed about "how quickly we could go into action and what we could do."[34]

(U) The implications of such concerns were clear to the military planners. If the sentiments of Marshall, Symington, and Royall were correct, the concept of the atomic blitz seemed very questionable. What should the services plan for? In July 1948, Forrestal told Marshall that in view of the Berlin Blockade he wished a "resolution of the question of whether or not we are to use the A bomb in war." Forrestal seems to have assumed that the services would continue to make some plans on the assumption that atomic weapons would not be used, although the first priority would be given to plans depending on their use. When the matter finally reached the President in the September consideration by the NSC, Truman said he would not shrink from the decision if he felt he had to use the bomb. This apparently satisfied Forrestal, despite its very conditional nature.[35]

(U) On 10 September 1948, the Executive Secretary of the NSC finally submitted a report (NSC 30) to the NSC on "US Policy on Atomic Warfare." It dealt with the feasibility of formulating at that time policies in regard to the use of atomic weapons. The analysis stated that the "US has nothing presently to gain, commensurable with the risk of raising the question, in either a well defined or an equivocal decision that atomic weapons should be used in event of war." However, in the absence of an established system of international control, the United States should make no commitment to deny itself the use of atomic weapons. The report concluded that "(1) in event of hostilities the National Military Establishment must be ready to utilize all appropriate means including atomic weapons and must plan accordingly, and (2) the decision as to the employment is to be made by the President."

(U) In view of these two hardly unexpected conclusions, no action was taken at that time (a) to obtain a presidential decision either to use or not to use atomic weapons in any possible future conflict; or (b) to obtain a decision as to the time and circumstances under which atomic weapons might or might not be used.[36] The JCS, it might be noted, concurred in this decision not to decide.[37]

(U) No further steps were taken on the matter for more than two years. In December 1950, a great deal of attention was given to a statement by Truman that he would not rule out the use of atomic bombs in Korea, this at the time of the US defeat and the retreat from the Yalu. In April 1951, the Executive Secretary of the NSC forwarded an NSC staff study entitled "Procedures with Respect to a Presidential Decision to Use Atomic Weapons" to the Secretary of State, the Secretary of Defense, and the Chairman of the AEC as members of the NSC

Special Committee on Atomic Energy. The purpose of the study was to "outline the procedures whereby the President can effectively obtain advice whenever he is called upon to decide in what circumstances atomic weapons should be used."

(U) The paper documented the earlier NSC consideration of the problem in September 1948. It pointed out that in the succeeding two years it had become the practice to refer atomic energy matters that required presidential decision and that affected the State Department, DoD, and the AEC to the NSC Special Committee on Atomic Energy for consideration and for such recommendations as it saw fit to the President. This procedure had been underscored by a letter of the President of 25 August 1950. The occasion arose in regard to the strategic deployment of nonnuclear components overseas, a preparatory move approved by the President, but which did not include any authority to use atomic weapons. This letter had requested that the Special Committee pass on the directives that the President had to make that affected all three agencies, and it had instructed the Secretary of Defense that those actions must be considered by the Special Committee before the President would approve further actions.

(U) The 1951 staff study pointed out that the issue had also been involved in the US-UK discussions on atomic energy in 1948 and again in the December 1950 meetings between Truman and Prime Minister Attlee. At the latter meetings, the United States had refused to permit any restraints on its ability to use the atomic bomb, restricting its commitment to a promise to inform the United Kingdom of any decision to use the atomic bomb and not to use the bomb from UK bases without UK permission.

(U) Responsibility for advising the President on the military desirability of using the bomb, the staff study continued, rested with the Secretary of Defense and the JCS, that for political effects primarily with the Secretary of State. The final decision, of course, rested with the President. Once the decision to use the bomb was made, the President would give the necessary directives to the Secretary of Defense and the Chairman of the AEC for implementation. However, the staff study went on, the means whereby the President promptly received the advice of the Special Committee needed to be identified.

(U) In its analytical section, the staff study suggested that unless there was to be an initial determination by the JCS that the use of atomic weapons in a given situation was desirable, it was difficult to see how the question could arise in any realistic way. In the event that pressures were to build up for the use of atomic weapons in other quarters, it would be obvious that the first question to be asked would be whether its use would be militarily desirable. Accordingly, the matter should originate with or be referred to the JCS. And when the JCS made such a recommendation, the President would want the advice of the Special Committee. If the President were to meet with the Special Committee and the JCS to make his decision, additional procedures would be needed to identify the extent, nature, and timing of consultations with, notifications to, or requests for action by other Departments of government (e.g., Civil Defense), the public, and other governments.[38]

(U) If time and circumstances permitted, the Congress should pass and the President approve a Joint Resolution declaring war and giving the President the right to use all US forces. This would clearly restate the President's authority to use atomic weapons. In the event of surprise attack, it might be necessary to launch an immediate counterattack, and the President would then take action under his constitutional powers as Commander in Chief, consulting Congress as soon as possible. In contingencies short of a surprise attack, the President would doubtless want to consult Congress.

(U) The JCS rejected the NSC staff study as attempting to impose restrictions on the authority and duties of the President, as well as the JCS. These restrictions, the JCS asserted, would interfere with the proper exercise of military command in war or national emergency. They objected to suggestions as to the form and manner in which the JCS should present their military views to the President.[39] With this effort, further consideration of the issue apparently died.

U ([redacted]) Another aspect of the issue of control of nuclear weapons was revived in February 1953, when Foreign Minister Eden visited Washington. It was understood that Eden wanted to discuss with the new Eisenhower administration two aspects of the nuclear problem. He wanted a reaffirmation of the understanding previously arrived at that US bases in Britain would not be used for the delivery of nuclear weapons without prior agreement of the United Kingdom. He also sought a new commitment that the United States would not employ atomic weapons anywhere from any base without the prior agreement of the United Kingdom. Both the State Department and the JCS concurred that there should be a reaffirmation of the existing commitment but a complete refusal to tie US hands on the second point,[40] and such was the outcome of the meeting.

(U) The concern of the military planners over whether they would be able to count on the use of atomic weapons dragged on into the Eisenhower administration. The matter came up as part of the extensive review of military programs under the so-called "New Look." The CJCS, Admiral Radford, expressed the impact of the dilemma over nuclear weapon availability in an NSC meeting on 13 October 1953. He stressed that in the absence of an authoritative determination of the extent to which the military might plan on the use of nuclear weapons, the JCS were forced to plan for several contingencies--all-out nuclear war or conventional war, limited nuclear war, or limited conventional war. To prepare for all four was very costly. Radford suggested that if the military could be told the type of war on which to concentrate, and especially if they were able to count on the use of nuclear weapons whenever it was technically advantageous to do so, defense costs could be drastically lowered, as could manpower requirements. The Chief of Naval Operations, Admiral Carney, and the Chief of Staff of the Army, General Ridgway, both disagreed with the Radford thesis, as did their civilian service secretaries, their feeling being that it was not time to put all the defense eggs in one basket. Furthermore, they felt, nuclear weapons on both sides might cancel each other out and return the situation to one dependent upon conventional forces.

(U) Nevertheless, the Radford thesis did seem to win out when on 30 October 1953 the President approved NSC 162/2, the major NSC paper that laid down the essential policy basis for the "New Look." The paper decreed that the JCS could plan on using nuclear weapons, tactical as well as strategic, whenever their use would be desirable from a military point of view. While the President kept firmly in his own hands the authority to release the weapons to the military, the directive represented in effect a promise or at least a formal assumption that such presidential release would be forthcoming upon the request of the military.[41]

(U) The effect of the decision, however, was less than was expected. Certainly, it did not end the sharp differences among military leaders on military priorities. Nor did it, indeed could it, relieve the underlying concern of the military that the President might not after all give them authority to use nuclear weapons. There would simply never be an absolute solution to that problem, a problem that was to grow more acute as Soviet nuclear capabilities increased.

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IV

THE CONTROL OF ATOMIC OPERATIONS

(U) The issues of custody and authority to use atomic weapons represented half the question of overall control of atomic operations. This half involved, as we have seen, the President, the AEC, and the DoD. The other half involved only the military and concerned the operational issues of who would control nuclear delivery operations and the planning for them and how the nuclear stockpile would be allocated among the services and the commands. A process had to be created at the JCS level to handle what yearly became a more complicated problem under the impact of technological advances. The development of such a process was not simple, since the matter of control of atomic operations became enmeshed in larger issues of controversy among the services.

(U) While activity in the atomic weapons field did increase year by year, there was little organized effort between the JCS CROSSROADS report in June 1947 and 1951 to look far into the future and to examine and change tactics in the light of atomic developments. All the services seemed occupied with adapting atomic weapons to their established roles and missions, and usually by employing well-established tactical procedures and systems of weapon employment.[1]

(U) Nevertheless, by 1953, the basic problems in the control of atomic operations were confronted and a functioning system was created. Command and control of strategic operations was recognized as being composed of several functional areas. Selection of targets, allocation of bombs, and control of operational delivery were all complex issues and were to involve the highest levels of strategic planning. The basic factors were the role

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to be given atomic weapons in strategic plans and the limited number of bombs, which made careful targeting essential and, indeed, governing. It was the Joint Chiefs who established the quantitative and qualitative requirements for atomic weapons and who controlled SAC, and it was logical that they determine the precise manner of employment. The three services, however, had different views on the relative importance of targets. Since the Air Force for the first five or six years was the only service that could deliver atomic bombs and also had responsibility for air intelligence, the Army and Navy could only try to achieve some share of control over atomic weapons by sharing in target selection at the highest level. Later, as the Navy also acquired the capability to deliver atomic weapons, the problem of bomb allocation to various missions and commands further complicated the command and control process. The JCS were thus compelled to control operational delivery as well as targeting.[2]

A. ORGANIZATIONAL DEVELOPMENTS

(U) During the final days of the Second World War, the forces for the delivery of atomic bombs consisted of one bomber group. This unit was controlled through a chain of command that led finally to the President via General Arnold, the commanding general of the Army Air Forces, and General Marshall, Chief of Staff of the Army, bypassing the JCS as such. The operational atomic bomb force was placed under the long-range Twentieth Air Force, but the control channels for it were specialized in nature.[3]

(U) Unified theater commands were officially formed on 14 December 1946, when the President approved the Unified Command Plan (UCP), by which one member of the JCS was designated executive agent for each theater command to act for the JCS. The Strategic Air Command, which had been established within the AAF structure in March 1946, was considered one of those commands. However, in the implementation of the UCP in January 1947, JCS directives were sent to the Far East, Pacific, and Alaskan commands but not to SAC. Although SAC was regarded as a JCS command thereafter, the JCS took no further formal steps in regard to SAC until 22 July 1948, when JCS 1944/13 included a directive that the commanding general of SAC prepare and coordinate detailed plans based on the new Joint Emergency War Plan, FLEETWOOD (previously HARROW).[4]

(U) The precedent for a special-purpose force went back to the establishment of the Twentieth Air Force on 4 April 1944 as the command to carry out long-range strategic attacks on the Japanese home islands. From the beginning, there was a general understanding that SAC, as the prime strategic bombing force of the nation, would be centrally controlled and directed by the orders of the JCS. However, Air Force mission statements provided that SAC should operate in accordance with directives and policies received from the AAF commanding general and later the Chief of Staff of the Air Force. Until the 1958 Reorganization Act, the CSAF was able to exert operational control over SAC units not only as a member of the JCS but also as executive agent for the Secretary of Defense and, after 1953, for the Secretary of the Air Force, too. The need for this control had been stressed by General Vandenberg during the congressional hearings on the Air Force Organization Act of 1951. He stated that this authority was essential because he had to be able to stop or change the attack of his SAC commanders immediately upon receipt of emergency political guidance from the President or the Secretary of Defense.[5]

(U) The Strategic Air Command could not be handled as a normal unified command, however, since it did not include Army or Navy forces. The JCS sought a solution in the Key West Agreements (1948), whereby they agreed to appoint executive agents not only for unified commands but also for "certain operations and specified commands." A specified command thus came to be a single service command under the JCS. While ultimately the JCS would assert that SAC had been responsible to them since 14 December 1946, they did not officially assign the mission of conducting strategic warfare operations to SAC until 11 April 1949 (JCS 1259/129). They then provided that SAC, under the JCS and with the Air Force as executive agent, was authorized to direct the strategic air offensive, to assign targets, weight of effort, and timing of air strikes, and to coordinate strategic strikes with theater air activities in order to prevent interference between forces and thus gain maximum benefits.[6] By spelling out their exact relationship to SAC, the JCS were defusing a Navy concern. The Navy had opposed the idea of SAC as a unified command, fearing that such an arrangement could lead to SAC's taking full operational control over any naval air units placed under SAC by the JCS for coordination. The compromise limited SAC to units specifically assigned by the JCS and provided also a measure of independence for any non-USAF units that might be assigned.

(U) On 19 January 1949, the JCS accepted an Air Force recommendation that operational units assigned to SAC be exempted from control by any unified commander (JCS 1259/11.5). The possibility that SAC might not have complete control of its forces at all times was of great concern to the Air Force. While a unified commander could not take control of SAC units in his area under most circumstances, he could assume temporary control in an emergency. The SAC forces specifically exempted by this directive from temporary operational control or "seizure" by a unified commander were 1 heavy bomber wing, 11 medium bomber wings, 2 fighter wings, 1 strategic reconnaissance wing, and 1 strategic support wing. The directive recognized that aircraft not specifically equipped for atomic operations would be required to support the atomic bombers, such as strategic reconnaissance, diversionary bombing, electronic countermeasures (ECM), escort fighters, and strategic support and that the list of designated exempt units would grow as SAC expanded.

(U) A new list of exempt units was approved by the JCS on 9 May 1950 after long debate over Army objections. To avoid the necessity of repeated revisions, the USAF in February 1952 suggested that the JCS approve force levels for SAC in terms of numbers and types of units and that they authorize the Air Force as executive agent to determine specific units to be exempted. The Navy and Army opposed this unless the principle of exemption from theater seizure was extended to all JCS commands considered to have units engaged in vital tasks. The Air Force agreed, and in March 1952 the problem of reviewing the unified commands and recommending exemptions in quantitative terms for each was assigned to the Joint Strategic Planning Committee. The Committee's report, approved by the JCS on 17 February 1953, stated that all units should be exempted from seizure that were at the time scheduled for, or engaged in, the execution of specific operational missions under war plans approved by the JCS. This in effect changed the method of determining exempted units from one of preselection to one of employment, and eliminated a list of exempt units.[7]

B. THE TARGETING ISSUE

(U) Like other atomic warfare issues, the question of target selection became highly controversial and could only be settled at high levels. The controversy lasted for over three years, from June 1947 to June 1950. It began with the JCS evaluation of Operation CROSSROADS. A key point made in the report was that "the selection of targets for attack by atomic weapons must take account of the number of such weapons available in the predictable future. Thus selection and priority of targets become of prime importance in the employment of the weapon."[8]

(U) The report recommended that the JCS set up a continuing responsibility for the selection of atomic targets. The Air Force wanted this function assigned to it because of its role as the JCS executive agent for SAC, but both the Army and Navy objected. The Joint Strategic Survey Committee recommended that the responsibility go to the Air Force Intelligence Division, which was already responsible for strategic target selection. This recommendation was rejected by the Army and Navy, which insisted that the JCS retain responsibility.

(U) The final solution was complicated. The Air Intelligence Division was to submit its target studies and recommendations to the Joint Intelligence Committee and the Joint Strategic Plans Committee successively, each to append recommendations, after which the material would go to the JCS. The Chiefs would then instruct the Chief of Staff of the Air Force as to the effects desired from the strategic air offensive in each of the war plans. With this guidance, the CSAF would submit target annexes, including priorities. Once the JCS approved these target lists, SAC would have the responsibility of preparing detailed operational plans.[9] This action, taken by the JCS on 18 April 1950, was another step toward full control of atomic operations and was considered to have met the recommendation of the CROSSROADS report.[10]

C. COORDINATION OF ATOMIC OPERATIONS

(U) Between 1945 and 1950, SAC had a virtual monopoly of the means of delivery of atomic bombs. As has been described, the JCS had drawn SAC forces under direct operational control in 1946 and had strengthened their control later by prohibiting the usurpation of SAC forces by unified commanders. Therefore, no coordination problems in planning and executing the atomic offensive existed in these years. By the early 1950s, however, this situation was being transformed by the proliferation both of weapons and delivery means.

(U) The Navy announced in 1952 that all its new attack planes were capable of carrying tactical atomic bombs and that it had on hand aircraft capable of handling large bombs. Newly activated Air Force tactical air units in Europe and the Far East were able to deliver the new smaller weapons. The Secretary of the Air Force announced that nearly all Air Force combat aircraft were being modified to carry small weapons, and in September 1951 the Air Force decided that all combat aircraft would be capable of carrying atomic weapons by 1954. With the incorporation of carriers and tactical air units into the atomic-capable forces, the establishment of centralized control became a matter of urgency.[11]

(U) The Joint Strategic Plans Committee had been directed in August 1950 to prepare the directives required to implement a report by it on procedures for control and coordination of atomic forces, but the directives were never prepared because of service differences. The assignment of a new mission to SAC, also in August 1950--that of retarding the advance of Soviet ground forces into Western Europe--made clear the necessity for a review and revision of the existing command and control structure. Subsequently, in early 1951 JCS 2056/7 established the new requirement that the unified commanders concerned coordinate their operational plans pertaining to retardation operations and have those plans approved by the JCS.

(U) In February 1951, a concept of operations for the Far East Command (CINCFE) and SAC was drawn up and signed. Each command was to support the other; SAC would employ the atomic bombs allotted to CINCFE for that purpose, with delivery to be on targets and at times prescribed by CINCFE as long as that did not conflict with the primary mission of SAC. The SAC command elements (phonetic commands) for coordination purposes were to be designated X-RAY for CINCFE, ZEBRA for CINCEUR.

(U) One of the issues that arose constantly was that of the use and control of SAC units. It was finally agreed by

SAC and CINCFE that on D-day SAC would take control of all SAC units in the Far East Command. Although these units might not have nuclear capabilities themselves, they could be used for diversionary attacks in connection with atomic missions, and such missions would take precedence over retardation missions. Another issue was whether SAC units would stay in the theater for conventional attacks. SAC agreed, so long as no other missions were required of them elsewhere.

(U) It was also agreed that elements of SAC headquarters would be established near or in the command posts of other unified commanders in order to keep them informed of the support requirements of SAC in retardation missions and to establish close coordination on all phases of such operations. The main forward command elements, X-RAY and ZEBRA, were considered deputy headquarters of SAC and were designated Hq SAC, ZEBRA and X-RAY.[12]

(U) The system was tried out in the Far East Command in September-October 1951. Exercise HUDSON HARBOR was conducted to demonstrate the capability of combined forces to employ the atomic bomb tactically in support of ground forces. The conclusions of the exercise were that (a) the minimum time needed to deliver a weapon was too long; (b) while the relationship between Hq SAC X-RAY and CINCFE was good, it was certain that SAC's primary mission would detract from its retardation capabilities (in this regard, CINCFE suggested the need for an available "on call" capability to deliver atomic bombs in the theater); and (c) CINCFE should be allocated its own weapon supply.[13]

(U) The embryonic system and the test of it apparently were accepted as a basis for a permanent system. In January 1952, the JCS directed the establishment of an *ad hoc* committee to submit recommendations on the same subject. The resulting report the next month led to JCS 2056/24, approved in March, which was to be a major step in the achievement of atomic coordination. It was in essence the refinement and final draft of the earlier document by means of which X-RAY and ZEBRA were established.

(U) The conclusions and recommendations of JCS 2056/24 were as follows. First, at least until 1957, there would be fewer atomic weapons available than were required in the event of a general war.

(U) Second, during this period of relative scarcity the JCS must preserve for themselves a positive, centralized control over weapon allocation. Within the scope of their responsibilities and without usurping the prerogatives of their commanders, they must retain sufficient control of weapon expenditure to insure achievement of several objectives:

(a) That appropriate forces having atomic delivery capabilities and atomic weapons are promptly available to and in support of commanders specified by the JCS.

(b) That a ready accounting is available to the JCS of all atomic weapons in the hands of the military. This should include the ability to count those remaining as well as those expended.

(c) That there be no interference between atomic air forces.

(d) That maximum military effect is obtained in delivery of atomic weapons. This requires coordination of plans to obtain mutual support between striking forces.

(e) That targets not be over-bombed or ignored, and that useless action not be taken by one force in ignorance of other actions.

(U) Third, the report went on to say that JCS supervision of planning and execution would require the following:

(a) Channels for lateral coordination of planning and implementation and a rapid exchange of operational data.

(b) A jointly staffed war room annex at the Pentagon with key data on the stockpile, presidentially released atomic weapons, storage sites and the distribution of weapons, the deployment of atomic forces, targets, planned operations, and expenditures. These data were to be provided to the war room annex by the services, the Military Liaison Committee, the AFSWP, and the unified and specified commands.

(c) Charging the Chief of Staff of the Air Force with responsibility for undertaking the above steps. Once the necessary machinery was in place and functioning properly, this responsibility could be ended, at the discretion of the JCS.

(d) Directing the unified commands to coordinate with SAC and to prepare atomic annexes for plans.[14]

(U) The last point (d) required that the Commander in Chief, Europe (CINCEUR), the Commander in Chief, Northern and Eastern Atlantic and Mediterranean (CINCNELM), and the Commander in Chief, USAF Europe (CINCUSAFE) prepare appropriate annexes for the employment of atomic weapons in accordance with the plans and directives of the Supreme Allied Commander Europe and that they effect mutual coordination with each other and with SAC and the Commander in Chief, Atlantic (CINCLANT). The latter was to prepare appropriate annexes for the conduct of operations as foreseen by SACLANT and was to effect coordination with SAC and the JCS representatives in Europe. The Commander in Chief, Far East (CINCFE), the Commander in Chief, Pacific (CINCPAC), and the Commander in Chief, Alaska (CINCAL) were to prepare appropriate atomic annexes and to coordinate those with each other and with SAC. Each of the above commanders was also to submit his atomic annex to the JCS for approval.

(U) The Chief of Staff of the Air Force thus became the authority for the control and coordination of all forces with an atomic delivery capability and was responsible for implementing the specified relationship. The commanding general of SAC was, in turn, designated as his agent for the establishment of channels for the lateral coordination of atomic plans and operations and for the gathering of information to be displayed in the war room annex. The director of operations of the Air Force was directed to establish the war room annex.

(U) The Commanding General of SAC, General LeMay, began to negotiate an agreement with General Gruenther, the representative of SACEUR, that acknowledged the coordinating authority assigned to the Chief of Staff of the Air Force and provided for the establishment of a full coordination center in the United Kingdom. Under the agreement, a field representative would be appointed by the CSAF, and staff and data would be supplied by SAC and SACEUR. Similar agreements were made by General LeMay with SACLANT, CINCFE, CINCPAC, and CINCAL. Each recognized that the CSAF would appoint a field representative who would establish the necessary facilities and operating procedures and that SAC and other parties would provide staff and planning procedures.[15]

(U) The field facilities for lateral coordination of planning, called Joint Coordination Centers (JCCs), were located in Buckinghamshire, England, and Pershing Heights, Tokyo. The European field representative was appointed in October 1952 and the Far Eastern one in December. The European JCC coordinated atomic operations for CINCNELM, CINCEUR, CINCSAC, SACEUR, SACLANT; the one in Japan for CINCPAC, CINCFE, CINCAL, and CINCSAC. The joint war room annex in the Pentagon, which was to receive the reports of the JCCs, had been established by the end of that year.

(U) The JCCs were war room facilities for the receipt, compilation, display, review, coordination, and relay of information concerning the plans and operations of atomic forces for the benefit of the unified and specified commanders and the JCS. Information on targets scheduled for attack was forwarded to the Pentagon war room annex, where duplication might be noted and, theoretically, eliminated. Under existing ground rules, it was found that as many as four commanders were scheduling atomic attacks against the same target. The JCCs were also to serve as advance command posts to control an emergency war plan employment of SAC in support of the theater.

U ([redacted]) It should be noted that the coordination established was to be operational coordination, in that it was to take place after hostilities began. However, early exercises of the JCCs in 1954 revealed the need for pre-hostilities coordination of atomic plans as well. Accordingly, that same year the JCS asked each appropriate commander to submit an atomic annex, a target list, to his war plan and to coordinate it with other theater commanders and CINCSAC.[16]

U ([redacted]) A SACEUR exercise in May 1953 provided a test of all of the machinery to use atomic bombs in support of NATO forces. The results were discouraging. From H-hour to the simulated dropping of bombs, 39 1/2 hours elapsed, most of it spent waiting for nuclear material. The Navy, too, was involved in the atomic operation exercise. Since SAC had been charged with responsibility for the atomic air offensive and with control of forces operating for that purpose, the Air Force sought information from the JCS in regard to the Navy's planned targets and also targets the Navy would be willing to attack in performance of collateral functions of strategic operations. The Navy asserted that no naval air units would be available for collateral operations (by implication under SAC direction) and that all atomic units were already assigned to unified commanders who would use them.[17]

U ([redacted]) As for the broad problem of allocation of weapons, the JCS were reluctant to allocate atomic weapons until the coordination annexes were received from unified and specified commanders. They did make an interim allocation in August 1953 after the chief of the AFSWP had reported that total demands for nuclear components coming to him exceeded the stockpile. The interim allocation at least permitted the development of pickup schedules. The allocation of weapons turned out to be a controversial issue, since it required a decision by the JCS on duplicated targets, a decision the JCS kept postponing.

(U) A compromise agreement reached in April 1954 still avoided the hard decision. The agreement did, however, set some general principles for unified and specified commanders in regard to target selection and the timing of attacks, and it permitted the refinement of pickup schedules and the development of atomic annexes to plans. The guidelines laid down by the JCS were that (1) targets within reasonable proximity of one another were to be attacked by only one commander; (2) targets of interest to more than one commander were to become a commitment on the target annex of the commander having delivery capability who considered the target of highest relative priority as to timing; (3) targets to be attacked by CINCSAC in support of other commanders were to be those that such commanders lacked normal delivery forces to attack themselves; and (4) in regard to (3), the desires of the requesting commander would govern as to timing (if practicable) and weapons expended would be charged to him.[18]

(U) In summary, during the period 1949-53 most atomic planning revolved around the preparation of atomic operation annexes to be implemented by SAC in support of the Joint Emergency War Plan. As various unified commanders acquired an atomic capability or were promised atomic support by SAC, however, SAC became responsible for coordinating the atomic annexes to avoid duplication and to permit best use of the weapons. Under JCS review, SAC thus became in this period the principal locus for atomic planning.

(U) As long as all prospective nuclear targets were within the Soviet Union, the simple procedure for coordination established in 1952 appeared to be workable. However, the situation rapidly began to get out of hand as the "New Look" doctrine of reliance on nuclear weapons greatly loosened planning for the employment of the rapidly growing atomic stockpile in limited, as well as in general, wars. The situation became more unmanageable throughout the 1950s and was not to be settled until the establishment in 1960 of the Joint Strategic Target Planning Staff at SAC headquarters.

D. THE IMPACT OF WEAPONS DEVELOPMENT ON THE CONTROL ISSUE

(U) This account has so far illustrated how command and control of atomic operations was intimately intertwined with the issue of Air Force domination of atomic war matters and with the interservice controversies that derived from it. Command and control of atomic strategy and operations was also influenced by the revolutionary developments in atomic weaponry after 1950. These included the development of lightweight weapons, and, finally, the coming of the thermonuclear bomb, all made possible by the rapid ending of the scarcity of fissionable material.

(U) The development of a sizable national stockpile was extremely slow, and for the first three years US nuclear strategy was based upon a small number of bombs. There had been a marked slowdown immediately after the Second World War in atomic bomb development because of the prevalent belief that fissionable material would remain scarce. In fact, Chairman Lilienthal of the AEC told President Truman in November 1949, while advocating US development of the hydrogen bomb, that only one-fortieth of total military spending since 1945 had been on atomic weapons. In FY50, less than 1 percent of the national budget was directed toward atomic weapon development.[19] The Chairman of the Joint Congressional Committee on Atomic Energy repeated the point in August 1951 that, while six years ago it was generally recognized that atomic weapons had changed the anatomy of air power and that the United States had proceeded to place overwhelming reliance on the deterrent stockpile, still only one-fortieth of total military spending had gone to the development of atomic weapons. He found deeds strangely out of line with words.[20] His comments, however, made in respect to the need to push tactical bomb development more vigorously, reflected the then common belief about the immediate recognition and acceptance of the role of atomic weapons after the war, a development which we have seen did not happen quickly at all.

(U) The scarcity problem began to ease by February 1950, when the AEC announced that it could turn out atomic bombs on a virtual production-line basis. The critical problem of atomic supply, which had from the start conditioned all atomic planning, seemed on the way to solution.[21] As a result, funds for procurement of atomic weapons increased and the rate of production rose rapidly after 1950, as evidenced by stockpile data listed in Chapter III.

(U) The recognition that the availability of fissionable material would no longer be a problem came at a time when technological improvements were permitting the fabrication of ever lighter bombs that could be carried on smaller aircraft. New weapons, weighing as little as 1,700 pounds, appeared. The great significance of such weapon developments was that they permitted the Navy and the Army to achieve finally the basis for some claim to part of the atomic mission. By the end of 1950, the Navy and Army were developing atomic weapons and the Air Force monopoly was ended, although rivalry still continued over the size of the respective shares of the nuclear stockpile.[22] The Navy began to build aircraft capable of flying atomic bombs off carriers, and the Army began to develop a nuclear artillery piece. Between May 1951 and July 1953, both services achieved their objectives.

(U) The Air Force was originally hesitant about accepting tactical atomic bombs. The fundamental basis of this reluctance lay in the Air Force view that atomic bombs should be used mainly as part of a strategic atomic offensive launched over great distances. Air Force concentration on strategic atomic operations led to the natural preference for design and fabrication of large bombs for large targets. It was probable, too, that the Air Force recognized that the tactical weapon would mean the end of its atomic monopoly and the special status that went with it. The reluctance faded only gradually, although the Air Force did begin the development of a tactical atomic air force in these same years. Air Force preferences were probably shaped also by the JCS decision in the summer of 1950 that gave retardation targets second priority out of three, ahead of attacks on Soviet industry. It was clear that tactical aircraft and tactical atomic bombs would have great value in this role, thereby preserving the strategic air force for the strategic offensive.

(U) The thermonuclear revolution came next. The rapid development of small tactical weapons was accompanied by the dramatic development of the immensely powerful super bomb. Right after the first Soviet atomic explosion of August 1949, the AEC had advocated a quantum jump over the Soviets with the crash development of the H-bomb, instead of pursuing a simple arithmetic race with atomic bombs.[23] The first US thermonuclear explosion came in November 1952, the first Soviet thermonuclear explosion in August 1953, and the first US weapon shot in March 1954.

(U) The thermonuclear revolution of 1954-56 was to change the picture again, making it clear that high-yield weapons could be employed by tactical aircraft. By 1955, the distinction between tactical and strategic weapons would begin to blur and even the distinction between tactical and strategic air forces would be questioned. It was also apparent that the H-bomb was not simply a super bomb, and that it would compel a complete reorganization of the national stockpile and a reevaluation of target systems.

V

INTERSERVICE CONTROVERSY OVER ATOMIC MATTERS

(U) It was noted in earlier chapters that the years between 1945 and 1953, when the US military were grappling with the overall problem of how to use, control, and coordinate atomic weapons and operations, were also the years of the bitterest interservice disputes. To be sure, competition for funds fueled much service controversy, especially between 1948 and 1950, but in large part, atomic energy was also a root cause. There were two main facets to the atomic aspect of interservice controversy. The first was essentially operational in character and had deep significance for the development of roles and missions. The second was a broad doctrinal issue. Both invariably influenced the effort to create an atomic force and a doctrine by which to use it.

(U) The first problem was the claim of the newly created Air Force to control all strategic bombing operations and, specifically, all atomic operations. The Chief of Staff of the Air Force raised with the JCS the subject of control of atomic operations on 23 March 1948, by which he attempted to establish Air Force command authority over the Armed Forces Special Weapons Project. He reminded the Chiefs that the Air Force had been charged with primary responsibility for strategic air operations, including atomic operations, but that, as yet, the Air Force had not been delegated proper authority to exercise that responsibility. In order to organize, train, and properly equip USAF units for atomic operations, the Air Force needed more positive control over the AFSWP, which was responsible for protecting the stockpile of atomic weapons. The CSAF suggested that there should be a single authority to which the AFSWP should report, rather than to the Chiefs individually.[1]

(U) Objection was made to the Air Force bid by the Navy and by Admiral Leahy, the then "Chief of Staff to the President," on three main grounds. They asserted that (1) the JCS did not yet have presidential authority to use atomic weapons; (2) the Navy's development of an atomic delivery capability would be relegated to the category of an unnecessary luxury that was unlikely to survive the stringencies of peacetime budgets; and (3) the JCS, as such, would be weakened by loss of direct control over atomic weapons. The Secretary of the Navy picked up the second point and charged that giving the requested authority to the Air Force would effectively prevent the Navy from developing an atomic capability, thereby depriving the United States of a second atomic-capable force. Naval carriers would soon be able to use atomic weapons, and it was always possible that the Air Force might be cut off from its operational bases, especially the overseas ones. This would leave the United States desperately dependent on a naval atomic capability.

(U) The CSAF acknowledged that the JCS could not use any atomic weapons without presidential authority, but pointed out that the HALF MOON Joint Emergency War Plan (approved by the JCS in May 1948; see Chapter II) had been adopted on the basis of an early atomic offensive, that the Secretary of Defense had asked the JCS to direct one of their number to ready the weapons for use, and that the Air Force had already been assigned the responsibility for strategic plans involving atomic operations.[2]

(U) Neither the Key West nor the Newport meetings among the services in 1948 resolved fundamental problems or stilled controversy to any degree. The key issues were simply postponed. At the Newport Conference in August, for example, it was frankly agreed to postpone any decision concerning the permanent future organization for the control and direction of atomic operations until further study was possible. At the same time, in regard to planning for the atomic aspects of the

Joint Emergency War Plan, HALF MOON, it was agreed as an interim measure to direct the chief of the AFSWP to report to the CSAF for instructions. The interim nature of this agreement was heavily stressed.[3] The Navy agreed, so long as the AFSWP continued to report to it on any atomic missions assigned to the Navy.

(U) In mid-1948, however, the Air Force, with good grounds, had denied that either the Navy or the Army had any atomic role, since only Air Force aircraft could carry the large bombs, which made most efficient use of the scarce fissionable material. However, also by 1948 both the Navy and the Army had become interested in the atomic stockpile and its allocation, and the Air Force apparently suspected the Navy of trying to delay the resolution of issues on responsibilities for atomic affairs and operations until it had developed a working delivery capability of its own, thereby increasing its weight in the controversial arenas. Air Force policy, therefore, seemed to be aimed at limiting tactical atomic weapons, since it could not exclude their development altogether, so that the national stockpile would remain overwhelmingly strategic in nature.[4]

(U) The other major strand in the interservice controversy was the broad doctrinal one concerning the overall role of strategic airpower in national strategy. As described in Chapter II, the concept of the strategic atomic blitz was from its very beginning opposed for a variety of reasons. One has just been discussed--the connection between the concept and the Air Force's attempted domination of nuclear weapons. Another basis for dissent lay in a skepticism as to the war-winning capability of nuclear weapons. A third lay in the moral implications of atomic war.

(U) It was the proposal in 1949 to build the hydrogen bomb that launched the intensive debate on the extent to which the United States should rely upon atomic strategic attack and upon its derivative, the concept of deterrence. The justification for the new weapon lay in its contribution to deterrence rather than to victory in a war. The consequences of its use, however, were stressed not by its supporters but by its opponents. The debate on the hydrogen bomb was conducted mostly within the government, but the issues relating to the viability of deterrence and the morality of atomic war became very public matters. These issues came together publicly in the B-36 controversy, primarily between the Air Force and the Navy, during 1949 and reached a climax in the congressional hearings on the matter.

(U) The B-36 became the symbol of the clash over overall strategy and doctrine and the consequent allocation of defense funds. The issue that the Navy, in its attack on the B-36, put foremost was the one of the degree of priority to be accorded long-range strategic bombing with atom bombs within the larger framework of US national strategy. The Navy attacked the atomic blitz concept as immoral, claiming that the B-36 was good only for bombing cities. Involved in the feud, of course, were also issues of money and service pride. The Navy resented what it felt to be the Air Force role in the cancellation of a projected "super" carrier, the Air Force position having been that such a large, expensive vessel would only duplicate the existing capability of SAC and the B-36. Service pride was present in the underlying resentment of the Navy that the role of the long-range striking arm of the nation, traditionally the function of the Navy, had now apparently passed to the Air Force.

(U) In the congressional hearings of October 1949, the Navy stressed that the issue was how much effort and money should be devoted to intercontinental strategic bombers as a deterrent to war. These, the Navy asserted, should not be accepted blandly as a substitute for other armed forces, which experience had shown were always required.[5] Admiral Radford, as a senior Navy spokesman, denied the validity of the concept of an easy, cheap atomic war:

> I do not believe that the threat of atomic blitz will be an effective deterrent to a war or that it will win a war. I do not believe that the atomic blitz theory is generally accepted by military men.... Strategic bombing should be the primary role of the Air Force. However, the United States is not sound in relying upon the socalled strategic bombing concept to its present extent.[6]

Radford's main thesis was that the United States must win a war but an atomic blitz was no guarantee of winning that war. He also raised the morality issue by asserting that the United States would also have to live with the peace thereafter.

(U) The Chairman of the JCS, General Bradley, also, while willing to concede that the atomic bomb was the strongest single deterrent to war and that the strategic air force should have first priority in the defense program, still did not believe that the United States should rely solely on the atomic bomb, even in the first phase of a war.[7]

(U) The hearings were inconclusive and damaging to both the Navy and the Air Force in terms of their public image. Both were revealed as not having fully thought through their cases. The failing was more serious in the case of the Air Force, since the hearings had demonstrated that the prime user of atomic weapons had apparently not given enough realistic analysis to the problems of waging atomic war.[8]

(U) The B-36 episode exposed the inadequacy of defense strategy, the absence of an integrated perspective within the National Military Establishment on national security policy, and the shortcomings of an exclusive reliance on strategic air power. In a sense, however, the hearings represented something of a climax in the interservice disputes. They came at a time when Secretary of Defense Johnson was making major reductions in the defense budget, yet within a little over six months the outbreak of the Korean war would sweep away most of the fiscal constraints underlying the disputes. In addition, the nuclear-sharing aspect of the disputes was also transformed by the apparent ending of the scarcity of fissionable material and by the rapid development of tactical nuclear weapons. Thus, by 1953, the end of the period under consideration here, the Navy had achieved a solid role in the strategic atomic offensive, and Navy criticism of Air Force strategic atomic concepts and strategy had become much more muted.

(U) Nevertheless, the long dispute and the final public hearings had a major impact on the processes and organization for control of atomic operations. Once the other services, especially the Navy, had achieved a share of the atomic offensive, they guarded it carefully and coordination of atomic operations suffered accordingly.

VI

DEVELOPING THE INSTRUMENT FOR ATOMIC WAR

(U) The second major element in the national effort to develop a military atomic capability, along with conceptual and organizational developments, was the creation of the force that would use it, the Strategic Air Command. The development of the bomb had been only the first step. It alone did not give the country a viable strategy of deterrence. That required many other actions on many other programs. The development of concepts, of weapons, and aircraft, and the establishment of forward bases became meaningful only as they were integrated into an organization specifically devoted to the atomic mission. The growth of SAC occurred concurrently with the steps already discussed in previous chapters, steps that were intended to provide the means of control and the procedures under which atomic weapons would be used. Like the development of those means and procedures, the creation of the instrument was surprisingly slow, and it was not until the end of the period under consideration that the SAC that finally emerged began to take definite shape.

(U) The emergence of SAC as the primary embodiment of strategic deterrence took place between 1949 and 1953. Its importance is described by Samuel Huntington:

> It was one of the most significant developments in the American military establishment after World War II. It marked a fundamental change in the composition of American military forces, comparable to the development of the battlefleet by the Navy at the turn of the century. Moreover, because it was carried out within an existing organizational structure, it was accomplished with no legislation and little or

> no public debate and discussion. The rejuvenation of SAC required, of course, demands upon scarce resources and conflicts with other groups. Its most significant aspect, however, was an internal matter: not the acquisition of resources, but the creation and acceptance of the purpose and concept which would shape the use of the resources. Unlike the military services, SAC was a single purpose organization. That purpose was the most important one in American military policy. It could be clearly grasped and understood both by the members of SAC and by the general public. It could furnish clear cut criteria for judging the priorities of programs and standards of performance.[1]

(U) Because the mechanisms for command and control of strategic nuclear operations grew with SAC and for SAC, some account must be presented of the growth of this unique organization.

A. ORIGINS OF SAC

(U) As mentioned earlier, the direct predecessor to SAC was the Twentieth Air Force, which from 1944 on attacked the Japanese home islands. In the rush of demobilization, General Spaatz had given first priority to the preservation of the backbone of the AAF, the long-range bomber groups, and their associated long-range protective fighter groups. It was these that he combined into the new SAC. On 21 March 1946, SAC was activated at Bolling Field, Md.; it was moved to Andrews AFB, Md., in October of that year, and then to Offutt AFB, Neb., two years later. The interim mission given SAC by General Spaatz on 12 March 1946, even before SAC was formally established, was as follows:

> The SAC will be prepared to conduct long-range offensive operations in any part of the world either independently or in cooperation with land and Naval forces; to conduct maximum range reconnaissance over land or sea either independently or in cooperation with Naval forces; to provide combat units capable of intense and sustained combat operations employing the latest

> and most advanced weapons; to train units and personnel for the maintenance of the Strategic Forces in all parts of the world; to perform such special missions as the Commanding General, Army Air Forces, may direct.[2]

That fall a new, revised mission was assigned by AAF Regulation 20-20, which required SAC to have a global striking force in constant readiness rather than the capability to furnish such a force at a future time.

(U) In October 1946, SAC was also assigned ASW and search-and-rescue missions. It retained this role, along with a responsibility for aerial mine-laying, until 1950, when it was finally recognized that these roles would interfere with SAC's emergency war plan mission, which would require all available aircraft. However, SAC was not completely free of these responsibilities until 1952.[3]

(U) In January 1946, the AAF had designated all long-range bomber units as the atomic strike force, even though only a few aircraft were capable of carrying atomic bombs. This step was taken to avoid the impression among the public and the Congress that only a small element of the bomber force was so capable, an impression that could have led to a reduction of funds to non-atomic forces. Actually, one group of the 58th Bombardment Wing, the 509th Bombardment Group, was designated in February 1946 as the test and training unit, to be kept in instant readiness to deliver atomic bombs. (The group was also to assume this role for the Bikini tests in mid-1946.) The unit was to be completely air-mobile and to be capable of immediate deployment to anyplace where ordinary base facilities existed. A transport squadron attached to the Wing would move the atomic bombs and associated technical personnel. Operational orders were to go to the Wing, then based at March Field, Calif., directly from AAF headquarters in Washington. The Wing was incorporated in the new Strategic Air Command when SAC was established within the Army Air Forces structure in March 1946.

(U) The Wing was not confined to just delivering atomic bombs; it was also to be prepared to drop the very largest high-explosive bombs, like the Tall Boy.[4] At this time, plans for SAC were predicated on scientific reports that fissionable materials were very scarce and that a state of nuclear plenty was improbable. General Arnold had warned the AAF that atomic bombs would be scarce and expensive. Consequently, SAC was to be capable of delivering conventional weapons, as well.[5] It might be added here that SAC continued to retain the capability for conventional operations, and all SAC aircraft were designed to include such a capability. However, the mission became secondary by the early 1950s and SAC began to think of itself as a nuclear force only. The conventional mission, however, was never abolished.

(U) The function of the 58th Wing was described in a SAC directive of May 1946 to the Fifteenth Air Force, which then controlled the 58th Wing:

> man, train, and equip the 58th Wing, including allied units and associated services, as the single AAF agency to coordinate and direct AAF activities concerned with the atomic bomb, maintain these elements as part of the strategic striking force, assist the Manhattan District in aerial experimentation and development and act as the AAF liaison agency with the Manhattan District.[6]

(U) Due to the preoccupation of the 58th Wing with the Bikini atomic tests, SAC's long-range planning for an atomic strike force did not get under way until after mid-1946. In July, AAF headquarters instructed SAC to prepare a training directive for the Very Heavy Bombardment Wing, which was to be the atomic strike force, and indicated that this unit was to be the forerunner of the conversion of all VHB units to atomic-capable status, which would be accomplished as soon as national capabilities permitted.[7]

(U) In directives from SAC and in discussions between the AAF and the Manhattan District, there was no mention of command and control arrangements, beyond the initial arrangement mentioned above. While it seemed to be recognized that this nuclear unit would be very different from nonnuclear ones, there did not seem to be enough concern over command arrangements to spell them out in any detail. This comparative lack of concern over command and control was probably a reflection of the lack of any imminent threat to SAC, which allowed it the luxury of time to respond. In these years, it will be recalled, SAC was planning in terms of 40-45 days to go to war. By 1957 the time would be reduced to two hours. The difference is a measure of the attention paid to command and control in two different eras. While General LeMay brought to SAC the idea of a full force ready for war, it took him a long time to achieve that capability.

B. EQUIPPING THE ATOMIC STRIKE FORCE

(U) Initially, SAC was very weak. The B-29 was not an intercontinental bomber. There were not enough bases in the United States to accommodate heavy bombers, and overseas bases in appropriate areas were also inadequate. Yet the United States had a few bombs, and it had the 509th Group.

(U) The equipment of the 509th Group, based at Roswell, N.M., was to include the 27 specially modified (SILVERPLATED) B-29s then available. At the end of the war, 46 B-29s had been modified to carry the atomic bomb, but for a year thereafter no further modifications were undertaken. By November 1946, less than half of the 46 remained operational. Eighteen were in storage and 4 had been destroyed.[8] Not all the aircraft available to the 509th were continually in readiness, however. In November 1946, for example, the aircraft were in commission only 51 percent of the time.[9]

(U) While overall SAC bomber strength grew steadily, the size of the atomic-capable force grew very slowly, much more slowly than anticipated. Exact strength estimates vary for the period, even within individual sources. R. D. Little, for example, states that in the summer of 1947 there were only 34 SILVERPLATED B-29s. He mentions elsewhere in the same volume that in October 1947 the atomic capability of SAC consisted of 18 modified B-29s. At the end of 1947, 30 flight crews were available in the 509th to man these planes, but only 20 crews were cleared for atomic activities.[10] Similarly, the bomb-assembly rate was very slow. As of July 1946, the Manhattan District had trained only 10 AAF weaponeers to handle and assemble the bomb.[11] It was estimated in October 1947 that it would take a minimum of 9 days and 20 hours to assemble 11 bombs. A more pessimistic estimate in January 1948 was 1 bomb in 5 days, initially, and as long as 30 days for 20 bombs.[12]

(U) Military exercises had shown the weaknesses of SAC. On 16 May 1947, SAC participated in a mock attack on New York. Of the total of 180 B-29s then in SAC, only 101 were able to take part in the test, which was marked by both poor planning and performance.[13] Tests in July and August that year in conjunction with the AFSWP also pointed up numerous deficiencies, primarily in bomb handling.

(U) Despite plans to increase requirements for modified aircraft, bomb commanders, and weaponeers, the status of SAC remained almost unchanged until the latter part of 1948, this despite the Communist coup in Czechoslovakia and the Berlin blockade.

(U) The Eighth Air Force, which had been assigned to SAC in November 1946 and which included the three Very Heavy Bombardment Groups of the 58th Wing, reported its strength for the 509th as follows:

11 August 1947	4 crews on hand; 3 other trained crews available; 9 SILVERPLATED aircraft on hand; 14 other modified aircraft available;
31 July 1948	15 crews on hand; 33 other trained crews available; 38 modified aircraft on hand.

(U) In September 1948, the Military Liaison Committee reported to the Secretary of Defense that the atomic striking capability still consisted essentially of the 509th Group with its 30 modified aircraft and 39 specially trained crews; in all the Air Force had only 106 trained bomb commanders and 69 weaponeers. By January 1949, SAC had 90 special crews and 124 modified aircraft available, as against a JCS-stated requirement for 175 and 225, respectively.[14]

(U) Overall, including the non-atomic units, SAC was showing greater improvement. Whereas in 1947 only six Bombardment Groups had reached a state of operational efficiency that would permit even partial deployment abroad, in 1948 six more Groups were capable of overseas deployment.[15]

(U) The assumption of command of SAC by General LeMay in October 1948 was to rejuvenate SAC, although low budgets prevented full modernization and expansion until after 1950. In 1948, SAC received its first postwar bombers, the B-50 and the B-36. The latter had close to true intercontinental range. Under the influence of evolving atomic warfare concepts, the extensive use of refueling techniques promised to extend aircraft ranges even more and led to changes in the organizational concept for atomic units.

(U) The following tabulation shows the growth of SAC in the period under review:

12/1946 - 148 B-29s
12/1947 - 319 B-29s
12/1948 - 35 B-36s, 35 B-50s, 486 B-29s, 30 RB-24s
12/1949 - 36 B-36s, 99 B-50s, 386 B-29s, 26 RB-29s
12/1950 - 38 B-36s, 195 B-50s, 282 B-29s, 20 RB-36s
19 RB-50s, 46 RB-29s
12/1951 - 96 B-36s, 216 B-50s, 346 B-29s, 10 B-47s,
63 RB-36s, 40 RB-50s, 32 RB-29s

12/1952 - 154 B-36s, 62 B-47s, 224 B-50s, 114 RB-36s, 39 RB-50s, 417 B-29s, 18 RB-29s
12/1953 - 185 B-36s, 329 B-47s, 138 B-50s, 110 B-29s, 137 RB-36s, 38 RB-50s, 80 RB-29s, 11 RB-47s.[16]

Numbers of aircraft, however, do not give a true picture of strength. For example, in 1950, three heavy bomber wings were out of operation because of lack of equipment, and the medium bomber wings were also short of equipment.[17] Also, there were 312 SAC crews but only 263 were considered combat ready.

C. EARLY OVERSEAS DEPLOYMENTS

(U) The emergence of the Soviet Union as the only threat to the continental United States dictated the geographical areas in which the most important SAC operations would be concentrated. The Arctic was one of those areas, because of the belief that the great circle route across the polar basin from Europe would be the likely avenue of approach by any attacker. It seemed wise therefore to acquaint SAC personnel with the problems inherent in cold weather operations.[18] Considerable attention was given in 1947 to flights in and around Alaska and Greenland; emphasis was placed on polar rescue and survival, cold weather maintenance, and the peculiarities of cold weather operations. These experiences graphically showed the need for much improved communications if SAC were to operate in this area.[19]

(U) The following year a program was begun of long overseas flights to and around the Arctic, Europe, and the Far East. However, the focus did not last long; in what the official SAC history termed "probably the most significant change in operational policy during 1948," operational emphasis was shifted from the polar regions to Europe. The rotation of SAC units to Alaska continued, but that region rapidly lost some of its early presumed importance as a key area in worldwide plans for strategic bombing when, after a partial alert in June 1948, SAC units were assigned to Europe.[20] This development was to have major significance for command and control, especially in regard to communications, which had remained a major weakness in Arctic operations and indeed had been a major factor in SAC's disenchantment with the Arctic as an operating area.

(U) As noted earlier, the European crises in the first half of 1948 found the striking power of SAC still relatively low. The key unit, the 509th Group, was described at this time as having only 11 fully qualified crews and possibly 12-15 more that could be scraped together and that would have some proficiency in atomic operations. Officers of the Group felt they would be lucky to "get off 30 bombs by D+30 with any assurance that the crews were equal to their tasks." The 509th also did not at this time have any target folders.[21]

(U) On 27 June 1948, it was decided to dispatch three full heavy bombardment groups to Europe as both a political and military gesture. At the time, SAC's strength in Europe comprised one squadron of the 301st Bombardment Group at Furstenfeldbruch. The other two squadrons of the group were ordered to Goose Bay, the normal summer staging area for Europe. The 307th Bombardment Group was placed on 3-hour alert and the 28th Bombardment Group on 12-hour alert, both to go to the United Kingdom. The rest of SAC went on 24-hour alert.

(U) By 2 July, all the 301st Group was in Germany, where it was ordered to fly nothing but test flights until 7 July. For a time, some consideration was apparently given to using the B-29s to transport coal to West Berlin, but to SAC's relief the idea was abandoned. It took longer to move the 307th and 28th Groups to Britain because of the need to prepare temporary bases. SAC's strength in Europe had been increased ninefold, but it took three weeks to do it, and by the time the units were fully operational there, the alert had been relaxed. Nevertheless, the units were kept in Europe for the rest of 1948.[22] It should be noted that none of the aircraft in these units carried atomic bombs or was capable of carrying atomic bombs.[23]

(U) It was not until 1951 that SAC permanently stationed units overseas--B-36s arrived in Britain in January 1951 and at Moroccan bases in December of that year.[24] The Moroccan bases were decided upon because of the vulnerability of the UK bases to Soviet attack. Along with the establishment of these bases came the development of the KC-97 tanker, which gave the B-47 an intercontinental bombing capability and thus vastly increased SAC's operational capabilities. In addition, by this time the B-36, which had many performance deficiencies when it first arrived in SAC in 1948, had been greatly improved and was the backbone of the heavy bombardment force.

(U) In these early years, the lack of a true, long-range intercontinental bombing force made SAC almost completely dependent on overseas bases in order to conduct its atomic offensive. It was not only a matter of aircraft range. The logistical support required for an atomic campaign was such that, for rapid response, that support had to be located at a forward base. No matter how self-contained and air-transportable SAC units tried to be, moving such materiel and personnel forward in an emergency would have taken too long.

(U) It was felt in SAC in those years that the absence or loss of forward bases would cut SAC's striking power fully as much as if the greater part of SAC were destroyed on the ground. At the same time, overseas bases became more and more politically and militarily vulnerable as the 1950s progressed. Nevertheless, for its first decade, SAC remained heavily dependent on them. It was not until after the mid-1950s that a recognition of the vulnerability of those bases led to a complete reorientation of SAC operational concepts and a withdrawal of SAC to well-dispersed bases within the United States.

D. THE DEVELOPMENT OF SAC COMMUNICATIONS

(U) The role of SAC as the atomic core of the American military establishment and the special command and control requirements deriving from that role would seem to have demanded special communications capabilities. Atomic warfare doctrine and its special sensitivities would seem to have imposed a need for finely tuned atomic responsiveness. In the actual course of events, the development of communications to fill these special needs came about very slowly and was not fulfilled in the period under review.

(U) At the close of World War II, no special AAF communications system, as such, existed. The AAF was a subordinate service of the Army and thus could not claim a separate system. From 1946 to 1949, SAC depended on the Army Command and Administrative Net, supplemented by a radio telephone circuit from the Pentagon to SAC headquarters at Andrews AFB in Maryland.[25] No special telephone facilities were available to SAC, and normal commercial long-distance service was depended upon.[26] Not until 1949, when the USAF command teletype network (AIRCOMNET) became operational, did the Air Force have its own communications system. The AIRCOMNET was supposed to carry both operational and administrative traffic.

(U) The AIRCOMNET fell short of meeting the operational requirements of SAC, which wanted a fully independent system. It was found that the system could not efficiently carry both operational and administrative traffic. The success of SAC's mission would clearly depend a great deal on the communications that directed it. Even the limited deployment to the United Kingdom in 1948 had revealed severe communications deficiencies. Common-user facilities were simply unequal to the task when SAC might have to be employed on a worldwide basis.

(U) Improvements made to the AIRCOMNET proved inadequate. General LeMay complained that the system did not function adequately even for current, limited operations. He directed the establishment of a control system that would be more exclusively SAC's but that would still be coordinated with other systems. In late 1949 and early 1950, plans were formulated for the construction and activation of the Strategic Operational Control System (SOCS). This net made use of a teletype and telephone system independent of the existing AIRCOMNET. The latter continued to handle administrative traffic, while the SOCS carried operational traffic only. Initially, the SOCS, which was fully installed by 1 May 1950, was to function entirely within the continental United States, providing the telephone and teletype facilities necessary for operational control of SAC units in the event of war. Circuitry was also established later in 1950 with Tokyo, Goose Bay AFB, Ernest Harmon AFB, Kindley AFB, North Africa, Guam, and Britain.[27] These circuits employed Army, Navy, Airways and Air Communication Service, and commercial circuits by special agreements. Early in 1951 an important circuit to the Azores was activated and a cable circuit to the United Kingdom replaced the radio teletype as a primary circuit.

(U) The SOCS net paralleled the SAC chain of command. Its nerve center was the RAMROAD network of long-distance telephone lines fanning outward from SAC headquarters to all subordinate Air Force headquarters and air bases in the United States. Supplementing the telephone net was the teletype net. These were not full-time circuits, however. Through agreement with the American Telephone and Telegraph Company, the SOCS net was an "on call" net, which meant that upon the request of SAC headquarters all circuits could be established or made operable within approximately 30 minutes.[28] In addition, there were the communications systems of subordinate air forces; each air force operated control rooms full time, which enabled them to pinpoint the location of all aircraft at any time.[29]

(U) A SAC communications command post exercise (CPX) in September 1950 revealed that serious communications deficiencies persisted. Involving 14 locations and generating some 250 messages to and from SAC headquarters, the exercise revealed an average transmission-time requirement of 4 hours and 44 minutes. The bulk of the delays were man-made.[30] (By June 1952, a marked improvement was noted in another CPX involving 50 locations and some 4,500 messages, whose average transmission time had dropped to 48 minutes.[31]) Nevertheless, the 1950 exercise had indicated that, while communications inside the United States were fairly satisfactory or improving, the real problem lay in the overseas links.

(U) The skeletal structure of the overseas communications system was formed around four types of communications equipment: radio teletype, submarine cable, landline teletype, and landline telephone. This mixed system was entirely independent of SAC control and funds to maintain it were allocated from independent sources. General LeMay stressed repeatedly that SAC needed direct communications between SAC headquarters and any bases from which SAC units might operate.[32] Ironically, it would appear that by the end of 1951 the capabilities of SAC, with its new overseas base structure, had improved faster and further than the command and control structure by which it would be operated.

(U) Until 1951, SAC was still dependent upon the USAF AIRCOMNET for all traffic, operational, logistical, and administrative, of higher classification than "restricted," since the teletype portion of SOCS (which had been installed in late 1949) connecting SAC headquarters to the subordinate air forces was not equipped with an encrypting or deciphering capability. Its operational use was thus severely limited and greater use had to be made of AIRCOMNET, which had an encoding capability, during operations. Consequently, the next step, using part of AIRCOMNET, was the development early in 1951 of a teletype system, the SAC Communications Network (SACCOMNET), which gave SAC an improved capability but was still not fully satisfactory.[33]

(U) All the major communications plans of the USAF originated before the outbreak of the Korean war, so the war had no direct effect upon the initial planning of a communications network to support SAC. The effect of Korea was to stimulate construction, procurement of equipment, and the extension of communications into areas of the world not served up till then.

The improvement of communications to forward bases occurred at this time. The overseas portion of SACCOMNET terminated in a major relay station in England, which in turn connected major strategic bombardment bases. Circuits were provided from England to North Africa, and, in addition, the Navy allocated to SAC two point-to-point circuits to bases being established in Morocco, one at Rabat and one at Sidi Slimane.

(U) However, the North African bases presented serious problems. All the landline circuits were leased from the Post Telephone and Telegraph (PTT) of French Morocco and were unreliable. While construction of the bases was moving along by the end of 1951 and personnel were in place, communications equipment was still in very short supply. There were no facilities (radio or other) available to back up the PTT-leased line. Progress in this direction was very slow.

(U) There were also communications problems in the Northeast Air Command area, which covered the northeast United States, Iceland, Greenland, Newfoundland, and Labrador. The problems there stemmed from a shortage of equipment and from a natural phenomenon called the auroral absorption zone. These problems had been recognized fully after the SAC exercise in September 1950, and, while the solution appeared to be in the use of very high frequency (VHF) communications, the problems were still unresolved in mid-1952.[34]

(U) As early as 1946, the idea had been initiated of an Air Force global communications system that would enable all commands to monitor their aircraft anywhere in the world. The Korean war inspired the Congress to appropriate funds for the USAF strategic communications system--GLOBECOM, which was to be composed of point-to-point landline teletype and radio facilities as well as air-ground-air radio links. The system would not belong to any one Air Force command and would give to SAC, upon request, allocated circuits that were owned and operated entirely by the Air Force.[35] Once completed, GLOBECOM would relieve SAC of its primary reliance on channels allocated by the Army, Navy, and Coast Guard.

(U) The initiation of the project was accompanied by a long dispute in regard to the proper organization and management of the system after it was completed. As a result, by mid-1952 only painfully slow progress had been made because of production, procurement, delivery, and funding problems. Much of the available equipment was diverted to the Northeast Air Command area in an effort to surmount the especially serious communications problems there. GLOBECOM still did not satisfy SAC's stated requirements, and all through the decade SAC was to complain of the inadequacy of a common-user net like GLOBECOM for SAC's special role. The story of GLOBECOM was to be typical of much of the overall communications picture in the early 1950s, a picture of very slow progress despite an obvious need.

VII

US PERCEPTIONS OF THE SOVIET THREAT

(U) The effort described in this study to cope with the new force of atomic energy and to create a military force prepared to use it as a weapon was carried out initially without any countervailing Soviet nuclear threat. There was, of course, the other and first threat, that of the Soviet army in Europe. That Soviet ground forces had the capability to attack and conquer Western Europe against existing ground opposition was accepted all through these years. The major asset in NATO was the threat of a US atomic attack. The American monopoly of atomic weapons endured for four years; while there was concern at the time over the possibility of Soviet long-range air attacks with conventional weapons, the danger involved was miniscule in comparison. In the first SAC plan (25 July 1946) for training and employment, for example, SAC pointed out that "no major strategic threat or requirement now exists nor, in the opinion of our country's best strategists, will such a requirement exist for the next three to five years."[1] The first real concern lay in just when the Soviets might develop their atomic bomb.

U ([redacted]) It is curious that the legend has been created that the United States was surprised by the Soviet achievement of an atomic explosion in August 1949. Both the military and the scientific community had accepted the US monopoly as temporary and, indeed, probably fleeting. In September 1945, Secretary of War Stimson had warned the President that the Soviets might have the bomb in four years. Ambassadors Harriman in Moscow and Steinhardt in Prague reported that the Soviets were working hard on an atom bomb. In August 1946, the Army's Intelligence

Division thought the Soviets would be producing bombs by 1949 or 1950, and in December 1947 the USAF Director of Intelligence expected a Soviet bomb by the summer or fall of 1949. In mid-1948, the Joint Intelligence Committee (JIC) of the JCS thought it would be mid-1950.[2]

(U) Estimates continued to disagree. In December 1947, the Director of the CIA released an estimate jointly prepared by the CIA, the Office of Naval Intelligence, and the Army G-2. The estimate conceded that Soviet results in 1947 were apparently equivalent to those achieved by the Manhattan Project in 1943, but, allowing a progress rate only one-third that of the US rate, the estimate thought it unlikely that a Soviet bomb would appear before 1953. It was "almost certain" that it would not appear before 1951. Air Intelligence, which had not been consulted in the preparation of the joint estimate, dissented, asserting the USAF belief that the Soviets would certainly have the bomb in the 1949-52 period.[3] In early 1949, the Air Force intermediate range war plan stated that mid-1950 was the "earliest possible" date and that mid-1953 was most probable for a complete weapon. Consequently, the Air Force felt, by 1955 the Soviets could have a stockpile of 50 bombs in the event of the mid-1950 completion date or 20 in the event of the mid-1953 date.[4]

(U) While the Soviet bomb was obviously the watershed event most watched for, intelligence estimates were also concerned with expected overall Soviet delivery capabilities. In December 1948, the Joint Intelligence Committee sent to the Joint Chiefs a US-UK estimate of Soviet intentions and capabilities for 1949 and 1956-57. It stated that by 1957 improved versions of the German V-1 and V-2 missiles, with ranges up to 600 miles, were likely to be in quantity production by the Soviets. It was unlikely, however, that these missiles would employ nuclear warheads.[5]

(U) By early 1949, there began to appear suggestions from US intelligence sources as to coming periods of danger. In May 1949, the Technical Evaluation Group of the Committee on Guided Missiles of the Research and Development Board reported that (1) the probability of active warfare was expected to rise "sharply" in 1951-52 and to be critical after 1955-56 (the dates corresponded roughly to the expected development of the first Soviet bomb and the Soviet creation of a medium-size stockpile); (2) the Soviets would have a strategic attack force using planes similar to the B-29 by 1951-52; and (3) smaller numbers of higher performance bombers might be expected by 1955-56. The JCS, it should be noted, commented on this estimate in October 1949, agreeing except in the use of the word "sharply" in regard to the possibility of war.

(U) Interestingly enough, the JCS comment included a priority list regarding Soviet missile developments, which they passed to the Research and Development Board. In a list of 13 items, the top three were different categories of air defense missiles. Long-range surface-to-surface missiles with atomic warheads ranked eighth on the list.[6]

(U) In early 1950, NSC 68 concluded that by 1954 the Soviets could have the capability to launch a "devastating" attack on the United States. In the same vein, an Air Force air defense briefing to the JCS in March 1950 spelled out some specific estimates for expected Soviet capabilities:

Date	A-bomb stockpile	TU-4 A/C availability
Mid-1949	1 (exploded)	285
1950	10-20	415
1951	25-45	985
1952	45-90	1,200
1953	70-135	1,200
1954	120-200	1,200

Assumptions concerning a Soviet attack were that there would be little or no warning; the enemy would attempt to deliver a major portion of his stockpile in a minimum time to achieve maximum shock; and effective attacks might be conducted under conditions of darkness. By mid-1950, the study stated, the Soviets would have the capability to damage the United States seriously by a simultaneous attack with 50 atom bombs.[7]

U ([redacted]) In April 1950, the JIC reported on the Soviet capability to attack the United States with guided missiles from submarines. By mid-1951, it was estimated, the Soviets would be able to deploy 49 guided-missile-launching submarines against the United States on D-day, each with two V-1-type missiles with a 150-mile range and an accuracy adequate for area targets. However, the use of atomic warheads or V-2-type missiles would not be within the Soviet submarine-launched capability during this period. The report also stated that biological agents could be used in V-1 warheads or otherwise dispersed from submarines.[8]

(U) The outbreak of the Korean war and the apparent Soviet inspiration of it led to a rising fear of the Soviets and of the potential for general war. As the Secretary of Defense expressed it in mid-1951, "the Communist aggression in Korea marked the beginning of a new military policy for the United States. It left no doubt that the Soviet Government and its satellites were willing to risk a general war by multiple aggressions all over the world, unless confronted by substantial military strength."[9] By late 1951, the JCS officially accepted 1954 as the year of maximum danger, the threshold year when the Soviets could obtain a capability to inflict "critical or even fatal" damage on the military capacity of the United States. It was also expected, conversely, that by 1954 the capabilities of the NATO alliance would have increased to such a degree as to reduce greatly the chances of a quick and easy Soviet seizure of Western Europe.[10]

U ([redacted]) In early 1951, the USAF Directorate of Intelligence estimated that by mid-1952 the Soviets would have bombers with a 2,000-mile range, and that by mid-1956 the range would have increased to 3,500-4,000 miles. By 1956, too, they would also possess a subsonic guided missile that would carry a 1-ton warhead 5,000 miles, and shortly after that a supersonic missile able to carry a 2 1/2-ton warhead the same distance.

U ([redacted]) By mid-1953, more modest appraisals began to appear concerning the expected Soviet threat. In August, a JIC estimate expressed doubt that the Soviets would possess an operational missile capability by 1957, although it was considered probable that they would be able to launch a limited number from submarines. The estimate did express the belief that by 1957 the Soviets could deliver some 550 atomic weapons with an average yield of 80 kilotons, but that they would do so only in desperation or on some assurance of overwhelming success.[11]

U ([redacted]) In October 1953, the JCS accepted a JIC report on "The Magnitude and Imminence of the Soviet Air Threat to the US--1957." Essentially a revision of the estimate described in the preceding paragraph, the report indicated that there was no evidence of a Soviet guided missile capability beyond the level of the V-1 and V-2, although the Soviets were carrying out intensive research and development. The JIC did not believe the Soviets would have a guided missile that could threaten the United States if launched from Soviet-controlled territory. While there was no positive evidence of Soviet R&D in submarine-launched guided missiles, it was estimated that by 1957 the Soviets could equip a limited number of boats to launch V-1-type missiles with a probable range of 200 nautical miles and a maximum of 500 miles.[12]

(U) The US perception of the Soviet threat went through several stages in the eight years covered in this chapter. Initially, no threat to the continental United States was seen, but a grave threat to Europe. By 1950, the threat to Europe was seen as so serious that, it will be recalled, SAC was directed to prepare to expend precious atomic bombs on retardation targets in Europe. In these years, too, the

Soviet long-range air force grew but with only conventional weapons at its disposal. After 1950 and Korea, the United States saw the Soviet capability as growing rapidly while, at the same time, there was general agreement that the US ability to prevent a Soviet surprise attack remained extremely low and would be low for several years ahead. Thus it was that while the period saw a great increase in the growth of US offensive power, the end of the period found the United States with only a marginal air defense capability. It is to a consideration of the growth of a US warning capability to meet the Soviet threat that we now turn.

VIII

THE DEVELOPMENT OF WARNING SYSTEMS, 1945-53

(U) Warning is an integral part of air defense, but for the purposes of this study it has been separated from its air defense matrix. Our concern with warning in this study of command and control is in terms of its passive detection role. We do not deal with any of the combat aspects of air defense systems.

A. THE BEGINNING OF A WARNING SYSTEM

(U) While the Army Air Forces established the Air Defense Command (ADC) at Mitchell Field, N.Y., on 27 March 1946, the prevailing attitude toward air defense in this early postwar era was one of extreme ambivalence. Air defense was regarded within the air forces as necessary in theory but not in terms of resource allocation. Not surprisingly, therefore, planning for air defense in any practical and coordinated sense got under way late. This resulted also from the unsettled nature of roles and missions before mid-1948, the indeterminate status of Air Force programs and organization, and the cost of attempting to build both air defense and offensive forces.[1]

(U) By the end of 1946 and early 1947, however, world developments had led to some public concern, primarily over the deliberate reliance by the ADC on Air National Guard (ANG) and Reserve personnel to man the few resources it possessed. The first major air defense debate thus began over the issue of whether the United States required an "in-being" air defense system or whether one based on the Air National Guard and Reserve would be adequate.[2]

(U) When the ADC was activated, there was not a single search radar in operation within the United States. General Spaatz, the commanding general, Army Air Forces, revealed before a congressional committee in May 1946 that he had no intention of allocating a substantial proportion of regular AAF strength to air defense, and he declared his intention to rely principally for air defense manning on the ANG and Reserve. He did, however, ask at this time for funds to operate certain radar sites on a 24-hour basis.[3]

(U) The issue that lay behind Spaatz' attitude was the one that underlay the whole air defense problem and was probably the crucial one in determining the course of events. This was the issue of resource allocation. Most of the AAF/USAF leadership was deeply committed to a concentration of resources on the development and expansion of US strategic striking power. Their view was that this course was dictated not only by the scarcity of funds, but by the absence for some time to come of any real airborne threat from the Soviet Union. Experimenting with air defense seemed a costly and unnecessary enterprise. With the sharply reduced budgets of the late 1940s, the new Air Force would choose to apply its resources to the development of nuclear attack forces, which would be a concrete asset, rather than to the air defense field, which was so dominated by uncertainties.

(U) An issue derivative from the above was whether to postpone the development of an air defense system for several years, both until the threat became more real and by which time newer equipment would be available, or to start now on a system using rapidly obsolescing World War II equipment.[4]

(U) All through 1946 and into 1947, discussion of the real mission of the ADC continued, numerous views being expressed within the Army Air Forces, the other services, and the Congress. One overriding consideration did control the debate. In May 1947, Spaatz directed the ADC not to rock the boat over the matter until the unification of the air forces and budget issues were settled. It must be stressed that a dominant concern of Army Air Force leaders in 1946-47 was the establishment and organization of an independent US Air Force.[5] The ramifications of this concern were such that, while the issue of resource allocation between strategic offensive forces and air defense continued to be fundamental, in actual fact the United States would have little of either for several years, in good part because of the preoccupation of the Air Force leadership with the creation of the USAF.

(U) Accordingly, steps toward the creation of even a token warning system were halting. In May 1947, operational search radars were set up in Arlington, Wash., and Half Moon Bay, Calif., but they were operated on a part-time basis and were mostly for training purposes.[6] No real action was taken on any of the ADC's plans until after the establishment of the USAF in July 1947. On 12 November 1947, the Secretary of Defense announced that planning for a nationwide radar early warning system was under way. This was an Air Force plan named SUPREMACY, which was designed to remedy the most fundamental lack in US air defense--an air control and warning (AC&W) system that would cover a very large part of the approaches to the United States. SUPREMACY was to provide a framework for such a system; it called for 223 basic radar stations and 14 control centers within the United States, and 37 basic radars and 4 control centers in Alaska. The plan, however, was too ambitious for the political and budgetary climate and it died when Congress failed to appropriate funds for it.[7]

(U) SUPREMACY did serve the function of raising key issues about air defense and warning. An exchange of memorandums between Secretary Forrestal and the JCS pointed up major issues that were to continue for years. The Bureau of the Budget, in May 1948, had sent the Secretary a memorandum that raised questions concerning SUPREMACY. The Bureau wanted to know the relative priority of the program, the extent to which USN picket ships would be used, and how the strength of the services and the National Guard would be integrated.[8]

U ([redacted]) A month later Forrestal turned to the JCS for advice. He pointed out the admitted inadequacies of the proposed radar fence against even World War II aircraft and reported that the Research and Development Board thought that the United States could not expect to obtain more adequate equipment from current development programs for about five years. The Air Force, he said, planned an orderly replacement of older type equipment, at as reasonable a cost as possible, when new types became available. Forrestal continued:

> Therefore, a fine question of judgment is involved. On the one hand there are considerations of economy involved in spending a substantial amount of money on radar which is now not completely effective and which will probably be obsolete in a few years, and on the other hand there is the obvious fact that the use of the present types of radar would give us at least some protection against a surprise attack during the years in which superior types are being developed.[9]

U ([redacted]) The JCS reply came almost four months later, which perhaps indicates something of the priority they placed on air defense. They explained that the Soviets possessed aircraft capable of one-way strikes to any vital target in the United States and that Alaska and the Pacific Northwest were within radius of those aircraft from their present bases. As of September 1948, the Soviets had 210 long-range bombers with this capability, and it was estimated that their force of improved bombers would reach 1,600 by 1952. Furthermore, Soviet development of an aerial-refueling capability was possible. It could be assumed that until 1952 the Soviets would not have the atomic bomb in sufficient quantity to wage atomic war against the United States of such magnitude as to be decisive.

However, by 1953 it was possible that the Soviets might have 20-50 bombs. Until 1953, the JCS felt, the Soviets would have to rely upon high explosives, chemical, or bacteriological attacks, which would imply a series of sporadic, harassing attacks.

([redacted] U) The JCS pointed out that the present 12 radar control and warning stations had almost negligible value. They recognized that present equipment was only reasonably effective now and would have only limited effectiveness against anticipated Soviet air capabilities in 1953. They therefore recommended the implementation of a modified air defense system that would (a) provide a basic capability; (b) be an operational proving ground for integration and improvement of methods, equipment, and training, both for defensive and offensive purposes; (c) be a deterrent to enemy attack; (d) provide means for the formulation of doctrine and ultimate requirements for joint and civilian participation; and (e) serve as a deterrent to the pressure of public opinion to divert military forces from offensive missions in case of attack. In regard to the Secretary's query as to priority, the JCS said it was low compared with programs for the offensive, but that the priority would rise progressively with Soviet strategic capabilities.[10]

(U) Nevertheless, the pressures of growing tension in Europe had provoked some action. In March 1958, the Air Force had ordered the Arlington, Wash., radar station onto a 24-hour basis and activated four other radars in the area to cover the Hanford, Wash., nuclear facility. This was probably the initial step in a serious warning system.[11]

([redacted] U) A much reduced version of SUPREMACY, called the Interim Plan, was approved by the JCS and the Secretary of Defense in late 1948. This plan was to be completed in 26 months and would include the 5 basic radar stations and 2 control centers currently in operation. With equipment that was in storage or on order added to the existing facilities, a total of 61 basic radar stations and 10 control centers in the United States and 10 basic radar stations and 1 control center in Alaska would be operational. In addition, 15 more basic radars were scheduled for eventual activation.[12] The Interim Plan system was recognized as being far from ideal, but it did represent what could be accomplished by 1952 with restricted funds. What is significant about it is that by the end of 1948 a token "in-being" air defense system had finally begun to take shape.

(U) The Interim Plan system was approved by Congress in March 1949. However, by this time the need for more immediate protection was recognized, and to fill the gap until the completion of the Interim Plan system, the ADC was directed to establish a temporary AC&W system, to be named LASHUP. This system would consist of 44 stations using World War II radars. Work got under way in late 1948.[13] By the spring of 1949, 18 radars had been deployed to the northeast United States, but LASHUP was not completed until mid-1950.[14]

(U) Although the first plan (SUPREMACY) was submitted to it in late 1947, Congress did not act on a permanent radar system until the fall of 1949, after the first Soviet atomic explosion. During the first half of 1950, however, the Air Force continued to stress the construction of the Interim Plan system, and it was hoped by summer that the system, originally scheduled for completion in 1952, might be operational by mid-1951.[15] By this time the Interim Plan system had merged into the so-called permanent system, so future reference shall be made the later term.

B. THE IMPACT OF KOREA

(U) The outbreak of the Korean war, coupled with the Soviet nuclear explosion, provided tremendous stimulus to the development of a comprehensive warning system. The issuance of NSC 68 added further impetus. Appearing in early 1950, NSC 68 had concluded that by 1954 the Soviets would have the capability to launch a devastating attack on the United States. One recommendation of the report was to build an active air defense that would provide warning of an attack and a means of defeating a bomber attack without resorting to nuclear retaliation initially. The suggested system would include a successive line of trans-Canada radar early warning stations, dispersed interceptor groups, deployment of antiaircraft missiles, an airborne-alert portion of the bomber force, and a hardened and sheltered command and control system to ensure communications. While no immediate action followed, the points made were all prophetic of future developments.

(U) After June 1950, money ceased to be a problem, at least temporarily. The problems now lay not in budgetary constraints but in the slowness of project completion. Deadlines began slipping steadily. Completion date for the permanent system slipped from a firm November 1951 to May 1952.

U
([redacted]) There was also an increasing realization in the Air Force in 1951 that, despite the sense of accomplishment in that both the administration and the Congress had accepted the requirement of an in-being air defense system and were pouring massive funding into it, the system under development was based upon obsolescent World War II equipment and techniques. In order for the system to be effective for a respectable lifespan, considerable improvement would be needed.[16]

(U) There was also some concern that the public had been oversold or had oversold itself on the capabilities of the air defense of the near future. Official DoD views had been cautious. The Secretary of the Air Force, in his January-June 1950 report, had stated:

> Completion of this aircraft early warning system will be an important step forward in the air defense of the US. However, it is only a start and will fall far short of the ultimate goal of a complete radar coverage. Additional stations must be built both in the US and in the North and great technical developments

> must be made in our scientific centers and labs in perfecting equipment and methods used for detection of aircraft.[17]

These cautions were too often forgotten. Estimates by authorities in early 1951 that the permanent system would stop only 5-10 percent of an attacking force led DoD to request the Massachusetts Institute of Technology to undertake Project Charles.

(U) The Project Charles report on 1 August 1951 offered no unusual solutions to the dilemmas of air defense. It strongly recommended that the current system be updated by increasing the extent of the radar coverage and also by increasing the speed by which data acquired by radar could be analyzed and acted upon. The report further recommended use of picket ships and airborne radar to provide a measure of offshore coverage. The Ground Observer Corps (see below) could be used to cover low altitudes.

(U) The report said that no new spectacular improvements in radar could be expected, but that great possibilities existed in the use of data automation to improve air defense systems. The scientific personnel who authored the report were convinced that automation was the only means by which speed in radar-data handling could be measurably increased. They called for new computers specially designed for an air defense function.[18] (At this time, automation was just beginning to come into use in industry and its potential was not well understood.)

(U) The Air Force accepted the recommendations in September 1951 and established the Lincoln Laboratory at MIT to continue research in the field.

C. THE GROUND OBSERVER CORPS

(U) A civilian support force for warning made its first appearance in September 1949, when personnel from the Office of Civil Defense were used in air defense tests. By December of that year, the USAF was considering a permanent Ground Observer Corps (GOC).[19] Progress in developing a GOC was slow, however, through 1951, and the system itself proved faulty. The reporting and analyzing of data were generally too slow for the sightings. A much more rapid system, along the line of the Project Charles recommendation, was clearly needed. Yet, until a low-altitude radar could be developed, the GOC was the only capability for low-altitude coverage.

(U) Another weakness of the GOC lay in its volunteer nature, which meant that it was not immediately available. It would require three-hours notice before it was ready to begin to function. An effort in 1951 to get a 24-hour manning for the northeast portion of the United States during the summer months (estimated by intelligence to be the period of greatest danger) failed. The GOC was finally placed on a 24-hour operational basis in 27 states in July 1952. This was achieved, it should be added, only after a shaky, politics-riven start as a result of the clashing of state and local jurisdictions with the DoD.[20] The system was now given the code name of Operation Skywatch.[21]

D. MAJOR CHANGE: THE DEW LINE

(U) Despite progress, there was a certain confusion and lack of decision apparent in warning and air defense planning by 1952 over the issues of the scope and nature of a proper air defense of the United States. It will be apparent that the issues were the same ones that had appeared in 1946-47--how much should be devoted to air defense and what should be expected from it. A 75-station permanent radar system and new radar and aircraft were being produced to replace the older equipment. All had been authorized in 1951, or earlier. The question that came to the fore in 1952 was whether the basic air defense system under construction should be further expanded and improved--at very considerable cost. Discussion was brought into focus by the Lincoln Laboratory Summer Study Group, which recommended construction of a distant early warning (DEW) line across Canada and integrated and fully automated communications for control of the air defense systems, all this at a cost of several billions of dollars.

(U) The DEW line had early antecedents. In 1946, a similar scheme had been proposed by AAF planners but died for economy reasons. In 1947-48, when the USAF was proposing SUPREMACY, the ADC had objected that the plan omitted a line of land-based radars along the farthest reaches of North America, a system the ADC called essential since the Soviets were then capable of a B-29-type aircraft assault across the North Pole. A distant early warning line could provide three-six hours of extra warning. The ADC's efforts in 1948-49 failed, because no real threat was yet perceived in view of the US nuclear monopoly.

(U) Some intermediate efforts were made to piece together AC&W programs in Canada and Alaska. One control center and 10 radar stations were planned for completion in 1952, but these ultimately became operational under the Alaskan Air Command only in early 1954. While US-Canada discussions dated to 1940, serious joint consideration of air defense did not begin until April 1949. A US-Canada agreement was signed in 1951, under which a total of 33 AC&W stations would be built in Canada, 22 by the United States and 11 by Canada. Eighteen would be manned by USAF personnel and 15 by Canadians. Of the US sites, 8 were assigned to the ADC and were operational by mid-1954. The other 10 US sites, deployed along northwest Canada from Baffin Island across Labrador to Newfoundland, were assigned to the Northeast Air Command. In addition, 10 permanent radars were to be erected in Greenland and Iceland to extend coverage eastward.[22]

(U) By the end of 1951, however, only five air defense radar stations were operational in Canada with Canadian manning. The Canadians were using World War II equipment and operating only eight hours a day; the Canadians said they could not begin full-time manning until sometime in 1952.[23]

(U) The patched-together system thus created provided some measure of protection against B-29-type bombers, but it was obviously going to be inadequate against the threat expected in the 1956-60 period. Production of Soviet jet aircraft similar to the B-47 was predicted for the late 1950s, with even faster models to come. The increased speed of Soviet aircraft dictated the need to push a detection line farther out in order to make up for the increment of lost time. Consequently, a joint US-Canadian military study in 1953 agreed to a 1950 Canadian plan to set a line of radars across Canada at 54° or 55° N, to be called the Mid-Canada Line, with an operational date of 1957.

(U) A very distant early warning line concept had been resurrected by Project Charles in August 1951, which concluded that a few hours extra warning would be invaluable. The Lincoln Laboratory Summer Study Group in August 1952 had suggested a line of radars along 70° N, connecting Alaskan radars with those of the Northeast Air Command. Locked onto the ends of this line would be a series of over-water stations flown by AEW&C patrols.[24] Neither DoD nor the Air Force was enthusiastic and the report was not immediately approved. Both were concerned primarily over costs. The USAF opposed the Summer Study Group recommendation, essentially on the basis that the strategy of deterrence did not require such an enormous allocation of resources to air defense systems. The Air Force argued that available equipment did not possess the very high standards of technological excellence that were demanded by such a harsh environment as in the Far North. Furthermore, a DEW line concept was disparaged as potentially creating a Maginot Line mentality that could create a false sense of security. With these views, the Secretary of Defense tended to agree.

(U) Opposition to the distant early warning line came from varied sources. The Commander of the ADC, General Chidlaw, favored, prophetically, concentration of resources on a ballistic missile defense system. A RAND study of the DEW Line concept in November 1952 also opposed it. Such a huge undertaking would necessarily be contingent upon a great increase in air defense funds sufficient to activate other air defense steps first, such as development of a low-altitude radar screen for the United States, establishment of AEW&C and picket-ship coverage off either coast, and major improvement in the permanent warning system. Also, a very crucial point was that no such great commitment of resources to the Arctic should be made until communications between the United States and the Arctic could be thoroughly tested and proved.[25] The Air Force declined to recommend the Summer Study report to the National Security Council, but in September 1952 the chairman of the National Security Resources Board took it to the NSC. The Air Force concern was the old one, that NSC consideration could end by compelling the Air Force to spend heavily on defense systems at the expense of the deterrent forces.

(U) The NSC took no concrete action, except to request further study of the report. However, the findings of the Summer Study Group were leaked to the press and became the subject of a public debate in which advocates of concentration of resources on the deterrent forces were depicted as being too cavalier with the safety of the United States. This was an unfortunate interpretation of the issue, which was really one of competition for funds and a matter of proper timing for such major undertakings.

U
([redacted]) Late in 1952, the President decided to issue a policy statement on a warning system. The services and the JCS unanimously opposed what was first expected to be a public statement. The flurry that was created led to some very specific statements of the fundamental inhibition felt by most Defense officials, military and civilian, over air defense programs. The Secretary of the Air Force, for example, cautioned the

Secretary of Defense that "we must give full weight to the deterrent as well as to the air defense function in any considerations. There must be no withdrawal from or diminution of established national policy which holds that a strong offensive capability is the greatest single deterrent to war."

(U) The Secretary of the Air Force also suggested that a presidential statement on warning might result in accentuating early warning to the detriment of other known defense measures, as well as offensive striking power. If so, the buildup of "known quantities would be impaired in favor of what thus far is still a pig in a poke." He also cautioned about announcing completion dates or estimates of cost. He stated that "we must have as effective an early warning system as American ingenuity can provide, but, in the national interests, this project must be viewed in proper perspective."[26]

(U) The President and NSC took account of the solid front against any public statement and revised the policy statement accordingly. It appeared as NSC 139 on 31 December 1952, a top secret document. It stated that the estimated time scale on which the Soviet Union would possess sufficient atomic weapons to deliver a heavy attack on the United States indicated that the United States should plan to have an effective system of air, sea, and land measures ready no later than 31 December 1955. An early warning system that would provide three-six hours warning was desired, and as much of the system as possible should be completed by 31 December 1954 and the full system completed by 31 December 1955.[27]

(U) The episode illustrated well the perpetual issue that overhung all warning and air defense developments, that of offense versus defense. Up until this point, the proponents of heavy emphasis on offensive measures and capabilities had been dominant.

(U) In the meantime, despite the lack of any decision on an improved air defense and warning system in 1952, the existing permanent system was extended. Forty-four mobile radar stations were approved and in July the ADC requested 35 more. At the end of the year, the ADC was operating 81 radar stations within the United States. Of these, 75 were part of the permanent network and 6 were LASHUP radars of the earlier system. Nine stations were operational in Canada, 2 from the approved 33-station Canadian extension of the permanent system, and 7 of the LASHUP type.

(U) Thus a basic "in-being" air defense was operational, although mostly of World War II type. The radar stations of the permanent system and the GOC in 27 states were sending data to 11 control centers. Thirty-nine interceptor squadrons backed up the system. One-third of these were early model all-weather jets (F-89B/C and F-94A/B), while 15 squadrons had fighters capable of daylight operations only (F-80, F-84, and F-86). Eleven squadrons still had World War II piston-engine fighters (F-47 and F-51).[28]

(U) The DEW Line controversy carried over into the new Eisenhower administration. The hearings on the last Truman budget began in early March 1953 and immediately bogged down over the air defense issue. General Vandenberg, the Chief of Staff of the Air Force, stressed that the goal suggested by the Summer Study Group of a 25 percent attrition of an attacking force was gilding the lily and did not represent a reasonable objective. The issue posed a dilemma for the new Eisenhower administration, which had been elected on an economy-in-government campaign and now faced major outlays for air defense, outlays over which there was no general agreement. The administration and the NSC tended to divide over the issue.

(U) The Kelly Committee, appointed in late 1952 to examine overall US defenses, reported in May 1953 that, while the principal element of American defense was the strategic striking force, a better air defense system, especially an early warning system, was needed. The report could thus be used by both opponents and proponents of the Summer Study Group recommendations. However, the Committee did play down the need for haste in continental defense and rejected the idea of a rush program.

(U) With the administration still undecided, Secretary of Defense Wilson appointed another committee, under Maj. General Bull's chairmanship, to study the air defense issue. Bull's group reported to the NSC in July 1953 that existing air defense plans were entirely inadequate and estimated that needed improvements might cost $18-$25 billion. The report was not acted on by the NSC.[29]

(U) The JCS position on expenditures of this magnitude reflected the position of those who stressed offensive deterrent power. In a memorandum to the Secretary of Defense on the matter of continental defense, the JCS summed up their philosophy. Decrying the "inadequacy of intelligence" and calling for better intelligence on Soviet capabilities as a basis for threat projections, the JCS stated:

> In weighing the effectiveness of defensive measures against the costs involved, the JCS feel that substantial improvement is possible at a modest cost. Yet there comes a point where a comparatively small increase in effectiveness becomes increasingly expensive until it reaches a point where even great expenditures fail to raise significantly the effectiveness of defenses. An aggressor nation will be far more deterred by evidence that we have the offensive potential and the mobility capable of dealing it decisive blows than by the excellence of our defenses.[30]

(U) The Summer Study Group, however, seemed vindicated in its criticism of the inadequacy of the warning and air defense system by Exercise TAILWIND in July 1953. The Strategic Air Command sent 94 bombers against the air defense system, employing all the techniques available to it--night attack, surprise, diversionary attacks, electronic countermeasures, saturation attack, and so on. Only 7 attackers were successfully intercepted. The following day, against daylight attacks, the air defense intercepted 29 out of 38 SAC task forces. Yet obviously, a real attack would come by night. The exercise pointed up the need for better early warning, solid radar coverage from 0 to 50,000 feet, and some automatic means of tying together data and displaying them to the battle commanders.

(U) What finally broke the back of opposition to a DEW Line was the first Soviet thermonuclear explosion in August 1953. The JCS soon after identified continental air defense and massive retaliation as the two principal military problems facing the country, while on 26 August, Admiral Radford, the new Chairman of the JCS, in his first press conference declared that the Soviet thermonuclear development would compel the United States to review and to strengthen its air defenses.[31] The questions of US thermonuclear development had been debated earlier in the year, with leading members of the scientific community linking their opposition to development with the air defense issue. Their position was that with a sufficiently tight air defense there would be no need for massive offensive operations that would require thermonuclear weapons. In the debate, supporters of thermonuclear weapon development and of the primacy of the deterrent mission were again portrayed as the villains.

(U) On 6 October 1953, the NSC approved NSC Paper 162, which included most of the Summer Study Group's findings, of which a DEW Line and automation were the most significant. The NSC was apparently convinced that the large expenditures necessary to make automation in air defense a reality should be spent, notwithstanding the fact that automation was a new thing and nobody was certain what obstacles lay in the way of such large-scale applications of automation.[32]

(U) In late 1953, the Air Force, reflecting the NSC action, approved FY55 funding for 29 more mobile radars (Phase III of the Mobile Radar Program), 5 Texas towers for offshore radars, a Canadian radar line along the 55th parallel, and 323 small gap-filler radars for low-altitude coverage.[33] Inclusion of the 55° line indicated the continued reluctance of the Air Force to build a DEW Line farther north.

(U) The small gap-filler radars were meant to remedy deficiencies in existing radars, and would be unattended stations. Eventually they would replace the GOC, until then the only means of low-level coverage, which was proving to be a weak reed. Only about 11 percent of the personnel the ADC felt were needed were active, public apathy having taken its toll.

E. THE SEAWARD EXTENSION OF A WARNING SYSTEM

(U) It was early recognized that any radar line, either close in or far to the north, would require extensions out to sea and down the coasts of the United States in order to prevent the possibilities of an end-run attack on the United States. Three elements came to be involved--airborne radars, naval picket ships, and fixed offshore installations anchored to the sea floor.

1. <u>AEW Systems</u>

(U) The idea of an airborne early warning and control aircraft was first raised in the mid-1940s, before the war ended. The Army Air Forces had no experience in the field, but the Navy had at least an introduction to it through its efforts to intercept Japanese kamikaze attacks on the fleet off Okinawa. Yet, overall experience with the technique was lacking.

(U) The advantages were obvious. Such an extension of the radar system would give at least 30 additional minutes of warning; low-altitude coverage that was overlooked by coastal-based radars would also be possible--AEW aircraft at altitude could look down and thus reduce the prospect of low-altitude sneak attacks.[34]

(U) Shortly before the end of the war, the AAF had directed the Air Materiel Command to examine the concept of an airborne control center for offensive operations. In 1946, the Air Staff suggested that the effort be switched to serve air defense purposes. However, because of budgetary constraints, duplication of Navy efforts, and the Navy's head start in the field, the AAF project was dropped. The final closing out in 1948 of any USAF effort on an airborne facility left the Air Force dependent on the Navy for an offshore radar screen.

(U) In the meantime, in April 1947, a newly formed US-Canadian planning group, which was under the respective Chiefs of Staff, issued a plan for early warning. They proposed an early warning line across Alaska, Canada, Greenland, Newfoundland, and off both coasts. Offshore coverage would be by radar planes and ships. The plan never went anywhere, but it did reflect an early expression of what was to become the ultimate air defense system a decade later.[35] Strangely, the 1947 Air Force plan, SUPREMACY, had not included provision for offshore coverage and had been criticized by both the JCS and the ADC for the inadequacy.

(U) The Navy pursued its AEW development program, adopting radars to Navy Grumman bombers and then to B-17s (PB-1Ws). Lockheed Constellations (C-121s) were also configured for radar. In late 1949, the Air Force directed the ADC to observe Navy experiments.

(U) The basis for interservice cooperation in air defense was established by the Key West Agreements in the spring of 1948. The Navy agreed to provide "sea-based air defense and sea-based means of coordinating control for defense against air attack," and also to coordinate with other services in the establishment of such systems. However, not until the creation of the Continental Air Defense Command in late 1954 were any jointly approved doctrines or procedures issued by the JCS. In view of this lack of JCS-approved doctrine, the Chief of

Naval Operations (CNO) in 1949 drew up general principles for Navy cooperation, which were to serve for years. He decreed that the basic principle for naval participation in air defense was that naval forces possessing important air defense capabilities would be trained and prepared for emergency deployment to reinforce those forces that were regularly assigned the air defense mission. He did not intend that there be a routine and permanent commitment of naval forces to the mission. Specific arrangements were to be made between individual commanders of sea frontier and air defense forces.[36]

(U) While it was not until 1951 that an ADC-owned AEW&C force was authorized, the ground work for such a mission had been laid earlier. Late in 1949, the Navy had suggested the possibility of using AEW aircraft for both ASW and air defense in joint tests, to which the Air Force agreed. The Navy tested its AEW aircraft in both an ASW and a surveillance role with ADC cooperation in July 1950 off the West Coast. Tests of intercepts vectored by Navy PB-1Ws were successful in picking up targets 500 miles out, and of intercepting them 300 miles out.[37]

(U) Finally convinced of the utility of and necessity for AEW, the Air Force established the requirement for 48 RC-121s in July 1951 and then raised the total to 56 by year's end. The first 10 were slated for 1953 delivery, all by 1955. In actual fact, final deliveries were not made until 1956, and, while the first squadron was activated in October 1953, it was not equipped until a year later.[38] The first plane was delivered in May 1954. An effort was made to offset the time lag by converting some B-29s to an AEW role, but this proved abortive.

(U) The first comprehensive plan for employment of the AEW aircraft was prepared by February 1952. It proposed establishment of barriers off each coast, 800 miles long and 200 miles offshore. Each barrier would be manned by four AEW&C

aircraft orbiting on station, with about 200 miles between planes. The ADC estimated that with this spacing the probability of detection at low altitudes would be 80-90 percent. The eastern barrier started about 125 miles southeast of Nova Scotia and ran to about 250 miles northeast of Norfolk. The western barrier ran from 250 miles west of Seattle to 200 miles off San Francisco.[39] The final total of some 60 aircraft would operate 30 from one base on each coast.[40]

2. Picket Ships

(U) The Air Force early recognized the need for shipborne radars to fill the offshore gap until the AEW system was functioning. It also recognized that ships could complement the AEW aircraft by adding a high-level coverage to the aircraft low-level coverage.

(U) The matter had been discussed by the Air Force and the Navy since 1949, but the Navy was slow to move, despite agreement on the utility of picket ships. In December 1950, the Navy finally volunteered two picket ships to work with the ADC in the event of emergency, but the next month the Air Force told the CNO that vessels for 10 stations were needed as soon as possible. The Navy replied that 10 ships of the type probably would not be available until 1954.

(U) A test of the two proffered picket ships was jointly held by the Eastern Air Defense Force and the Eastern Sea Frontier Force in February and March 1951. The main problem uncovered was that of poor communication from ship to shore. Neither radio-telegraph nor voice contact could be maintained for more than 28 hours without a complete breakdown. Intervals of over three hours occurred during which no contact could be made.

(U) The Air Force tried in vain to have the Navy increase the number of picket ships. Not even the two tested were actually formally approved for that emergency role until

September 1952. As a result, no more than one or two stations were manned until 1955.[41]

3. Offshore Stationary Radars

(U) While the concepts of AEW aircraft and picket ships were raised quite early, the offshore stationary radar was a latecomer. The Lincoln Laboratory Summer Study Group in 1952 concluded that an additional means of reinforcing radar coverage was offered by the shoals lying off the northeast coast of the United States. It suggested use of radar platforms, like oil drilling rigs, to be emplanted on five shoals in water 50-100 feet deep, 75-100 miles offshore. The name of Texas tower was soon applied to what seemed a way of bypassing the problem of getting picket ships from the Navy.[42] The ADC endorsed the concept, but as noted earlier, no action was taken until late 1953, when the Air Force included 5 Texas towers in its FY55 funding.

G. ORGANIZATION FOR AIR DEFENSE AND WARNING

(U) Progress in the development of the substance of a warning system during these years was not matched by improved organization. Throughout the entire period, organization was fragmented.

(U) It will be recalled that the Army Air Forces established the ADC in March 1946, as a first organizational step. The National Security Act of 1947 did not clarify air defense responsibilities, but in the Key West Agreement of 1948 the Air Force was assigned the responsibility for air defense, and the Army and Navy agreed to provide forces as required. Each service was to perform its assigned mission "in accordance with the policies and procedures approved by the JCS."

(U) In the meantime, the ADC had been dissolved and merged, along with the Tactical Air Command, into the Continental Air Command in December 1948. However, because of the added impetus given air defense at the beginning of the 1950s, the ADC was reestablished in January 1951, with headquarters at Colorado Springs.[43] In April 1951, the Army established an Antiaircraft Command, to be collocated with the ADC. The structure of the organizations was parallel and closely integrated for field operations.

(U) From time to time, the Chief of Naval Operations issued policy statements regarding Navy participation in continental air defense, but no separate command organization was established. The two Sea Frontier commanders were still, in 1953, the principal operating link between the Navy and the Air Force on air defense matters.

(U) The ADC was responsible to the Air Force, the Antiaircraft Command to the Army, and the Sea Frontier commanders to the Navy. Any plan prepared by the ADC, whether it involved solely an Air Force function or required participation by the Army and Navy, had first to be approved by the Chief of Staff of the Air Force. As far as the Air Force portion of the plan was concerned, it had first to compete with the plans of other Air Force commands for its share of the Air Force budget. If the ADC plan did include the other services, the Air Force then had to bargain with them, and quite likely the JCS as well, to get the plan requirement fulfilled. This bargaining ran smoothly so long as no service interests were contradicted.

(U) The Air Force had responsibility for the basic ground radar system for surveillance and control of all weapons, the fighter forces, and the initiation of warning to alert both military and civilian agencies. Within limits, the Air Force established requirements for all the services. In theory, the ADC, through the CSAF, could levy requirements on the other services for participation in a program. In practice, while tactical control of air defense forces of all three services was broadly executed by the ADC, there was no assurance that the ADC could obtain Army and Navy forces as required.

(U) The same situation prevailed in the US-Canadian air defense relationship. There were two coordinated systems, rather than one integrated one.[44]

H. WARNING 1945-53: A SUMMATION

U
([redacted]) By the end of 1953, 87 radar stations were operational in the US warning net. Of these, 75 represented the US permanent system, 8 were Canadian sites of the Radar Extension Program, and 4 were old LASHUP sites still in operation. Seventy-nine mobile and semimobile stations had been authorized, but would not be in operation until late 1954-early 1955.

(U) The Secretary of the Air Force was able to report in July 1954:

> The development of an air defense in depth has been greatly aided by increased radar operations by the Canadians and the resultant extension of our basic radar net. Improvements in the radar net have permitted greater emphasis to be placed on increasing the radar coverage and improving the overall system capability. A major step will be the ultimate transition from a manual system to a high capacity radar net capable of providing the essential elements of detection and control. Additional aircraft control and warning squadrons have been deployed to advanced overseas bases.
>
> The activation of the first airborne early warning and control division of the Air Force on 1 May 1954 marked a major advance in air defense early warning and control systems. This division is being equipped with specially modified versions of the Super Constellation (RC-121). Eventually the Division will operate squadrons off both Atlantic and Pacific coasts on a round-the-clock basis.[45]

(U) At the end of 1953, therefore, the type of air defense system outlined by the commanding general of the ADC in 1946-47 was in place and operating. Plans for improving range, responsiveness, and kill potential had been approved, but the necessary hardware delivery had not yet begun.

U
([redacted]) After seven years of consideration, the JCS authorized the creation of a joint command to control air defense, directing in August 1954 the establishment at Colorado Springs of the jointly manned Continental Air Defense Command, under the USAF as executive agent.[46] The step was apparently not taken enthusiastically. In response to a request by the CJCS, Admiral Radford, on 16 October 1953, the Chief of Staff of the Air Force had submitted on 16 December a report on command arrangements for defense of the United States (included in JCS 1899/89) in which he concluded that no change was needed or advisable. The CJCS replied that a joint command was both necessary and advisable and recommended that the JCS approve in principle the establishment of a joint air defense command.[47]

(U) The years from 1947 to 1953 had seen the establishment of a system comparable to that used in World War II. The extended public debate and the final NSC decision in October 1953 directed the creation of a wholly new system. This was the crucial decision. The steps taken in the previous eight years had been both discrete and incomplete. They did not represent a major coordinated effort to develop a continental defense system. The years 1954 and 1955 were to see the construction and integration of new elements of the system. However, the public debate continued over the efficacy of the air defense system, with Congress repeatedly expressing concern over the disproportionate resources being allocated to the strategic striking forces. The irony was that the delays in reaching the decision to create a wholly new system meant that the system was to be rendered obsolescent before it became operational.

IX

THE DEVELOPMENT OF COMMAND POSTS FOR STRATEGIC OPERATIONS CONTROL

(U) Within a year of the nuclear explosions over Japan, awareness had grown in some circles in the government that in a future major war the US national command structure would come under attack for the first time (if one excludes the visit of the British Army to Washington in 1814). This concern began a cycle of planning for the development of command centers, which has continued to this day. The problems that underlay the initial concern and that were revealed quite early have never been resolved.

(U) Since command and control depended upon the survival of the political and military decisionmakers, much more attention was paid to the issue of disaster planning after the Soviet atomic explosion in August 1949. As the Soviets steadily improved their nuclear capabilities, the problems of command and control survivability became more difficult. During the next 10 years, planning for continuity of operations was based either on "emergency evacuation" or on staying in place and hoping to ride out an attack.

(U) There were two aspects to the matter of command posts for atomic operations. One aspect involved the safety of the command authorities; the other concerned the machinery for controlling atomic (or non-atomic) operations. It was in September 1946 that General Eisenhower, as Chief of Staff of the Army, was requested by the chairman of the Senate Finance and Banking Committee to lay before the JCS a request that "the Army and Navy undertake a study to determine the advisability, cost, and best methods of making the United States as invulnerable to attack as possible."[1] Eisenhower recommended to the

JCS that such a study be undertaken and encompass not only the relocation of industry, population, transportation, and similar facilities, but also the War and Navy Department command posts and major signal communications centers.

A. JOINT COMMAND POST

(U) The JCS directed that such a study be undertaken on 11 September 1946. The first report was submitted in August 1947, then revised, but not completed. That October the portion of the study dealing with the relocation of major command posts and signal centers was made a separate study, and the remainder was withdrawn shortly thereafter, on the grounds that the matters it concerned were within the jurisdiction of the newly formed National Security Resources Board. The JCS did recognize that planning for a joint command post should be initiated and that this planning should be related to planning by other agencies on the composition and location of an alternate seat of government.[2]

(U) By May 1948, the JCS study had indicated the need for a joint CP in a protected location "to effect operational control of US and Allied Armed Forces in event of war." The mission of the joint CP was to be as follows:

> (1) Direct and coordinate operational elements of the Armed Forces in the strategic offensive and in the defense of vital areas by:
>
> > (a) Transmitting the policy decisions of the JCS and the necessary implementing directives to the unified commands and services.
> >
> > (b) Furnishing military intelligence to the unified commanders and the services.
>
> (2) Insure direction of the operational effort in consonance with logistics capabilities and the mobilization effort.[3]

The Army was assigned the responsibility for the planning.

(U) The JCS study, which had been reported on in the Secretary's memorandum cited above, had stressed the interrelationship between the joint CP and the relocation of other elements of the government. The JCS requested that steps be taken to establish a joint command post (JCP).[4]

(U) Progress toward creation of a JCP was painfully slow, with more studies and more planning not followed by any implementing measures. Part of the problem lay in service disagreements over the scope and role of a JCP and over service responsibilities. The question arose, too, of the relationship of alternate service CPs to the JCP and of the choice of relocating the seat of government or attempting to protect Washington.

U
([redacted]) A JCS study on the organization of the JCP, requested by Secretary Forrestal in May 1948, finally appeared in October 1949. It stressed that planning for the JCP had followed the NSRB decision that the seat of government would remain in Washington until the city was completely untenable. The relationship between the JCP and the seat of government would thus remain the same regardless of any alternative seat-of-government locations chosen by the NSRB. The study also stated that it was believed that the Secretary of Defense, the service secretaries, and the JCS would remain at the seat of government, as would the Joint Staff. It thus became necessary to determine what functional portions of the present staffs would be moved to the JCP in time of danger.[5]

(U) In late 1949, NSC 68 called for a hardened and sheltered command and control system to ensure communications under attack, but just what the command and control system should consist of was not spelled out. Presumably, it would include an alternate command post, such as the one projected for Fort Ritchie.

(U) There was evidently a growing gap between the NSRB and JCS views of what the functions of the JCP should be. The JCS took a much more restricted view than the NSRB. While they admitted that initial planning had been in terms of a joint command post as an agency of the JCS, they felt, by late 1949, that these were no longer appropriate conditions for the facility that was to be created. By May 1950, the name of the facility had been changed from JCP to alternate joint communication center (AJCC), a name the JCS felt was more appropriate to its real purpose.

(U) The change in emphasis is difficult to trace and its causes are concealed. It would appear that the services did not want a single CP. The Air Force no doubt felt the need for a CP specially prepared to launch and monitor strategic air strikes, a capability that they may not have felt could be achieved in the Army-operated JCP. The Air Force apparently did attempt unsuccessfully to gear the development of the AJCC and its facilities to ADC and SAC operations, these being the key elements in a nuclear war. It is perhaps for this reason that the other services seemed to hold back.[6]

(U) As late as December 1949 the Secretary of Defense, in reporting on the JCP status to the President, still referred to it as "the principal implementing agency of the JCS," using Secretary Forrestal's language of May 1948.[7]

(U) The alternate site was approved by the President in January 1950, and in May, Fort Ritchie, Md., was selected as the location.[8] The center would handle planning, operations, intelligence, communications, and logistics; the alternate CPs of the services would conduct matters of interest to the service only. The site was not, however, to be manned until danger was imminent. The plan was that the Battle Staffs of the service headquarters would evacuate the Pentagon as soon as an attack was confirmed, go to Ritchie, and there assume control. The crucial questions of how they would get there under the prevailing conditions and what means they would employ to maintain contact with and control of the forces (particularly SAC and the air defense forces) during the conflict remained unanswered.

(U) The issue of pre-locating a staff at the AJCC arose as early as 1952, when the Air Force argued unsuccessfully that the center should be manned full time by a small cadre. With the completion of the facility in 1953, the operating principle called for a state of alert to be declared by the President, upon which the JCS would activate the AJCC. In December 1952, the JCS had decided that in the event that Washington became untenable, certain JCS elements and small operating groups from each service would move to Ritchie. The JCS also suggested that, under those conditions, the President and others he chose might also move to the AJCC.[9]

(U) The outbreak of the Korean war had prompted an effort to disperse agencies from Washington to reduce vulnerability, but the intention proved difficult to implement. An enormous amount of planning went on in the next several years, but it was not until the late 1950s that emergency evacuation was recognized as impossible. Since the military could not plan on directing the war effort from Washington, the direction would have to be exercised by personnel relocated before the attack or by a predesignated headquarters that had escaped the attack. With sufficient tactical or strategic warning, Washington personnel could evacuate to predesignated emergency relocation sites to carry out operations. With insufficient warning, however, the predesignated alternate headquarters would have to direct the war effort.[10]

B. THE ROLE OF THE AIR FORCE COMMAND POST

(U) The establishment of a command center for the control of strategic operations began very modestly in the fall of 1947 when, at the request of General Spaatz, the AAF established a "war room" in the Pentagon, which became operational early in 1948. Initially, it was used primarily for intelligence displays and briefings.[11]

(U) The history of the Air Force command and control system as it exists today, however, really dates to the outbreak of the Korean war. The Air Force command post (AFCP) was created on the opening day of the war, 25 June 1950, when an emergency facility was hastily set up within the Pentagon to serve as a central processing point for messages from the Far East. This was the lineal predecessor of the present National Military Command Center. Since air defense was primarily an Air Force mission, the command post also set up communications lines to alert the National Command Authorities in the event of Soviet attacks on the United States; direct phone lines were established between the Pentagon CP and the ADC headquarters at Mitchell AFB and the small radar complex then operating on the East Coast. Procedures were prepared for the dissemination of information pertaining to a hostile act against the United States; a roster was drawn up of key personnel to be notified in case of an imminent attack. By August, the AFCP had become a rudimentary national system when, at the request of the White House, the CP ran a direct phone line to the President, by which the President could be notified immediately of an air alert. Appropriate procedures were established for notifying the White House of such alerts.[12] The facility was moved to more permanent quarters in the Pentagon and began functioning there in early 1951.

(U) The Air Force facility included the command post proper, which was in essence a communications center, and a war room, which prepared status displays of plans, operations, and intelligence. In 1951, the Air Force also established an Emergency Air Staff Actions Office, which held in readiness prepared messages for transmission at a moment of crisis. This office and function were incorporated into the command post early in 1952. The national role of the AFCP was reinforced by its use by DoD for high-level briefings of both US and allied leaders. In 1952, the Emergency Air Staff Actions section of the CP was also given responsibility for maintaining the "Check List of JCS Actions Upon the Imminence or Outbreak of War."[13]

(U) The AFCP continued its key role in the joint arena by virtue of its link to the warning and air defense system. Initial warnings were received at the ADC headquarters at Colorado Springs and suspicion or confirmation of attack would then be relayed to the Pentagon CP and to SAC headquarters. While SAC and ADC forces moved to war-readiness status, the Pentagon CP would pass the warning to the President, the Secretary of Defense, and the JCS, and would in turn relay their orders to the combat forces. However, it was not until 1955 that the NSC designated the AFCP as the national air defense warning center. This step confirmed what the AFCP had been doing on the national level and permitted it to establish communications to other agencies with an important war-emergency role.[14]

(U) The Joint War Room Annex, which had been established by the JCS in March 1952 as a means to coordinate the operations of all atomic-capable forces, was operated by the Air Force as an adjunct to the AFCP. It was not until after the crises of 1958 that the JCS would assume control of the Joint War Room Annex and, finally, in August 1959, would establish their own Joint War Room. In December 1960, the AFCP finally gave up its joint and national responsibilities.[15]

(U) Another development that arose out of the Korean war years was the establishment of a requirement for alternate service CPs. Mitchell AFB, N.Y., as headquarters of the Continental Air Command, had fulfilled this role before 1950. Langley AFB, Va., was designated as primary alternate in 1951. Presumably, if the Pentagon were destroyed, command of the Air Force would be switched to Langley. Maxwell AFB, Ala., was designated as secondary alternate. However, personnel and funding shortages prevented the Air Force from manning or equipping these posts to any realistic extent. Also, the development of the JCP/AJCC discouraged long-range Air Force planning in this regard, since the facility at Fort Ritchie would presumably attempt to do what the Air Force alternate CP would have done.[16]

X

THE FIRST EIGHT YEARS: AN OVERVIEW

(U) If the early process of development of an American atomic capability and of the procedures and mechanisms to control it could be characterized by one word, it would be "incongruous." The preceding chapters have illustrated the numerous contradictions that existed in these years, the differences between aspiration and actuality, words and deeds, policy and implementation.

(U) In summary, these were the major incongruities:

- (U) Despite the spectacular explosion of two bombs over Japan and the success of the Bikini tests, there was only a gradual acceptance by the military, and especially by the Air Force as the service most immediately concerned, of the military implications of atomic energy.
- (U) Despite the tendency to brandish the atomic weapon politically, there was astonishingly little planning undertaken to use that weapon. Similarly, there was only a very slow improvement of the physical capability--in terms of aircraft and crews--to deliver atomic bombs.
- (U) Despite the recognition that the atomic bomb formed the balance in Europe, production of bombs moved slowly, too. The scarcity of fissionable material conditioned all thinking in the first four postwar years, but that situation was totally transformed in the next four years.

- (U) While deterrence was early adopted as the national strategy against the Soviet Union, the strategy had few teeth in it until after 1950.
- (U) An atomic blitz concept was developed as the preferred method of atomic attack, but the scarcity of bombs rendered it infeasible for years.
- (U) While the scarcity of bombs initially made targeting of crucial importance, intelligence on Soviet target systems remained abysmally poor.
- (U) Despite the at least verbal emphasis on atomic bombs, for some time there remained considerable skepticism as to their war-winning capacity.
- (U) Despite the emphasis on deterrence, there remained uncertainty as to whether the President would indeed authorize the employment of atomic bombs.
- (U) The Air Force jealously guarded its monopoly over atomic weapon use and attempted to exert control over the bomb itself, yet it did little at first to develop the capability to use the bomb.
- (U) This was the period of fierce interservice rivalry over shares of the atomic pie, yet there was unusual military unanimity over the primacy of atomic offensive forces over defensive measures.
- (U) The system of civilian custody of atomic bombs, so carefully set up and so rigidly defended during the early years, was relaxed with surprising speed in the face of operational realities and needs.
- (U) While it was expected that the Soviets would sooner or later achieve an atomic capability, the effort to develop an extensive warning and air defense system was an uphill fight all the way.

- (U) Despite the sensitivity of atomic operations, comparatively little attention was paid to command and control arrangements before 1950. In fact, the concept as we understand it today did not appear until the mid-1950s.

(U) This strange duality was obviously the product of many factors, most of which have been discussed in the preceding pages. Perhaps above all was the newness of so much--atomic energy, the cold war, and the growth of an unprecedented threat to the American homeland. There seems little doubt that these factors contributed to many of the popular myths that now surround the history of that era.

(U) The idea of action-reaction in terms of command and control is problematical. Command and control is designed for one's own forces, to fit one's own requirements. There is only an indirect relationship to the enemy, because command and control is a means, not an end in itself. However, if, as in this paper, command and control in these years comprehends the many steps taken and the problems encountered in the process of creating an atomic capability, then it seems obvious that the whole process can be viewed as a US reaction to Soviet actions, actual and anticipated. The very slow growth of command and control in the first three postwar years reflected the slow development of the cold war and US concern over it. Only after the crises of 1948 did the process begin to accelerate, with the acceleration moving into higher gear after the Soviet explosion of an atomic bomb and the outbreak of the Korean war. It would seem that it was the appearance of a Soviet nuclear threat to the United States that galvanized US efforts more than the Soviet threat to Europe. The rapid increase in atomic offensive forces to reinforce deterrence and the reluctant but eventual major effort to create a vast warning system were the results.

[redacted]

FOOTNOTES

Chapter I

[1](U) Walter Millis, *Arms and the State* (New York: Twentieth Century Fund, 1958), p. 156.

Chapter II

[1](U) George F. Lemmer, *The Air Force and the Concept of Deterrence, 1945-1950* (U) (Historical Division Liaison Office, US Air Force, June 1963), pp. 3 and 20, SECRET.

[2](U) David E. Lilienthal, *Journals of David E. Lilienthal: The Atomic Energy Years, 1945-1950* (New York: Harper Row, 1964), p. 377.

[3](U) R. D. Little and L. Bowen, *A History of the Air Force Atomic Energy Program, 1943-1953* (U), 4 vols., Vol. II, *Foundations for an Atomic Air Force, 1946-1948* (U) (Historical Division Liaison Office, US Air Force, 1959), p. 124, TOP SECRET.

[4](U) Lemmer, *The Air Force and the Concept of Deterrence,* p. 11.

[5](U) Ibid., p. 12.

[6](U) Joint Chiefs of Staff, *Final Report of the JCS Evaluation Board for Operation CROSSROADS: The Evaluation of the Atomic Bomb as a Military Weapon* (U), 30 June 1947, TOP SECRET.

[7](U) Lemmer, *The Air Force and the Concept of Deterrence,* p. 17.

[8](U) Office of the OSD Historian, *History of the Strategic Arms Competition, 1945-1972* (U), 3 vols., Vol. I, *Chronology-US, 1945-1960* (U), October 1974, p. 70, TOP SECRET/RESTRICTED DATA.

[9](U) Ibid., p. 81.

[10](U) Little and Bowen, *A History of the Air Force Atomic Energy Program,* II:152. Much of the material in Section II.B is drawn from this source, which is one of the most extraordinarily rich archives on the subject.

[11](U) Headquarters, Strategic Air Command, *Operation CROSSROADS: The Role of the AAF From the Project's Inception Until 7 May 1946* (U), 2 vols., I:158, TOP SECRET.

[12](U) Interview with Hq SAC Historical Division.

[redacted]

[13] U ([redacted]) Ibid., pp. 49-51. It is interesting that SAC historians have been told by General LeMay that one-way missions were never planned and, by the first commander of the 509th Bombardment Group, the first atomic unit, that such missions definitely were planned. The great amount of attention paid in early years to search and recovery of downed SAC crews would seem to imply that one-way missions were indeed options.

[14](U) Headquarters, Strategic Air Command, *History of the Strategic Air Command, 1947* (U), p. 139, TOP SECRET.

[15](U) Robert F. Futrell, *Ideas, Concepts, Doctrine: A History of Basic Thinking in the United States Air Force, 1907-1964* (U), 2 vols. (Aerospace Studies Institute, June 1971), I:218, UNCLASSIFIED.

[16](U) Little and Bowen, *A History of the Air Force Atomic Energy Program,* II:255-61.

[17](U) Directorate of Plans, US Air Force, *USAF Intermediate Range War Plan (COWLICK)* (U), 7 March 1949, TOP SECRET.

[18](U) Harry S. Truman, *Memoirs,* Vol. II, *Years of Trial and Hope* (New York: Doubleday, 1956).

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PART TWO

1954-1960

XI

STRATEGIC CONTEXT

(U) It is useful to recall the perspective from which American leaders viewed the strategic arms competition with the Soviet Union and the problem of command and control of strategic forces at the beginning of the 1954-60 period. Perhaps the keynote of that perspective lies in the earlier designation of 1954 as the "year of maximum danger" in the 1951-52 planning of the National Security Council and the Joint Chiefs of Staff.*[1] The Communist attack in Korea, following hard on the Berlin blockade, the fall of China, and Soviet attainment of nuclear status, had been viewed both in Europe and the United States as the opening round in a new expansionist phase of Soviet policy. One historian of the period described the reaction of American leaders as follows:

> Within military circles--JCS and the Office of the Secretary of Defense--the feeling prevailed that general war with the Soviet Union was almost inevitable and might be imminent. The Korean war demonstrated, they believed, the Russians' willingness to employ war as an instrument of national policy. And by 1954--some said 1952--the Soviet Union would be able to devastate the United States with atomic bombs. Many national leaders also believed that limited wars had become abnormal, and that Korea might be the last such conflict. Therefore, the United States could not permit its involvement in the Korean war to divert it from preparing to deter or fight a general war with the Soviet Union.[2]

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*Footnotes for Part Two begin on p. 255.

(U) The strategic premise (chiefly propounded by the Air Force) had become widely accepted that in a future war with the Soviet Union there would be no time to arm, as there had been in the past, so that the forces with which the war was to be fought must be largely "in being" at its beginning. It was also generally agreed among US political leaders that US strategic-nuclear forces constituted the primary deterrent against Soviet aggression, and after the Korean attack, it had been decided that the strength of those forces must be accelerated on an urgent basis. Procurement of the B-47 medium jet bomber, which was just beginning to enter SAC's inventory in 1951, had been substantially increased and a series of measures to improve SAC's striking capability had been undertaken, including the provision of tanker support and the construction of a network of overseas bases. At the same time, development of the B-52, which had been initiated in 1946 and which promised to bring the Air Force much nearer to its dream of true intercontinental bombing capability, had been speeded up, with this heavy jet bomber coming into production in early 1954.[3] In conjunction with the bomber acceleration, production of atomic weapons had been increased, and the development of new weapons, including the hydrogen bomb, had been given high priority.

(U) Events in the Soviet Union had meanwhile heightened the arms race tension. It was known that since 1947 the Soviet TU-4 copy of the B-29 bomber had been produced in quantity, and that other aircraft and missile development programs were being urgently pushed. In 1953, the Soviets had carried out a flight test of what was to become their first operational MRBM (the 630-mile range SS-3). Then, in the same year, they shocked US leaders by exploding a thermonuclear bomb before US attainment of this stage of nuclear development, thus confirming the impression of a secretive and immensely powerful monolith marshalling all its scientific and economic resources to surpass the United States militarily.

(U) Spurred by these events, in October 1953 the National Security Council had concluded a long period of debate over US air defense requirements with a decision to intensify plans and actions for continental air defense. The mid-Canada radar warning line was accelerated, along with the Airborne Early Warning and Seaward Extension programs; a new program for development of the Semi-Automatic Ground Environment (SAGE) air defense control system was initiated; and plans for the Distant Early Warning (DEW) line were approved, with the objective of achieving three-to-six hours warning of aircraft attack. The US in-being warning capability was still relatively primitive, however, and the NSC decisions did not bring to an end the controversy that had raged for so long over the priority that air defense and warning should receive in the nation's strategic policies.

(U) The Soviets, for their part, in 1951-53 appear to have gone through something akin to their own version of an assessment of "maximum danger"--and this at a time of touchy internal transition in their own top leadership.[4] Whatever the internal difficulties, decisions clearly were made to accelerate Soviet strategic bomber production. Development programs had already been initiated under Stalin either just before or during the first years of the Korean war for three new aircraft: the Badger (TU-16) medium jet bomber, and two intercontinental bombers, the pure-jet Bison (M-4) and the turboprop Bear (TU-95). In May 1954, the Badger and the Bison were publicly flown in Moscow. A year later the Badger and Bison were flown in operational-unit numbers, and the Bear was unveiled. The ingredients were now all to hand that were to lead shortly to US predictions of a coming "bomber gap." Increasingly worrisome questions were also to be raised regarding the US ability to detect an in-coming bomber attack in sufficient time for SAC to avoid massive destruction, and even more regarding the effectiveness of the US process for launching and controlling the strategic-nuclear force in a retaliatory strike, under conditions of a Soviet surprise attack.

A. THE NEW LOOK

(U) The Eisenhower administration thus entered 1954 with the conviction that "the crisis was permanent" and that war with the Soviet Union--if it came--might begin with little or no warning. On the other hand, the United States could not allow itself to be nibbled to death by a number of local aggressions, like the attack in Korea or the steadily worsening situation in Indochina. Financial limitations alone would not permit preparations to fight every kind of war. In October 1953, NSC-162 had already decreed that military spending for FY55 must be reduced below that for FY54. A "New Look" must be taken at US defense problems in order to bring requirements and capabilities into better balance. President Eisenhower summarized his new defense policy in his State of the Union message to Congress on 7 January 1954. He declared that the United States would emphasize air power, mobile forces that could be held in strategic reserve and readily deployed to meet sudden aggression, continental air defense, a mobilization base that could be swiftly converted from partial to all-out mobilization, and a professional corps of trained officers and men. Eisenhower envisaged a defense establishment that could meet "a twofold requirement--preparedness for the essential initial tasks in case a general war should be forced upon us, and maintenance of the capability to cope with lesser hostile actions--and aimed to satisfy this requirement with less drain on our manpower and financial resources."[5]

(U) The most dramatic statement of the Eisenhower administration's new defense policy was in Secretary of State Dulles' controversial "massive retaliation" address to the Council on Foreign Relations on 12 January 1954.

> Local defense will always be important. But there is no local defense which alone will contain the mighty land power of the Communist world. Local defenses must be reinforced by the further deterrent of massive retaliatory power. A potential aggressor must know that he cannot always prescribe battle conditions that suit him.[6]

Dulles explained that the basic decision of President Eisenhower and the National Security Council was "to depend primarily upon a great capacity to retaliate."[7] The address touched off a storm of discussion, among both critics and defenders, as to just what the new policy meant. In any event, it clearly implied a requirement for a national command and control system that would permit US decisionmakers to make precise assessments of distant crises and then to take rapid responsive action that might presumably even include initiating a nuclear World War III. No such precise, sophisticated system existed in 1954, however, and indeed the national concern was preponderantly with building the forces rather than the means for controlling them.

B. DISPUTE OVER STRATEGIC DOCTRINE

(U) Even with the basic decisions taken in the "New Look," there was no consensus in the mid-1950s--even within the Air Force, much less in wider circles--as to just how US strategic air power should be used in a future war. Indeed, the entire decade of the 1950s was one of the most turbulent in the history of US strategic thinking, as both political and military leaders struggled to come to grips with the problems posed by unprecedented weapons and threats and vulnerabilities. There was general agreement that the most immediate threat was to Western Europe, because of the weakened condition of the countries there and the overwhelming Soviet military strength on the ground.[8] It was also widely assumed that US strategic-nuclear power constituted the most effective US response to that threat. But there was little agreement as to how SAC would interact with other forces in the defense of Europe or even regarding the kinds of targets against which SAC's bombers should be directed. The future of the US command and control system would be significantly influenced by the manner in which these disagreements were resolved.

(U) The fundamental problem involved the delineation of the circumstances that might bring the strategic-nuclear forces into action. It appeared fairly clear, of course, that if the Soviet "hordes" launched a massive attack against Western Europe, and the attack were accompanied by Soviet nuclear strikes at airfields, depots, ports, and other rear-area targets, the war would probably lead quickly to a general nuclear exchange in which SAC would be totally involved. On the other hand, SAC's role was not nearly so clear if one posited a more limited Soviet aggression. Indeed, from the beginning it had been one of NATO's continuing (declaratory) objectives to build up its ground strength so that a plausible defense might be possible, using European forces alone, against a less-than-all-out Soviet attack.[9] Also virtually from the beginning, however, the British--already suffering from a chronic economic crisis--had argued against major preparations to fight a ground war and in favor of primary reliance upon British and American strategic nuclear capabilities committed almost immediately against a Soviet attack. Not only would this strategy lessen the logistical and manpower burden on the Allies, they insisted, but deterrence would thereby be maximized.

(U) The doctrinal dispute extended well beyond the question of when the strategic air forces should be committed; it involved also the targets against which SAC should be utilized in the event of a Soviet attack. The Lisbon force goals, enunciated in 1952, had provided for the mobilization of 96 divisions during a period in which SAC would delay the Soviet advance by nuclear "retardation" strikes. Increasingly, however, European nations other than the British had come to see this objective as too costly in terms of manpower and too doubtful of success to be acceptable, and little progress had been made in meeting the Lisbon goals. Moreover, SAC itself was unenthusiastic about the "retardation" mission, both because of anticipated difficulties in locating and destroying the projected targets and, more importantly, because it called for a diversion of SAC capabilities from what were conceived to be more vital targets in the Soviet homeland.

(U) With the New Look, and the advent of nuclear weapons that could be delivered by tactical air forces and even by the ground forces, the NATO Council in 1954 resolved that member nations would use nuclear weapons from the outset of a war, thus permitting a reduction in the size of the ground forces thought necessary. Under the new NATO strategy, the local defense forces would provide a "shield" at the forward defense line in Europe, while nuclear strikes flown by the Strategic Air Command, the British Bomber Command, and the US naval forces would wield the "sword."

(U) The new strategy did not relieve SAC of all retardation strikes, however, and it raised additional problems not only of coordinating atomic strikes by the various forces but, even more important in the eyes of SAC, of priorities in the allocation of nuclear weapons--weapons that in the very recent past SAC had considered uniquely its own. Thus, for example, in June 1955, General LeMay, after reviewing the nuclear weapons allocations for US forces for FY56, wrote to General N. F. Twining, Chief of Staff of the US Air Force, protesting the allocation of nuclear weapons to any fighters (including SAC's own) until every SAC bomber was allocated a high-yield weapon. The Strategic Air Command, he said, possessed the only force with a proven capability to deliver atomic weapons, almost regardless of circumstances, and the only control structure to launch a fully coordinated strike; yet, he noted, only 200 SAC bombing aircraft had been provided with weapons, which left one-third of the command's force, including all fighter aircraft, without weapons. He was unable to see how such a decision could be justified:

> In effect it indicates that more weight is being given to holding a defensive line in Europe than to the prevention of atomic attacks on US cities. It implies that there is as great a threat involved in retreat in any theater as in loss of the air battle. It means the American people have invested millions of dollars in aircraft and air crews for which collateral plans have not provided ample weapons.[10]

(U) General Twining rejected General LeMay's proposals, and this recognition by the Air Force itself of a wider set of strategic priorities than those of the Strategic Air Command was promptly dubbed by the SAC staff "obeisance to the theater concept."[11] But the issues at stake in this controversy went well beyond the simple question of allocation of nuclear weapons among competing types of forces, or the problems of interservice rivalry. At bottom was the continuing strategic dilemma that the New Look had initially attempted to resolve--whether the enemy could best be deterred, or defeated, by a capability to strike directly at his homeland (including his strategic forces), or by a more diverse capability to "contain" and counter his aggressive thrusts on a wide variety of fronts. Also contained within the dispute were the seeds of a parallel one with great significance for command and control. If SAC's point of view were accepted, regarding both its own role and preferred strategy, then the case could be made that the primary command and control problem was to get the execution order to SAC--and SAC did tend to see the problem thus. But if the nation's leaders wished to retain a wider spectrum of options, and to exercise those options as they themselves assessed the situation, then a much more complex command and control system was required. As the decade of the 1950s passed, and especially after the Kennedy administration took the helm in 1961, there was to be an increasing tendency by the nation's political leaders to insist upon greater control on their part of a wider variety of options in crisis situations.

(U) Subsumed within General LeMay's use of the term "the air battle," in the previously quoted statement, was an implied point of view on yet another wide-ranging controversy that was also related to the targeting of US strategic-nuclear forces--the issue of "counterforce" versus "war potential." In insisting upon winning the "air battle," LeMay was emphasizing the counterforce side of the argument, although Air Force leaders had long accepted the fact that enemy industrial potential should also be a major objective of US strategic forces. Prior to 1950, LeMay said, he had been willing to "violate the principles of war and forget about the rulebook and go about leisurely destroying their war potential or taking on any other task that seemed desirable at the time."[12] By 1953, however, the Soviets had an atomic stockpile plus a growing delivery capability, and LeMay accordingly concluded that "we have to go back to the rulebook and the principles of war and fight the air battle first, which means that we must as quickly as possible destroy their capability of doing damage to us."[13] In February 1954, General Twining gave full Air Force approval to the counterforce doctrine, stating: "We can now aim directly to disarm an enemy rather than to destroy him as was so often necessary in wars of the past."[14]

(U) Thus, in 1954, as a result of the perception of a growing Soviet strategic threat and an increased US capability to counter it, "blunting" the enemy's ability to launch a nuclear attack on the United States was the JCS-assigned, first-priority mission of SAC, followed next by retardation of the massing and launching of enemy ground forces, and then by the systematic destruction of enemy war-sustaining resources.[15] The command and control system to support a US counterforce war--including repeated restrikes against surviving Soviet targets--was, once again, in a primitive state at best in 1954, especially in a context not only of Soviet strategic retaliation but presumably of a Soviet first-strike. The controversy over strategic targeting did not die, meanwhile, and was repeatedly to be revived in the future, especially in connection with new weapons developments, such as the Polaris submarine or proposed deep penetration bombers, that appeared to emphasize one type of capability over another.

C. SAC OPERATIONAL CONSTRAINTS

(U) We have commented earlier on one of the reasons for SAC's lack of enthusiasm for the "retardation" mission--i.e., the difficulty in locating and striking specific, and perhaps moving, targets. This lack of adequate target intelligence, while most severe in the "retardation" case, was only one aspect of a more general operational problem that was to plague SAC throughout most of the 1950s and was not to be alleviated until major returns were received from the U-2 and satellite intelligence sources. Prior to this time, and especially in the first two-thirds of the decade, virtually all conceivable sources, including defectors, public libraries, commercial and cultural records, and the like, were assiduously exploited for bits of information that might add to the little already known concerning most targets.[16] Meanwhile, SAC's potential effectiveness, especially against limited-area or moving targets, was to remain much more of an open question than was ever acceptable to the responsible military leaders.

(U) Another major operational problem faced by SAC in 1954 and that persisted in one form or another for a number of years thereafter, was the protracted and enormously complex nature of the strike itself, once the decision was made to launch it. Without a true intercontinental bombing capability--i.e., aircraft that could depart the United States, fly to the most distant targets in the Soviet Union, and return to the United States without refueling--a variety of auxiliary measures, entailing countless minutely planned and costly preparations, were required to get bombing aircraft over their targets. Most important of these measures, of course, was the construction of overseas bases. The United Kingdom had at first constituted almost the sole available location for SAC's purposes, but the UK's vulnerability was a source of continuing and growing concern. After the Korean war, there was developed as a matter of the greatest urgency the network of pre- and post-strike bases, chiefly in North Africa, Spain, Saudi Arabia, Greenland, and Japan, as well as the United Kingdom, from which SAC proposed, in effect, to fight the strategic war after the requisite aircraft, supporting equipment and supplies, and personnel had been moved there. As much as possible in the way of housekeeping personnel, maintenance and repair capabilities, and war-reserve materiel could be prepositioned, but the additional requirements for combat personnel, staffs, supplies, and equipment were enormous, and these had to be transported on a schedule of unprecedented complexity and precision. Included in the problem, of course, in addition to those elements related to strategic bombing itself, were the requirements for ground and air defense of the bases, aerial refueling units, and other supporting capabilities. The implications of all this for detailed command and control by SAC, pre-, trans-, and post-strike, were clearly immense.

(U) One last problem must be mentioned, in itself perhaps as significant for SAC operations, for warning, and for the command and control function as all the others, even though its actuality was not to manifest itself until near the end of the decade of the 1950s. That problem was the looming threat of intercontinental missiles. Even though these were possessed by neither side in 1954 and were not imminently expected,[17] and though the Soviet ICBM tests as early as 1957 came as something of a surprise, the entire period of 1954-60 was intimately affected by the realization that long-range missiles, when they appeared operationally, would change all the rules and make obsolete many of the plans, procedures, and existing capabilities of the US strategic-nuclear force. Thus, even while plans went forward to extend at immense cost the early warning network into the Arctic, through construction of the DEW line 2,000 miles north of the US-Canadian boundary, it was fully recognized that the system would be useless against ICBMs and that, even if an effective ballistic missile warning capability should be developed, warning time would then be counted in minutes instead of hours. It was also realized that operational IRBMs with sufficient range to reach SAC overseas bases would be available even earlier. Indeed, as the 1958 Gaither Report gloomily warned, the coming "missile gap" promised to relegate the United States to the position of a second-rank military power.

(U) Every decision, therefore, regarding the improvement of an existing capability, or the development of a new one, had to be made in the recognition that almost everything would be changed when ICBMs appeared on the scene--and there were wide differences of opinion as to when that might be. The best was the enemy of the good, and throughout the last half of the decade SAC leaders found themselves contending with both the US missile advocates and the threat of the Soviet ICBM in their unending effort to improve SAC's existing capability to perform its function. Thus, in regard to the prospects for a US ICBM and its implications for strategic bombers, General LeMay was to declare as early as 1955: "I believe it would be courting disaster to decimate the conventional proven force and its follow-on of the true intercontinental supersonic manned bomber aircraft before the missile system has proven a progressive replacement."[18] Meanwhile, as the threat of a Soviet ICBM moved inexorably closer, there was to arise a steadily growing concern with the survival both of the strike force itself and the command, control, and communications systems on which it depended. In turn, as new procedures were implemented to provide for survival even in the face of a surprise missile attack, the resultant problems for the maintenance of effective command and control in a state of advanced readiness and in a post-strike environment were to demand an increasing share of attention from both military and political leaders.

XII

SAC ORGANIZATION AND COMMUNICATIONS

A. BASIC ORGANIZATION

(U) While details of the organization of SAC changed during the period 1954-60, basically the command arrangements were as follows. First, CINCSAC, with headquarters at Offutt AFB, Omaha, Neb., operated as commander of a specified command under the direct operational control of the Joint Chiefs of Staff, with the Air Force as executive agent. Under SAC Headquarters were three numbered air forces--the Second, with headquarters at Barksdale AFB, Shreveport, La.; the Eighth, at Westover AFB, Chicopee Falls, Mass.; and the Fifteenth, at March AFB, Riverside, Calif. There were also three independent numbered overseas air divisions--the 3rd, at Anderson AFB, Guam; the 5th, at Sidi Slimane AFB, French Morocco; and the 7th, at South Ruislip, United Kingdom--all of which were administratively and logistically under the control of SAC Headquarters. Operationally, the 3rd and 5th Air Divisions were under the control of the Fifteenth and Second Air Forces, respectively, and the 7th Air Division was under the direct operational control of SAC Headquarters.

(U) In addition, there were five "phonetic" commands and several task forces. A phonetic command, as stated by Headquarters SAC, "is a provisional command element established in a forward area in order that this command may fulfill its responsibility to support other commands under the Joint Chiefs of Staff and to insure proper coordination of mutual support requirements."[1] Essentially, the phonetic commands were headquarters units established overseas in close proximity to unified commanders, to coordinate planning for retardation missions, to serve as a source of expertise on nuclear operations, and to maintain command control of any SAC units that might be temporarily assigned to the area. The ZEBRA and YOKE phonetic commands had their headquarters adjacent to Supreme Headquarters, Allied Powers Europe (SHAPE); VICTOR at Headquarters Alaskan Air Command (AL); X-RAY at Headquarters Far East Command (FE); and OBOE at Headquarters Northeast Air Command (NEAC). The phonetic commands were directly under CINCSAC but also coordinated closely with the senior SAC commander charged with responsibility for the area in which they were stationed. These intra-SAC coordinating relationships were as follows:

OBOE	- Commander Eighth Air Force
X-RAY	- Commander Third Air Division
	Commander Fifteenth Air Force
VICTOR	- Commander Fifteenth Air Force
YOKE	- Commander Fifth Air Force
	Commander Second Air Force
ZEBRA	- Commander Seventh Air Division

B. GENERAL OPERATIONAL SITUATION IN THE 1954-60 PERIOD

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([redacted]) The years from 1954-60 represented for SAC a time of unending struggle to improve the speed of response of the bomber fleet in the face of reduced warning time. In the beginning of the period, the threat was that of the growing Soviet bomber force against the limited air defense system of the United States, and in the last years of the decade the problem was compounded by the perceived threat from Soviet intercontinental missiles affording warning in minutes, at best. Beginning in 1954, the quick-strike capability of the command was developed to the utmost. Nuclear bombs began to be stored on bomber bases, and the SAC Alert Concept was evolved whereby approximately one-third of the force would be on a ready status at all times, with bombs and fuel loaded and

crews standing by. Also, to counter reduced warning time (and in view of the sheer length of time required for takeoff of an entire wing), a plan was established for the dispersal of the B-52 force to satellite bases.[2] The latter plan also reduced vulnerability, of course.

(U) The most important development in improving the speed of SAC's response in the early part of the period was the evolution of the FULLHOUSE concept. Conversion to B-47s and vastly improved aerial refueling equipment and techniques enabled SAC in 1954 to develop a new war plan for launching its primary attack from home bases. Under the FULLHOUSE concept, which went into effect in 1955, multi-wing deployments in night and day all-weather conditions became possible, and units could be deployed directly to targets by means of air refueling and post-strike service at forward overseas bases.[3] At the same time, though overseas bases were no longer to be the primary stations, they would continue to play key roles in SAC strategy. Aircraft operating from them would complicate enemy targeting. Also, SAC could employ those that survived an initial attack for post-strike recovery and turnaround.[4]

(U) The evolution of the FULLHOUSE concept and the development of a capability in those types of operations affected all aspects of command operations. FULLHOUSE-type operations made necessary a tremendous logistics and base development program in the northeast Atlantic area and the northeastern United States; SAC even began to look to Canada for more tanker bases. Other direct results were the movement of Hq Eighth Air Force from Carswell AFB, Tex., to Westover AFB, Mass., and the activation of two refueling wings in the northeastern United States. As a concomitant, the B-36 force was freed for deployment to the Far East and French Morocco. Meanwhile, the enhanced mobility of the command was evidenced by the routine rotation of combat units to all parts of the world.

(U) The changing philosophy of overseas strategic bomber basing had its greatest impact in the United Kingdom. Here SAC eliminated all but four bases from its plans for major peacetime deployment, and completely reorganized the 7th Air Division, changing its mission from operating and pre-strike support to principally post-strike support. Beginning in January 1958, SAC experimented with reducing the size and duration of deployments by dispatching small B-47 bomber and KC-97 tanker "reflex" forces to two of the UK bases. Operating on a 1.5-to-1 crew-to-bomber ratio, each reflex force remained 21 days on station rather than 90 days as before, and each individual crewman served two weeks on alert and one off. In the event of nuclear war, these forces would undertake post-strike missions in support of primary launches of the main forces from US bases. By the end of 1958, all SAC overseas forces operated on the reflex principle.[5]

(U) The Soviet ICBM capability so dramatically demonstrated in 1957 brought to an acute stage SAC's problems in assuring the necessary warning, quick response, and command and control of alert forces. Ground alert procedures (for which planning had begun in 1956) were developed to provide for takeoffs within 15 minutes; "Fail Safe" and airborne alert concepts were developed, tested, and perfected; and additional means of preserving SAC control through further hardening of fixed command posts and institution of an airborne command post were being sought.

(U) Thus, in the short period of some five or six years after 1954 SAC progressed from a strike concept envisaging massive and protracted deployment of the entire bomber force and its supporting elements to overseas bases and then launching the strike from there, to a concept wherein the greatest part of the alert force would be launched on 15 minutes warning from bases within the ZI, with other alert aircraft launching from overseas bases on the same or less warning.[6] At the end of the decade, steps were being taken to withdraw all SAC forces to the ZI at the time the vulnerability of overseas bases made them untenable--a time that was reckoned to be about 1962.[7] Meanwhile, in September 1959 the first ATLAS ICBM launchers attained initial operational capability (IOC) and were accepted by SAC's 1st Missile Division. The Strategic Air Command had entered the missile age itself.[8]

C. SAC COMMUNICATIONS[9]

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([redacted]) Four major objectives dominated SAC's approach to its communications systems during the period 1954-60: (1) acquisition of greater control over its own communications so as to be independent of Air Force common-user systems for operational purposes; (2) expansion of the use of voice as opposed to record communications in the control of aircraft and operations; (3) increasing the speed and reliability of message transmission (particularly in the difficult northeast US area) through improved equipment, redundant systems, realistic operator training, and frequent command post exercises (CPXs); and (4) reduction in the vulnerability of communications to nuclear attack--a concern that increased rapidly in the latter part of the decade.

1. Worldwide Point-to-Point and Air-Ground Communications

U
([redacted]) During the early 1950s, SAC had developed what it called its "full pipeline philosophy," which meant that the command's communications lines should be busy--if not loaded--at all times. (It might be noted that this was in direct opposition to established Air Force policy.) The basis for SAC's approach was the belief that operators should be trained, the equipment ready, and the system already operating beforehand as it would in an emergency. Also, there would be no increase in traffic to be detected by an enemy during the emergency, and the enemy's task of interpretation would be made more

difficult by the sheer volume of traffic to be "read." One aspect of the new philosophy involved increased operational realism in CPXs. Before February 1954, SAC CPXs had been essentially "communicator-to-communicator" exercises with "canned" messages. But in 1954 SAC established a combat reporting system during the CPX whereby commanders and staffs and control teams deployed to the maneuver areas of the world and prepared and sent actual operations-reporting-type messages composed by the staffs and sent to multiple addressees. Aircraft were also physically deployed and sent on strike missions, in addition to the utilization of simulated aircraft. Wartime conditions were simulated by deliberately saturating the teletype system.

U ([redacted]) The new SAC approach highlighted major bottlenecks in GLOBECOM, the common-user worldwide communications system. During Exercise GAMETIME, for example, from 5-11 August 1957, messages backlogged in Japan and the Middle East. SAC immediately requested from Headquarters USAF additional full period on-call teletype circuits for US-Japan channels as a vital requirement for SAC's mission. This request was turned down as too expensive; indeed, said the Air Force, SAC's needs during the previous exercise had been filled "by denying service to other commands." SAC insisted that its requirements could not be taken care of by simply making commercial channels available during an emergency, as was proposed. In a letter to Headquarters USAF, 14 November 1957, CINCSAC declared "it seems foolish to spend billions of dollars to build up a strategic strike force and then fail to provide the communications required for effective control and use of this force."[10] Finally, in December 1957, Headquarters USAF approved a SAC requirement for three additional teletype channels from the ZI to Yokota (one full period and two on call), and four channels to Guam with a single channel from Guam to Itazuke. While this still did not provide the independent system that SAC craved, it at least helped remove a major bottleneck.

[redacted]

(U) The common usage of GLOBECOM (or STRATCOM as it was later renamed) continued to fester for SAC throughout the decade. In 1958--by which time SAC had its own tactical ultra-high frequency (UHF) and very high frequency (VHF) channels and its own single side band (SSB) net--a determined campaign was launched for a SAC indigenous high frequency air-ground system, but every request was repeatedly denied by Headquarters USAF. The USAF maintained that the proposed SAC system would, in effect, duplicate STRATCOM. SAC, on the other hand, insisted that its system would be an integral part of STRATCOM, with SAC "controllers on the line" conducting SAC tactical matters, such as transmission of "go" instructions, recall, diversions, recovery, and recycle mission-type instructions, as well as initial strike reports.

(U) Headquarters USAF refused to abandon the position, however, that the underlying concept of the USAF global communications system was the support of air striking power and its supporting elements, including intelligence, air movements, weather, and logistics. Moreover, the capital investment already made in STRATCOM of over one-third of a billion dollars would be doubled in the near future with modernization and expansion of the system. In short, while the strategic strike mission was undoubtedly the most important one in the Air Force, it was still only a part of the total Air Force responsibility and SAC's worldwide communications had already been provided for. The Air Force simply could not ask for yet another system:

> In light not only of its dollar investment, but also of its manpower and frequency resources together with its presentations before OSD, BOB and the Congress, the USAF cannot support another communications program which would appear to duplicate the services provided by STRATCOM and which would be in competition for the same limited manpower, dollar and frequency resources.[11]

[redacted]

SAC did not give up the struggle for its own worldwide HF system, but the battle was lost for the time.

2. Communications within the ZI

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([redacted]) The development of the Strategic Operational Control System (SOCS) in 1950 had given SAC command levels a means for rapid control of operations through instantaneous voice communications. The SOCS circuits originated at Headquarters SAC, with lines to the numbered air forces and, in turn, to SAC bases. Top secret conversations could be held by installing special encipherment equipment on the line. One of the more advanced features of the SOCS system was a built-in instantaneous and simultaneous alerting capability to all SAC bases. By picking up a designated handset, the Headquarters SAC controller could dial a number that automatically seized all SOCS circuits to SAC bases and terminated those circuits in a loud speaker at each SAC zone-of-interior wing comtrol room. Alert instructions transmitted by the controller were heard by all in the control room.

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([redacted]) Headquarters SAC remained concerned, however, with the problem of transmitting warning in sufficient time to effectively launch the force. A poor reliability factor had proven inherent in the "Red Telephone" system, in which daily alert tests showed a high percentage of malfunctions persisting as late as mid-1958. SAC had requested USAF approval for a Hot Line Alerting System to all SAC bases with a reliability factor of as close to 100 percent as possible, and in 1958 a plan for this system was approved by Headquarters USAF. SAC's goal was a communications system that utilized only a minute and a half of the 15 minutes alerting time for the strategic strike force.

3. Single Side Band--A Further Step in Voice Control

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([redacted]) A further outgrowth of SAC's constant efforts to improve communications, first at command levels and then between

commanders and aircraft, was the development of the Commanders' Radio Telephone Network, a single side band (SSB) system. Independent of landline cable, SSB was an extension of the SOCS complex to the cockpit. It enabled the commander to reach all areas in the SOCS system, as well as aircraft, by radio.[12]

(U) Two events marked the origins of SAC's enthusiasm for SSB as a key to solving its problem of long-range control. The first was a flight on 4 July 1956 that carried Col. John B. Bestic, then chief of SAC's Communications-Electronics Division, to Goose Bay, Thule, and Alaska. On this trip, using SSB, Colonel Bestic talked to the South Pole from Thule and to Australia, New Zealand, and Pakistan. The marked improvement in long-range transmission by SSB, and in particular its ability to cut through the auroral absorption zone, resulted in its first being utilized as the commander's back-up net, before it was established on aircraft.

(U) The second event was the highly successful use of SSB during Operation POWERFLIGHT, a global exercise of B-52s, in January 1957. "The commander of the flight declared that 'single side band HF radio equipment performance was far superior to normal HF and AM contacts with SSB relay stations affording constant mission-following throughout the entire operation.'"[13] In the autumn of 1957, Headquarters USAF approved a program for development of an SSB point-to-point network for global control of SAC aircraft. By December 1957, SAC had in operation 19 SSB stations throughout the world.[14] In addition to improving SAC's control of long-range aircraft, SSB also met General LeMay's requirement for reaching any wing commander in 30 seconds. As a technique, SSB cut through the more difficult propagation and over greater ranges than any HF known up to that time. Single side band, then, fulfilled two major functions for the command: (1) a backup for the SOCS point-to-point network, and (2) a means for extension of voice communications to the aircraft.

4. "Positive Control"

U ([redacted]) One of the major justifications put forward by CINCSAC for procurement of SSB equipment was the requirement for "positive control" of strike aircraft. The Soviet ICBM test in 1957 had emphasized a problem with which SAC had been concerned for some time, i.e., the recognition that, in view of rapidly decreasing warning time, normal communications lag, and the time required by the current decision-making procedures, it might be necessary to launch aircraft prior to the receipt of a strike execution order. In October 1957, General Power (now CINCSAC) had written to General LeMay (Vice Chief of Staff, Headquarters USAF) that "it would be next to impossible to effect High Frequency (HF) radio re-direction of the strike force once it is launched."[15] While CINCSAC was probably overstating his case, it is still true that the Air Force radio system relied upon distant offshore Aircraft and Airways Communications Service (AACS) stations, which could be reached only through indirect channels. The CINCSAC argued that the current concept of staging and supporting the SAC force from the ZI should apply to communications systems as well. The command's experience with the SSB point-to-point net, meanwhile, led General Power to direct the perfection of a high frequency SSB air-to-ground system for control of the strike force. Because procurement of such an SSB system would be a multimillion dollar program, however, SAC first implemented a test of the "positive control" or "Fail Safe" concept.

U ([redacted]) The test, code name NOAHS ARK, was conducted between 15 November 1957 and 15 January 1958. For testing purposes, the outbound strike routes of the alert force were broken down into 12 general routes along which several HF and UHF ground radio stations were located. During the testing period, each numbered air force and applicable overseas air division was to schedule a minimum of six missions over each route. One or more aircraft would constitute a mission. While on the mission, the air crew was directed to make radio contact with selected stations along the route in an attempt to receive the "go" code prior to reaching the "Fail Safe" point. The "go" code would be relayed from Headquarters SAC through the Air Force global communications network to the applicable ground stations. These stations would then relay the "go" code to SAC aircraft upon contact. After the mission was completed, the air crew would transmit a message to Headquarters SAC enumerating the message received.[16]

U ([redacted]) Sixty-five "Fail Safe" missions were flown in the test, of which 50 were successful. The main difficulties were determined to be inadequate briefing of crews and deficiencies in supporting NORAD and AACS facilities. The "Fail Safe" concept proved basically reliable, however, and SAC continued to press for approval of the SSB radio system. This approval was soon secured, and by March 1960 the new system, consisting of four SSB air-ground stations, was in operation.[17] SAC could now count on its "positive control" system with a high degree of reliability: i.e., the bombers could be launched under orders to fly to a designated point outside enemy territory; upon reaching that point, they would automatically return to their home bases unless they received orders--the "go" code--to proceed to their targets.

(U) The high frequency SSB system was by no means completely without problems, however. In the event of an attack, the system might be blacked out by nuclear explosions. Also, its transmitters were soft and in fixed locations, and thus vulnerable to destruction.

5. The Northeast Air Command: A Unique Communications Problem

U ([redacted]) A special word should be said regarding communications in the Northeast Air Command (NEAC) area. After SAC's initial CPX in September 1950, it was found that communications between Limestone Air Force Base, Me., and Goose Bay were very poor.

Moreover, communications in the entire NEAC region (Massachusetts, Maine, Labrador, Frobisher Bay, Greenland, and Iceland) were bad. Early attempts to improve the situation met with little success. The problem was especially acute because the region was a critical one strategically and became steadily more so with the implementation of the FULLHOUSE concept.

U ([redacted]) The breakthrough came late in 1953 and in early 1954. Among the various concepts explored had been the applicability of VHF forward scatter research in achieving a voice-teletype system. Forward Propagation by Ionospheric Scatter (FPIS) and Forward Propagation by Tropospheric Scatter (FPTS) techniques had first been used with success by the National Bureau of Standards, and other pioneering work had been accomplished by the Massachusetts Institute of Technology. In cooperation with these organizations, SAC found that operational equipment could be designed using forward scatter techniques, and in the period 1954-56 the USAF converted to this system for its primary communications network in the NEAC zone.[18]

U ([redacted]) Between 1954 and 1957, still further studies were made in the development of the forward scatter system, especially in voice transmission--though the peculiar NEAC difficulties were by no means solved. It was to remain for SSB to make further substantial improvement in communications in the NEAC region. Continuing problems existed, however, because of sunspots, equipment outages, auroral absorption, and other factors, so that NEAC remained a major problem area for SAC, requiring a number of alternative and redundant measures to assure successful communications. A SAC communications study written in December 1959 made the following assessment:

> Today SAC could--in all probability--reach any station in the NEAC region at any given time through one means or another. The multiplicity of channels, the moving of control points, and the addition of FS and single sideband have given the command reliable communications in the Northeast for the first time.[19]

One has the impression that the SAC communicators always kept their fingers crossed, however, where the NEAC region was concerned.

XIII

SAC PRE-ATTACK AND POST-ATTACK COMMAND AND CONTROL SYSTEMS

(U) By the end of the 1950s, SAC had become an enormously complex organization. In 1960, an average of 122 bomber and tanker aircraft were airborne each day, with in-flight refuelings taking place at the rate of one every 6.8 minutes. Large-scale exercises of the command often involved more than 500 aircraft. The sheer size of SAC, with 260,000 men and thousands of aircraft scattered around the globe--not to mention intercontinental ballistic missiles just beginning to enter the force--further compounded the problems of command and control.

(U) In order to provide for the supervision and control of this far-flung organization, the Air Force and SAC had built by 1958 a worldwide communications network consisting of (1) a primary alert system of voice communications between SAC's underground control center at Offutt AFB and all base control rooms in the United States and overseas; (2) a single side band, high-frequency, point-to-point radio system; (3) a telephone system for day-to-day operational control purposes; and (4) a teletype system to convey printed operational information.

(U) These various systems generated huge amounts of data that were continuously processed and displayed in the SAC control center. As early as 1954, however, the flood of information had become so great that the CINCSAC had expressed concern over the center's ability to remain current with the disposition of the force. The primary difficulty involved the center's machinery for data reduction, correlation, and display. Seeking to resolve this problem, SAC recommended on 17 December 1954 that the Air Force initiate research and development of "electro-mechanical devices capable of high-speed performance of a major portion of the sorting, summarizing, correlating, and displaying" of status information.[1] The requirement was approved by Headquarters USAF, and the resultant studies led in time to the installation of a closed-circuit, color TV system and an IBM 704 computer in SAC's underground control center. Beginning on 20 May 1957, the computer was exercised along with the existing manual system and soon proved the feasibility of using electronic data processing for command and control purposes.

U ([redacted]) These early experiments also uncovered serious communications problems in the course of attempting to integrate electronic data with manual communication and posting techniques. The SAC battle staff found that the control center remained an average of 1 hour and 30 minutes behind the force, and in extreme cases the center fell 6 hours behind. The CINCSAC insisted that, in the era of the ballistic missile, such "historical data" were unacceptable.[2] Three months after installation of the 704 computer, the command requested a follow-on system that would consist of electronic computers at Headquarters SAC and the headquarters of the numbered air forces, means for integrating the computers with a secure communications network, and display equipment. Three major subsystems--for data transmission, data processing, and presentation--were prescribed. The Air Force approved the requirement, which was designated the 465L development program, and thus began the search for a "real time" capability for command and control of the strike force. More than six years would elapse before the program achieved even a limited operational capability.[3]

A. 465L FUNDING AND SCHEDULE DIFFICULTIES

U ([redacted]) On 11 February 1958, Headquarters USAF published a General Operational Requirement (GOR) that delineated the SAC control system and specified an initial operational capability (IOC) of January 1960 and a complete operational capability (COC) of January 1962. Sixteen days later, USAF assigned the system a 1-A priority. Virtually from the moment of the selection of the International Telephone and Telegraph Company (ITT) as the major contractor, however, the 465L program began to go through a seemingly endless series of funding limitations, cost increases, program stretch-outs, and retrenchments that, in the final analysis, postponed the COC more than three years.[4]

(U) Almost simultaneously with the contractor selection, the Air Force on 16 September 1958 submitted a request to the Office of the Secretary of Defense for $29.8 million in FY59 funds. The OSD insisted on a thorough briefing on the proposed technical approach before it would release funds. Representatives from Headquarters USAF, the Air Research and Development Command (ARDC), and SAC gave the briefing on 31 October and obtained tentative OSD approval and $18 million. In its authorization, OSD emphasized that system acquisition should be on a "fly before you buy" basis.[5]

(U) Since OSD's actions constituted a "stretch-out" of the earlier development and funding plans, ITT requested a new IOC date and revised its program costs upward--from $107 million to $137.8 million. The Air Force agreed to a new IOC date of January 1962. It also approved plans to build a prototype test facility at Paramus, N.J., to demonstrate the operational feasibility and integration of the various parts of the 465L system.[6]

(U) During 1959, there began a series of uncontrollable cost increases that were to plague the entire history of 465L system acquisition. These were attributed to the OSD funding limitations placed on the program, the original lack of specific details on SAC's operational needs, unexpectedly high subcontractor costs, and growing system complexity. All told, these factors contributed to boosting the estimated costs of system acquisition first to $198.1 million, then to $228.3 million, and finally to $339.7 million by October 1959. This last figure was $200 million above the estimate given only 12 months before.[7]

(U) It was hardly surprising that, when the Air Force approached OSD for release of $62.3 million in FY60 funds, the request was rejected. Headquarters USAF then reviewed the whole program in detail and deleted some of the planned equipment to cut costs. A revised program was submitted to OSD, which was approved on 1 December 1959; however, obligations were limited to $40.6 million. The inability to obtain the full budget amount in turn caused further slippage of the projected IOC date to April 1963, and of the COC date to January 1965.

(U) Much of the Air Force difficulty in securing funding for the program was grounded in OSD doubts regarding the validity of the entire 465L concept. Essentially, the question was why the system should be built at all if, as was increasingly expected, the war would begin with a sudden Soviet missile attack that would destroy it even before it could be used. The answer from SAC was that the system would be worth the cost, if only for peacetime training and exercises. The OSD did not find the logic compelling--especially as 465L costs continued to spiral upward.[8]

U ([redacted]) Headquarters USAF itself had become greatly concerned by the cost and system complexity of 465L and early in 1960 had cautioned SAC that it was essential to take "a most austere approach" to the system configuration. At the end of May, SAC and ARDC officials briefed Headquarters USAF on the latest proposed system configuration, but Air Staff representatives found it "too sophisticated to be financially palatable." SAC undertook a new review of its requirements and, with ARDC, made further changes and deletions, although they felt these would erode system capability. However, even with the revisions, total program cost was now estimated at $387.6 million.[9]

U ([redacted]) As a result of the latest cost increases, the Air Force encountered still greater resistance from OSD. And by now the question of the 465L system's survivability was becoming a major issue. One proposal increasingly being heard was that the Air Force would do better to rely on mobile command posts rather than on ground facilities that could be eliminated by a determined enemy--even if some of the facilities were hardened. For here the question arose of the survival of the entire system as an operational entity: if it could not so survive, what would be gained by having parts of it survive, and what was the need for the system in the first place?

(U) Meanwhile, the Air Force had renewed its attack on the problem of system costs. An ad hoc study group proposed an even more austere 465L configuration, which was approved by the Air Staff and submitted to OSD on 7 December 1960. The OSD then released additional funds and gave authority to proceed with the program. Despite these actions, the Air Force knew the 465L program was still in trouble, chiefly because the problem of survivability had not really been faced up to.

B. THE PROBLEM OF SAC COMMAND AND CONTROL SURVIVABILITY

(U) In January 1960, the Air Force had organized the Winter Study Group "to examine critically and objectively from a technical viewpoint the entire complex of existing and planned" USAF command and control systems. An eight-month review followed, conducted by USAF and civilian consultants working with the Mitre Corporation and supervised by a senior advisory committee under Dr. A. G. Hill of the Massachusetts Institute of Technology. In its final report of 15 September 1960, the group generally endorsed the Air Force approach to automated systems, but it noted that the type to be built depended on the basic strategy the United States intended to pursue--one based on immediate second-strike reaction in the face of an incoming Soviet ICBM attack, or one based on surviving the attack and then striking back as a deliberate action. The group felt that a strategy of relying entirely on quick reaction to warning was too risky and should be rejected. "The chances of either failing to get warning or 'retaliating' on a false alarm are too great," they said.[10]

(U) The group further observed that there was a danger that USAF command and control systems would, on the one hand, be neither sufficiently reliable to launch a quick retaliation on warning nor, on the other, survivable enough to control the remaining force after a first strike. In the group's opinion, the best solution to the problem of compressed time was not elaborate electronic equipment "to make quick reaction safe" but a survivable system to eliminate the need for quick reactions or "snap judgments."[11]

(U) Long before the Winter Study Group recommendations were made, the Air Force had been studying the problems of survivability and quick reaction. It had recognized that US political leaders would probably not agree to launching nuclear weapons at Soviet targets without definite proof of an enemy attack and, therefore, that US missiles would be required to "ride out" a Soviet first-strike. The Air Force had also realized that command and control systems--which involved thousands of miles of "soft" communications, in addition to numerous other vulnerable components--could be hardened only at prohibitive expense and that under the Eisenhower administration the necessary funds would not be forthcoming. As a compromise, a plan had been submitted to harden the 465L combat operations centers, but the money for it had not been provided by Congress. After the Winter Study Group made its recommendations, the Air Force renewed its efforts to harden the four centers--but here the justification tended to fall apart (as OSD had insisted all along) in the face of the obvious fact that all other components of the system were "soft" and vulnerable to attack.

C. POST-ATTACK COMMAND CONTROL SYSTEM (PACCS)

(U) In July 1961, the Department of Defense redirected SACCS 465L to a pre-strike system and established a separate post-attack command control system with air and ground elements. The key PACCS segment was an airborne command post complex, including communications-relay aircraft. The Air Force had never intended to put its entire faith in the hardening of control centers as an answer to the problem of command and control survivability, and in fact SAC planning for an airborne command control network had antedated the formal establishment of the SACCS 465L system. SAC was fully aware that, of the four major networks on which its command control communications depended in the late 1950s--single side band HF radio, teletype, long line telephone, and the primary alerting system (SOCS)--single side band remained vulnerable to jamming, natural phenomena, and nuclear aftereffects, and the other systems were keyed to leased facilities that employed soft communication lines. Thus, the existing systems failed to meet the stringent requirements for survivability that were mandatory for the new PACCS confronted with the Soviet missile threat. Also, the existing systems gave decisionmakers little assurance of time for deliberation and continuing command and control of forces in a trans- and post-attack environment.

(U) This situation had prompted a SAC qualitative operational requirement (QOR) to Headquarters USAF, dated 13 September 1958, that in turn resulted in a new communications plan, designated the National Survivable Communications System (NSCS). As envisioned in 1958, the NSCS included an airborne command post and radio relay system, hardened low-frequency stations, emergency communication rockets, and redundant landline circuits. In essence, the NSCS--with the airborne command post as its principal element--became SAC's post-attack command control system. However, by mid-1961 only a beginning had been made.[12]

[redacted]

(U) The original goal of the system had been to establish a survivable execution capability, and the airborne command post was seen as the means of transmitting the execution message for launch of the SAC strike force. The following responsibilities were to be the heart of the airborne command post operation: (1) maintain contact with the SAC ground command post; (2) keep in touch with the joint war room-alternate joint war rooms; (3) maintain contact with the NORAD command post; (4) be prepared to relay message traffic between USAF and SAC command posts; and (5) keep contact with SAC numbered air forces and overseas air divisions.[13]

(U) On 1 July 1960, SAC initiated a 15-minute ground alert of the command post aircraft at Offutt Air Force Base. The operation was supported by five KC-135 aircraft and an alert team from Headquarters SAC on 24-hour alert. All rated general officers, except the CINC and the VCINC, took turns serving as head of the alert team--with authority to implement any DEFCON required; to launch the alert force under positive control; to carry out instructions from higher headquarters, including passing the "go" code to aircraft and launching follow-on aircraft and missiles; and to assume the duties of CINCSAC. This last could only be done under dire circumstances, however, when there was no way of contacting Headquarters SAC or the numbered air forces, and then only until contact could be reestablished.[14]

(U) Between 1 July 1960 and 2 February 1961, SAC executed 42 no-notice flights of the airborne command post; the average time elapsed from execution order to takeoff was 11.4 minutes. Early in the test program, Headquarters USAF authorized SAC to develop a detailed plan outlining concepts and procedures for maintaining a continuous airborne command post operation. Subsequently, on 1 February 1961, USAF directed General Power to begin continuous airborne operations as soon as possible. These flights were instituted on 3 February. The resultant system possessed a rudimentary capability to alert and direct

[redacted]

the SAC force.[15] Shortly after, Headquarters USAF approved several new development projects to enhance the survivability of command and control communications, including an emergency rocket communication system (ERCS) and a hardened, low-frequency communication system.[16]

XIV

COORDINATION OF STRATEGIC OPERATIONS

A. ATOMIC COORDINATION MACHINERY PRIOR TO ADVENT OF THE POLARIS

U ([redacted]) Early exercises of the Joint Coordination Centers, established in late 1952 to provide a means for lateral coordination of planning for atomic operations (see Chapter IV), had disclosed a requirement for pre-hostilities coordination of the various commanders' atomic plans.[1] Accordingly, in 1954, the JCS asked each appropriate commander to submit an atomic annex, i.e., a target list to his war plan, and to coordinate it with theater commanders and CINCSAC. In 1955, SAC was directed to act as host for a conference of appropriate commanders to determine a methodology or *modus operandi* for coordination of nuclear strikes. This conference failed to agree on anything except the requirement for periodic coordination of atomic war plans. The JCS approved this requirement, and the resultant conclaves became known as Worldwide Coordination Conferences (WWCCs). They were held each subsequent year through 1958. After plans were developed at these conferences and approved by the JCS, they were deposited with the Joint Coordination Centers for operational coordination as required by an exercise or by the initiation of hostilities.

U ([redacted]) The total coordination activity, pre- and post-hostility, was known as the atomic coordination machinery. On the positive side, the worldwide conferences did enable commanders to appreciate more fully each other's capabilities, tasks, objectives, and plans. Target lists, forces, and strike timing were discussed and compared. Some conflicts were undoubtedly avoided. The defects of the program, however, were clearly more evident than its successes--especially in the eyes of SAC.

The Chief objection of SAC was that the conferences did not solve the problem of target conflicts. In the 1957 and 1958 meetings, duplications and triplications (two or more commands delivering weapons to the same target) were not significantly reduced. Neither did they achieve mutual support or unity of strategic effort among the JCS commanders.

(U) The ineffectiveness of the ponderous atomic coordination machinery could be attributed at least in part to the inability of the coordinators to know for sure just how many weapons would be available and, therefore, which strikes would be made and which would not. The only information exchanged at the coordination conferences was a listing of targets of interest to the various commanders, and no consideration was given to the latter's actual intention or capability of attacking the targets on a timely basis.[2] This was partly attributable, in turn, to the special nature of the arrangements for allocating and maintaining custody of nuclear weapons. On the one hand, SAC had complete nuclear weapons at its disposal and available for use. On the other hand, the JCS also allocated each year a significant percentage of the nuclear stockpile to the various JCS commanders for planning purposes. These were known as "allocated weapons"--but the fact that they were allocated did not give the commander possession either in fact or in principle of them.[3] Coordination of strike planning under such circumstances was inevitably imprecise, at best.

(U) An even larger part of the problem in coordinating the strategic offensive had to do with the still considerable amount of operational coordination required and the resultant dependence on a highly sophisticated communications system at the JCCs. During peacetime exercises, the communications time lag between the sending and receipt of messages tended steadily to increase, causing a backlog; under combat conditions, the system's efficiency would undoubtedly be reduced even more.

(U) Not only SAC was critical of the system's complexity and inefficiency. If the following extract from a memorandum by the Director of Naval Communications can be taken as an indication, the Navy too was at least as dissatisfied as the Air Force with the atomic coordination machinery--though it was also to resist Air Force proposals to improve the system. The Navy at this time was, of course, at loggerheads with the Air Force over the latter's dominant role in the total strategic mission, especially since the Polaris submarine was about to make its appearance. The following Navy memorandum rests its case basically on the JCC communications and operational deficiencies, however, rather than on arguments for an increased strategic role, and is quoted at length for this reason:

> The present organization, methods and procedures are the "clay feet" in the "deterrent posture" because of overdependence on vulnerable communications links.
>
> The functions performed by the Joint Coordination Centers are duplicative of functions which must be performed anyhow in the operations centers of major commanders and only serve to introduce complexities and time-consuming "extra" requirements in reporting and coordination procedures.
>
> Reporting and coordination procedures require naval forces to transmit by radio which defeats any efforts made to employ the unique advantages of mobility, concealment and surprise which are inherent in naval forces. Such transmissions make the job of locating a naval force relatively easy thus reducing considerably its advantages over a "fixed base."
>
> Reporting and coordination procedures impose requirements for special communication circuitry which introduces special equipments and antennas, special frequencies, and special handling requirements in our already overcrowded ships.
>
> There are undoubtedly many facets other than those cited which have bearing on this problem. However, it appears possible by determined effort to devise the means, methods

> and procedures necessary to maintain the centralized control required, achieve a considerable reduction in reporting and coordination exchanges, and provide for our naval striking forces a considerable degree of survivability through concealment, stealth, mobility and surprise which they do not now enjoy because of the necessity for acting as a radio homing beacon while employing present coordination procedures.[4]

U ([redacted]) While both the Navy and the Air Force were thus dissatisfied with the JCCs and the atomic coordination machinery, neither was disposed to budge from a basic position that was at the same time unacceptable to the other--i.e., the Air Force insisted on a unified strategic command and target planning organization that would in operation clearly be dominated by SAC, while the Navy insisted on a cooperative interservice relationship securely buttressed by a "joint" charter. Meanwhile, the looseness and lack of coordination in strategic execution plans continued. In each of the exercises of the JCC machinery from 1958 to 1960, there were over 200 time-over-target conflicts. In wartime, with disrupted communications, this could obviously result in needless losses of aircraft and crews. Some new approach to the coordination problem appeared to be required, since the net gains from several years of past effort seemed to come down to a comparison of target lists and some minimal conflict resolution. General N. F. Twining, Chairman of the JCS, finally declared that one fundamental principle had evolved from the previous coordination activities and should be implemented as soon as possible--i.e.,"atomic operations must be pre-planned for automatic execution to the maximum extent possible and with minimum reliance on post-H-hour communications."[5] The organizational and interservice obstacles confronting such a prospect remained as formidable as ever, however.

B. DEFENSE REORGANIZATION ACT OF 1958

(U) The Defense Reorganization Act of 1958 seemed to open new vistas for better coordination of the strategic offensive. President Eisenhower, in outlining his plan to the Congress, emphasized the vital necessity of complete unity in US strategic planning and in basic operational direction of combat forces. It was necessary, he declared, that the Secretary of Defense and the Joint Chiefs of Staff have the authority to take action in these matters. The Air Force was strongly behind the President's program, as was the Army. The Navy was considerably less enthusiastic.

(U) Since the eventual resolution of the strategic target coordination problem was accomplished in the context of the 1958 Reorganization Act, it is appropriate here to review the latter's main features. Since 1947, there had been a steady trend toward strengthening the decision-making power of the Secretary of Defense. Now, on 6 August 1958, when the Department of Defense Reorganization Act went into effect, the authority of the Secretary of Defense in relation to both the service departments and the JCS was even further increased. The civilian departmental secretaries were at the same time removed from the chain of command. The line of operational control now ran from the President to the Secretary of Defense, then through the JCS to the commanders of the unified and specified commands. The Secretary of Defense thus had under his jurisdiction the Office of the Secretary of Defense and the JCS to provide staff assistance, the military departments to prepare forces for effective prosecution of their missions, and the unified and specified commands to carry out specific military missions assigned to them. The JCS, rather than the departments, now exercised operational control.

(U) One of the most significant results of the Reorganization Act was that the Secretaries of Defense began to play an increasingly active role in decisionmaking. The Chairman of the JCS was specifically directed to keep the Secretary informed on issues upon which the JCS had not reached an agreement. In December 1959, Defense Secretary Gates was to state that he intended to meet personally with the JCS on such matters and to keep himself fully informed. If necessary, he declared, he would bring the matter to the attention of the President for his decision.[6]

(U) The Reorganization Act also served to strengthen the authority of the commanders of the unified and specified commands. Firm force structures for these commands were established, and were not to be altered by any military department unless authorized by the Secretary of Defense. The authority of the unified and specified commands was further strengthened through the establishment of clear-cut lines of command and communication to replace the cumbersome executive agency system.[7] The 1958 reorganization directed the unified commanders to communicate directly with the JCS on the preparation of plans, strategic and operational direction of forces, conduct of combat operations, and any function needed to carry on their missions. In addition, they could deal directly with the chief of a service on matters of sole interest to that service. Some of the unified commanders, for a time, appeared also to be under the impression that they were authorized to communicate directly with the Secretary of Defense, but in August 1959 the JCS reminded all commanders that the proper chain of command went through that body to the Office of the Secretary of Defense.[8]

C. COMMAND AND CONTROL OF THE POLARIS FBM SYSTEM

U
([redacted]) It was in the context of the new Defense Department reorganization that, in the latter part of 1958, Secretary of Defense Neil McElroy examined plans for the new fleet ballistic missile (FBM), or Polaris, and on the day before Christmas sent a memorandum to the JCS requesting that they furnish a concept for command and employment of the system. The JCS (in

JCS 1620/209) circulated the Secretary's memorandum to the services for their views. With this act, a major interservice dispute that had been simmering for some time broke into a boil. During 1958, it had become increasingly apparent that the Polaris nuclear submarine weapon system would become operational within the next two-to-three years. It was also clear to all, on the one hand, that the Air Force intended to marshal all its efforts to secure a single strategic command that would include Polaris, and, on the other, that the Navy would resist to the bitter end any attempt thus to consign its unique and prized strategic weapon to Air Force operational control.

(U) In January 1959, Admiral Arleigh Burke, CNO, forwarded to the JCS a comprehensive staff study that he recommended be used as the basis for the JCS reply to the Secretary of Defense. This study will be quoted below at some length, since it embodied the Navy's carefully developed views on the subject--views that were never basically departed from--and since it also contains the concept that was in the end victorious.

(U) The Navy study saw Polaris as a part of a "mix" of strategic weapon systems: "Its most significant asset is its high survivability, which enables it, independently of vulnerable warning systems, to insure inevitable retaliation, either immediately, or with deliberate response." The study then proceeded to emphasize--an emphasis that was underscored repeatedly throughout the study--the peculiarly naval character of the Polaris. It outlined a concept of employment of the system in the Norwegian-North Seas, the Mediterranean, and the Western Pacific, with immediate logistic and administrative support supplied by deployed tenders and other support "closely integrated with normal naval afloat and shore facilities." In regard to communications, the study stated:

> Communications must be reliable, secure and rapid, in that order of importance to this system.

> Direct communications will be provided from the Joint Chiefs of Staff at their regular or alternate headquarters to Unified Commanders to whom the forces have been assigned. The Naval Component Commanders of these unified commands will be provided with facilities for communicating with the submarines. Provisions also will be made for direct transmission of information on Presidential decisions.
>
> The programmed communication system includes the use of, and adaptation of, existing naval communication facilities and techniques. The primary method of communicating will be by utilizing the very low frequency, VLF, band. A chain of VLF stations is in being. Others are planned, and programmed.
>
> To enhance reliability through multiplicity, other techniques utilizing standard high frequencies will be in use simultaneously. Additionally, further developments in the naval communication system have been planned to increase the sensitivity to reception, increase speed of transmission and enhance the security.

U ([redacted]) In a section entitled "Command and Control," the study summarized the basic Navy philosophy in regard to Polaris (U):

> Operations of POLARIS forces must be closely coordinated and integrated with naval-strike, anti-submarine, submarine, mining and barrier operations in the same general sea areas to insure safety, to avoid mutual interference, to compound the enemy's intelligence problem, and to get the maximum effectiveness from the POLARIS system. This control and coordination of both offensive and defensive operations in the same general area will be exercised by the unified commanders through their naval component commanders.
>
> The POLARIS weapon system will operate in mutual support of other offensive systems under the targeting and coordinating concepts established by the Joint Chiefs of Staff.

U ([redacted]) The study concluded (U):

> Existing naval communications systems, and those planned and programmed, will support the POLARIS weapon system.
>
> The POLARIS weapon system should be assigned to unified commanders exercising operational

> command of major naval forces, and command should be exercised through their respective naval component commanders.[9]

The Navy then recommended that "the POLARIS weapon system initially be assigned to CINCLANT, and later to USCINCEUR and CINCPAC, as numbers permit, and in accordance with the current strategic concepts."[10]

(U) In commenting on the Navy position, on 5 May 1959, the Chief of Staff, USAF, weighed in with rather heavy rhetoric (U):

> The nature of general war in this period of unprecedented scientific advance requires more than ever before that this nation and the entire Free World place unique and crucial reliance on the effectiveness of U.S. strategic military strength. As one measure toward assuring greater effectiveness, it is essential that all weapon systems directed toward accomplishment of the strategic mission be planned for and controlled in a manner which will permit our over-all strategic effort to achieve the necessary effects in minimum time. Therefore, irrespective of the Service that develops and mans such systems, they should be assigned to a single unified strategic command responsible to the President, through the Secretary of Defense and the Joint Chiefs of Staff.

The Air Force went on to point out the absolute importance of unified command in executing the strategic strike mission, as well as the necessity for intimate coordination in target planning. For these reasons, insisted the Air Force, a unified US strategic command should be created to encompass Air Force bombers and missiles and the Navy Polaris.[11]

(U) The Army, Navy, and Marine Corps lined up in opposition to the Air Force proposal. The Chief of Staff, US Army, declared that the entire investigation was premature, and that the JCS should avoid making a hasty decision. They should take into account "the concept and command structure for our retaliatory forces as a whole in the 1962-64 time frame." Polaris should be assigned initially to commanders of the unified and specified commands exercising operational command of major naval forces. Once tried, proven, and attaining a reliable operating status, a careful review should be made by the JCS to determine the command structure that would make it most effective operationally.

(U) The CNO, for his part, reiterated in even stronger terms the Navy's basic recommendation from the earlier study. He stated further that the view of the Chief of Staff of the Air Force "clearly indicates that the Navy-Air Force divergencies on the concept of command stem from basic differences of philosophy which extend far beyond the scope of the questions asked" in the Secretary of Defense's memorandum. The Polaris, he declared, was designed as a "naval weapon system with a national strategic mission. It cannot, and was never intended to stand alone as a missile-submarine combination awaiting only a directive from any authorized source to fire. Intimate to and inseparable from the system are the many facets of naval operations at sea such as communications, and the close integration and coordination with other naval forces."

(U) Regarding coordination of target planning, the CNO stated (U):

> The Joint Chiefs of Staff have the responsibility for target coordination, as well as the power of decision to prevent gaps or undesirable duplications in target and weapon planning. The unified and specified commanders prepare their target lists in accordance with damage criteria established by the Joint Chiefs of Staff. Responsibility for the coordination of these vital atomic offensive plans properly belongs at this level. Although there may be some need for strengthening of procedures, this should not be interpreted as a requirement for basic changes which would tend to spread and weaken authority which properly belongs to and has been assigned to the Joint Chiefs of Staff.

The CNO also declared that the Polaris was to be targeted against "the industrial base and governmental control structure of the enemy--a relatively stable target system which readily lends itself to preplanning." Hence there would be no target coordination problems.[12] "Assignment of all weapon systems to a single command, on the other hand, would disrupt and alter the U.S. defense organization."[13]

(U) The Marine Corps favored making the JCS responsible for selection of targets, after which the unified commanders would assign them to attack forces. It feared that assignment of the strategic trageting functions to one commander would create a "monolithic" structure to control aircraft and land and fleet missiles, which would have great internal coordination problems and be vulnerable if communications were destroyed.[14]

(U) As a result of the disagreement among the services, a split-decision paper was presented to the Secretary of Defense. Secretary McElroy in the meanwhile had apparently concluded that a decision on command arrangements for the Polaris was not urgent, since the system would not become operational until late in 1960; on the other hand, it was clear that he intended to continue to press for improvement of target coordination procedures. In late July, following a briefing at Headquarters SAC on emergency war operations, he requested that the Chairman of the JCS present his views on the target coordination problem.

(U) In his reply, General Twining reviewed the history of coordination to date and declared that "not much more progress can be achieved under the present arrangements." He rejected modifications to the existing machinery, advocating instead fundamental changes to the system. The problem divided, he declared, into three aspects: (1) targeting policy, (2) development of integrated operational plans, and (3) control of strike forces. Regarding the first, he inclined toward the Air Force counterforce philosophy, believing the target system should include (in order of priority) long-range nuclear delivery capability, government and military control centers, warmaking resources, and population centers.[15] On the second question, the Chairman believed an integrated operational plan was definitely needed. He would charge CINCSAC with its development. Naval carriers should not be assigned any preplanned strategic targets, but when Polaris developed a significant operational capability, it should be brought into the integrated plan. On the third issue, the Chairman reasoned that if the above actions were taken, the question of operational control and problems of mutual interference would be simplified. The promulgation of a national strategic target list (NSTL) and a single integrated operational plan (SIOP) would, in General Twining's words, "provide a sound basis for necessary coordination of operational plans of local commanders with CINCSAC's plan."[16] Only after decisions on these issues were made, in the form of a command decision, and enforced, would there be progress in the area of target coordination.

U ([redacted]) The Chairman also sought the positions of the services on the issue of targeting coordination by requesting answers to 18 questions. There was wide divergence of opinion in the answers, as on the issue of command and control of Polaris. No action was taken, therefore, during 1959. In December 1959, Secretary McElroy left office, and the task of resolving the problem of target coordination fell to his successor, Thomas S. Gates.

D. ESTABLISHMENT OF JOINT STRATEGIC TARGET PLANNING STAFF

U ([redacted]) On 16 August 1960, after over a year of consideration by the JCS and two Secretaries of Defense, the issues of command and control of strategic systems and strategic targeting became the subject of a Secretary of Defense decision. It was a clear compromise, endorsing neither the Air Force position favoring a unified command, nor the Navy position that existing JCS machinery could do the work. In his decision, Secretary

Gates recognized CINCSAC's extensive experience in strategic planning and stated that the individual designated as CINCSAC, acting as the agent of the JCS, should collect at Headquarters SAC a team of experts from all services to prepare a plan for all US forces committed to the initial strategic strike effort. CINCSAC's duties as Director of Strategic Target Planning (DSTP) were to be an additional and separate responsibility to that as commander of SAC. On 18 August, Secretary Gates assigned Rear Admiral (subsequently promoted to Vice Admiral) Edward N. Parker, an expert in nuclear weapons and former head of the Defense Atomic Support Agency, as deputy to General Powers, in the latter's role as DSTP.[17]

(U) The initial Joint Table of Organization of 269 requested spaces was divided as follows: SAC resources--140 officers, 57 airmen, and 22 civilians; Army--10 officers; Navy--29 officers; Air Force--8 officers; and Marine Corps--3 officers. (Subsequent changes were made in the personnel authorization but these figures provide an indication of the division of responsibilities.) On 1 September 1960, the JCS approved the proposed organization, officially designating it the Joint Strategic Target Planning Agency (JSTPA); on 29 September 1960, the JCS redesignated the organization as the Joint Strategic Target Planning Staff (JSTPS).[18]

(U) After almost a decade of dissatisfaction with the procedures for coordination of the strategic offensive, a major forward step was thus at last taken. The shortcomings of the old target planning process had been made more glaringly obvious by the prospect of the imminent entry of a completely new strategic weapon system into the US inventory. Yet the JCS command structure was not in itself unified enough to push through a decision to change the process, at a time when the two services primarily involved--the Air Force and Navy--were strongly opposed to each other's position on basic principles. The Secretary of Defense, strengthened by his increased decision-making role under the Reorganization Act of 1958, therefore took it upon himself to resolve the problem. While his solution was in many respects a compromise, it finally created a new and unified entity, the JSTPS, to accomplish the strategic target planning function.

E. CONCLUDING COMMENTS ON COMMAND OF POLARIS

U ([redacted]) On 15 November 1960, the USS *GEORGE WASHINGTON*, the first US nuclear-powered ballistic missile submarine, departed Charleston, S.C., on operational patrol, carrying 16 Polaris missiles having a 1,200-nm range.[19] The vessel was, as the Navy had insisted, placed under command of CINCLANT. The Navy had won its battle against a unified strategic command hands down, after it increasingly became clear that the Air Force was isolated in the JCS. Indeed, fairly early in the dispute the Air Force appears to have retreated to diversionary tactics. On 4 April 1959, the Air Force had requested from J-2 an estimate of Soviet capabilities to react to SSBNs under the Navy's concept for deployment of Polaris. The resulting J-2 estimate was then nonconcurred in by the Air Force, on the grounds that the Soviets possessed greater capabilities and intent to neutralize Polaris than was attributed to them by the estimate. The Army and the Navy, however, supported the J-2 estimate. In October 1960, over a year later, the dispute barely broke the administrative surface again when J-2 recommended that the Air Force position on Polaris vulnerability be rejected by the Chairman JCS. The Chairman concurred with the J-2 recommendation--and six months later, in April 1961, the majority-approved estimate was finally forwarded to the JSTPS. Neither the initial frontal attack nor the retreating rear-guard action of the Air Force had been remotely successful, and we hear no more (at least for the time being) of, in effect, assigning Polaris to the Air Force.

(U) An interesting side incident, with less significance for strategic target planning than for relations between the unified and specified commands and the Secretary of Defense and JCS, also surfaced during this dispute. In early 1959, when the services were preparing their positions on command and control of Polaris, CINCSAC (General Power) asked the JCS to recommend to the Secretary of Defense that the weapon system be assigned to SAC "in view of its strategic capabilities." CINCSAC at this time also sent a similar letter directly to Secretary of Defense McElroy. General Power was in this case, according to the official SAC history, "exercising his new prerogative of going directly to the Secretary of Defense on matters involving strategic operations."[20] Air Force Headquarters was not impressed. General Power's letter was returned unopened to him, with an attached comment by Air Force Chief of Staff General Thomas D. White that "General Power should readdress his letter to the Secretary of Defense *thru* JCS and should put it in the straight official form in my opinion."[21]

(U) The concept of a single strategic command did not die with the failure of the Air Force campaign in 1959, and it was to be revived periodically in subsequent years. Thus, when President-elect Kennedy in 1960 was choosing his top personnel and planning his administration, prior to his inauguration, he appointed a task force under Senator Symington to study the organization of the Department of Defense; the Symington task force brought in a recommendation for (among other things) a unified strategic command.[22] To leap ahead in the story to 1970, a group appointed by President Nixon to study the organization and operations of the Department of Defense--the Blue Ribbon Defense Panel--again proposed establishment of a single strategic command. Neither group's recommendation was to make any visible headway, however.

(U) The particular form taken by the decisions on command of Polaris--and for that matter, on creation of the JSTPS--

appears to have been motivated largely by individual service considerations and by the dynamics of intra-DoD relationships, rather than by any specific concern for the Soviet threat. At second remove, of course, the Reorganization Act of 1958 was itself motivated to a considerable extent by the Soviet ICBM and space achievements, the implied increased threat to the United States, and the concomitantly shorter time in which to react to it. But a drastic Soviet strategic threat to the United States had been perceived throughout the 1954-60 period. From a logical standpoint, the Air Force case for a single strategic command and unified target planning was clearly a good one--and had been so throughout the period. In the final analysis, the Air Force failed to secure operational control of Polaris chiefly because the Navy was too powerful to be forced to release it. Under the circumstances, creation of the JSTPS appears to have been the minimum that the strategic situation called for, and the maximum that could be accomplished in practical political terms.

XV

WARNING OF STRATEGIC ATTACK

A. WARNING SITUATION AT BEGINNING OF 1954-60 PERIOD

1. Heritage of Confusion

(U) Whereas the nuclear strike forces, and preeminently SAC, had never had to concern themselves over their relative priority in US strategic thinking, the importance of warning and air defense had always been (i.e., since World War II) a matter of debate. In the first place, the two latter functions were usually considered together, and the fortunes of one tended to move with the other, though warning was required not only for air defense but for the strategic retaliatory forces and for the remainder of the nation's political and military elements. Second, there had never been a consensus regarding the necessity for an elaborate warning and air defense system, so long as the United States possessed overwhelming strategic power. Imbedded in the above controversy had been a further dispute as to the effectiveness that a warning and air defense system could realistically hope to achieve in the face of a determined strategic-nuclear attack, which created basic doubts as to the usefulness of investing billions of dollars in such a system to start with. Further US ambivalence had existed concerning the division of responsibilities between the Army and Air Force in air defense and warning, and also regarding the part that civilian and reserve elements should play in these functions.[1]

2. The Basic System in 1954

(U) It will be recalled from Part One (Chapter VIII), that at the end of 1953, 87 stations of the radar network were operational. Although 79 additional mobile and semimobile stations had been authorized, these were still being sited at the end of 1953 and were not expected to become operational until late 1954 and 1955. Only 3,500 of the 16,000 planned observation posts of the Ground Observer Corps (GOC) were operating, and of the 900,000 civilian observers the Air Defense Command (ADC) felt were necessary, only about 100,000 were active. Thirty-two GOC filter centers were operating around the clock, but most were vastly undermanned. Plans for increasing the range responsiveness and kill capability of the basic air defense system had been approved by the end of 1953, but delivery of the needed hardware had not begun.[2]

(U) Also as noted in Part One, Operation TAILWIND (an exercise conducted in July 1953, in which SAC sent 94 bombers against the air defense system at night, in bad weather, and under other conditions difficult for the defense) had demonstrated serious inadequacies in the system. The Alsop brothers, Joseph and Stewart, published the results of the test and accelerated their newspaper campaign against what they called the "big bomber mentality" in the higher levels of the Air Force.[3] The "New Look" military posture promulgated by the Eisenhower administration had been denounced by air defense advocates as a red herring designed to hide the fact that insufficient funds were being spent on air defense.

(U) Despite partisan complaints of foot-dragging, however, the air defense system was improved significantly during 1954. All 33 radar stations of the Canadian Pinetree line were completed and began operating. The Alaskan portion of the system, consisting of 1 control center and 10 radar stations, also began operating in early 1954. The modernization of the interceptor force was completed, and by the end of 1954 all 55 squadrons controlled by the ADC were equipped with jet, all-weather interceptors of the F-86D, F-89D, and F-94C types. Twenty-six Airborne Early Warning and Control (AEW&C) aircraft had been received and airborne surveillance off the west coast had begun. The differences with the Navy had been resolved and two radar picket ships were operating in the Atlantic. The Ground Observer Corps continued to have difficulty in recruiting and retaining volunteers, but the 1,400 observation posts that were fully manned and operated around the clock in the Skywatch area along both coasts and the northern border added to the air defense system a low-level surveillance capability that it would not otherwise have had. The ADC wanted more than 10,000 observation posts fully operational in the Skywatch area, but neither the general public nor, for that matter, the US political and military leadership was prepared to take the program that seriously.

(U) Organizationally, five loosely coordinated air defense systems had emerged on the continent by 1954. In the United States, the USAF's Air Defense Command operated the radar sensor network, the fighter interceptor squadrons, and the combat control centers. The Army's Antiaircraft Command operated what was in effect a second air defense system employing antiaircraft artillery, a few Nike missiles (which soon would replace the artillery at all installations), and a well-developed network of fire control centers and target acquisition radars. The top administrative headquarters of both the Air Force and Army systems were at Ent AFB, Colorado Springs. The main battle control center--called the Combat Operations Center (COC) was also located there. The Air Force had concentrated its radar stations and interceptors on the northern and coastal perimeters of the country, and its interior stations afforded unbroken aircraft tracking (though at high altitudes only) between defense areas and along logical approach routes. The Army sited its fire units around major military and industrial areas. The philsophy of the defenses was that interceptors would engage bombers as far from critical targets as possible and that both interceptors and Army weapons would engage those bombers that penetrated the outer defense. Defense Department directives and interservice agreements empowered the Air Force to assume operational control of all weapons during an attack. However, the Army maintained that the Air Force command and control network was insufficiently reliable to permit proper control of Army weapons in a crisis, and as a result the two services were, from a practical standpoint, poles apart on the issue of single control of weapons.[4]

(U) In Alaska, the unified Alaskan Air Command (AAC), established soon after the end of World War II, was responsible to the Joint Chiefs of Staff for air defense. Another system, deployed in the area of US interest in the Canadian northeast and Thule, Greenland, was similarly organized as the US Northeast Air Command (NEAC). In both areas, the unified commanders delegated the actual task of air defense to the USAF component, whose commander worked out mutually acceptable terms of antiaircraft participation with his Army counterpart. The Royal Canadian Air Force's Air Defense Command (RCAF ADC) operated the fifth of the air defense systems.

3. Creation of a Joint Command for Continental Air Defense

(U) After seven years of discussion, the Joint Chiefs of Staff in January 1954 authorized the creation of a joint command to control air defense. In doing so, the JCS had to overrule the Air Force, which wanted to retain its primary role in air defense as a service rather than a joint responsibility. The following excerpt from the Chairman's (Admiral Radford) memorandum to the service chiefs of staff makes it clear that he felt the time had come for the JCS to make some visible response to political pressures for greater unity and effectiveness in the national air defense system:

> In response to my request of 16 October 1953, the Chief of Staff of the Air Force submitted on 16 December 1953 in JCS 1899/89 a report on command arrangements for the defense of the

> United States which concluded that no change in the present command arrangements for air defense is advisable or necessary at this time.
>
> In an era when enemy capabilities to inflict massive damage on the continental United States by surprise air attack are rapidly increasing, I consider that there is no doubt whatsoever as to the duty of the Joint Chiefs to establish a suitable "joint" command.... The command will be composed of forces of each of the services and provide for the coordinated accomplishment of functions of each of the services for the air defense of the United States.
>
> In this connection I invite attention to the specific emphasis which has been accorded to the air defense of the continental United States by the President, the National Security Council and the Senate Committee on Armed Forces.

U ([redacted]) The Chairman then proceeded to recommend command and organizational arrangements that basically formalized existing understandings among the services. Thus, command should be under a senior general of the Air Force, with the Air Force as executive agent. But no provision was to be made for a joint command staff, and the terminology in the proposed new command's mission statement remained vague.

U ([redacted]) The Chairman's memo continued (U):

> The command should include all air forces regularly assigned to the air defense of the United States; land based early warning stations and sea based forces assigned to contiguous radar coverage; those antiaircraft forces of the Army involved in the permanent air defense of the United States. Furthermore, provision should be made for the exercise of operational control of other air units of the Air Force, Navy and Marine Corps and antiaircraft units of the Army and Marine Corps which can temporarily augment the air defense forces in event of emergency. Forces involved in the seaward extensions of the early warning system should continue under CINCLANT and CINCPAC, and early warning installations in Alaska and the NE Command under CINCAL and CINCNE, but should be responsive to the needs of the commander of the Air Defense Command as part of a coordinated system.[5]

(U) During the six months after January 1954, the nature and function of the new JCS command were determined and in August 1954 the Secretary of Defense announced the establishment of the Continental Air Defense Command (CONAD) at Ent AFB, Colorado Springs, with the order to be effective 1 September 1954. The CONAD was to operate as a joint command directly under the Joint Chiefs of Staff and was charged with responsibility for correlating and integrating the air defense capabilities of the three military departments into an air defense system responsible to the control of one military commander. As proposed by the Chairman of the JCS, all three services contributed forces to CONAD: the Army supplied the antiaircraft artillery assigned to the Army Antiaircraft Command; the Navy contributed its radar picket ships, assigned to a new organization known as Naval Forces CONAD; and the Air Force added the resources of the Air Defense Command.

(U) Many of the changes remained formal rather than actual, however, and it was not for another two years that truly significant strengthening of the air defense structure came about. In September 1956, as part of an overall revision of its unified command plan, the JCS appointed a separate commander for CONAD, clarified and strengthened his authority, and furnished him with a joint staff. At the same time (as we shall note later more specifically in connection with the DEW Line), the JCS transferred responsibility for the air defense systems in Alaska and the Canadian Northeast from the unified commands in those areas to CONAD. Firm authority over US air defenses everywhere on the continent at last became centered in Colorado Springs. Meanwhile, by early 1957 both Canada and the United States had agreed on the wisdom of integrating their air defense systems, and on 12 September the North American Air Defense Command (NORAD) was born with headquarters at Colorado Springs.

U ([redacted]) It is interesting to note that while the Air Force had failed in its attempts to acquire the Army's antiaircraft batteries in the immediate postwar years, the new CONAD, commanded by an Air Force officer, assumed operational control of this joint defense weapon. The interservice differences over control of these weapons were by no means completely resolved, however, and were to break out again in late 1955 in a dispute between the ADC and ARAACOM (Army Antiaircraft Command) over a CONAD plan for SAGE control of antiaircraft guns and Nike missiles.

U ([redacted]) Throughout these early years, and indeed throughout the period 1954-60, the basic priorities of OSD and the JCS in regard to the relative importance of air defense and the strategic strike force were never to change--i.e., air defense of the United States would remain secondary to the attack against the enemy. Thus, again and again we find the same statement of JCS policy as the "Concept of Operations" for defense of the continental United States:

> The concept for defense of the Continental United States is founded on the principle that in case of war the war objectives of the United States can be gained only by employment of the main war effort offensively against the enemy. In order to make available the maximum force for offensive employment, the United States will commit to defensive employment only that portion of its total force which is necessary to provide a reasonable degree of protection for the essential elements of the war-making capacity. Other less critical areas and installations will be relatively undefended except for the incidental protection offered by their proximity to defended areas or by units in training in the vicinity.[6]

4. Increasing Cost of the Air Defense System

(U) Of even greater significance for the eventual shape of the US aircraft warning and defense system was the fact that, as the mid-years of the 1950s passed, both the Congress and the Department of Defense felt increasingly burdened by the huge costs to which they had committed themselves in NSC Paper 162. The National Security Council, in deciding that the air defense system should be expanded and improved, had recognized that this decision would result in the expenditure of several billion dollars. At the time, however, there was the general feeling that money was no object, that this was a task that must be accomplished regardless of cost. As a result, a number of very expensive projects were quickly approved--DEW Line, SAGE, Texas towers, airborne early warning, additional ground radar, gap-filler radar, advanced interceptors, and BOMARC. During 1954 and 1955, the costs for these systems were not excessive because most of the items required were still undergoing development.

(U) By 1956, it was becoming possible to write firm contracts for the actual hardware involved and the costs of the various systems began to command more attention. When the total cost of the improved air defense system became apparent, it was obvious that the proposed expenditures would be too great in terms of current defense budgets. Nearly every aspect of the air defense program was to suffer reduction during 1956 as a result of the shortage of funds. Beginning with the budget for FY57, cost-cutting exercises became commonplace in the Department of Defense, the USAF, and the ADC. And Congress, which had not quibbled about costs in the years since the beginning of the fighting in Korea, began to show increasing interest in the matter.[7]

B. THE DEW LINE

1. Background--The Changing Soviet Threat

(U) The major addition to the aircraft control and warning system in the 1954-60 period was the construction of the DEW Line--an undertaking for which original planning had begun as early as 1948.[8] While the combined AC&W effort in Canada, Alaska, Greenland, and Iceland patched together some measure of warning capability against Soviet bombers of the B-29 type, it would not, according to intelligence estimates of the early 1950s, cope with the threat envisioned for the 1956-60 time period. Production of jet-powered Soviet bombers comparable to the B-47 was predicted for the late 1950s, with even speedier models in the offing. The faster the vehicle, of course, the sooner it would have to be detected over North America to brace air defenses for the coming attack. It seemed only reasonable to ensure additional warning by moving the air defense system even farther north and using the Mid-Canada Line and the others as backup.

2. Construction of the DEW Line

U ([redacted]) On February 1954, President Eisenhower formally approved the DEW Line project, for which the Air Force was made the agency of implementation. Much has been written regarding this unprecedented technological feat. Suffice it to say here that the line was to be built along the extreme boundary of the North American Continent, several hundred miles north of the Arctic Circle. With a view to achieving a minimum of two hours early warning of a Soviet supersonic bomber attack from every conceivable angle of the polar attack route, the joint US-Canadian planning committee generally endorsed a route across North America from Herschel Island to Padloping Island, Canada. On the western end, the DEW Line would become integrated with the radar network ringing Alaska, and thence extended from Kodiak to Hawaii by way of airborne and seaborne patrols furnished by Navy AEW&C aircraft and picket ships. Eastward, the DEW Line would be pushed into Greenland proper, then from Cape Farewell, Greenland, would be carried to the Azores by Navy AEW&C aircraft and picket vessel patrols. Certain changes in the seaward extensions were proposed by the US Navy and were eventually accepted: instead of Kodiak to Hawaii, the Navy proposed Midway Island to Adak in the Aleutians; and in the Atlantic, Greenland to Scotland in addition to the Azores. Also, a DEW West Aleutian segment, consisting of six sites approximately 100 miles apart, was eventually added.

(U) The main DEW Line sites numbered 57, spaced along the 69th parallel about 50 miles apart. The FPS-19 was to be the main search radar, with a detection range up to 160 nautical miles, at altitudes as high as 70,000 feet. The FPS-19 was limited at low altitude, however, and the FPS-23 continuous wave (CW) radar was created to fill the low-altitude gaps. Both radars were equipped with automatic alarming devices, both aural and visual.

(U) Construction of the DEW Line started in the spring of 1955 and ended in early 1957, which was an achievement of epic proportions when the natural obstacles are considered. On 13 August 1957, the Air Force formally took possession of the DEW Line from the Western Electric Company, the contractor for the project. While two-thirds of the decade of the 1950s had thus been consumed in planning, experimenting, engineering, and erecting the main segment of the DEW Line, the rest of the decade was spent operating and further testing DEW stations, simplifying procedures, realigning jurisdictional responsibilities, and stretching the DEW Line's reach, eastward and westward.

(U) Responsibility for the DEW Line had first been parceled out among several USAF commands, but was later to gravitate more and more to the ADC's control. Operational responsibility, prior to the DEW Line's completion, had been vested in the Alaskan Air Command for the western portion, and the Northeast Air Command for the eastern. When NEAC was deactivated in 1957, operational control was assigned to the ADC, and exercised by the 64th Air Division (Defense), which the ADC inherited from NEAC as of 1 April 1957. Next, the ADC on

15 February 1958 assumed operational control of the main segment in its entirety under the aegis of CINCNORAD. For its part, the Alaskan Air Command was limited by the USAF to operational control of the Alaskan and Aleutian radars, which comprised the land portions of the DEW western extensions.

(U) The DEW Line rearward communications--in their way as important as the initial radar detection--at first left much to be desired. NORAD complained that the preponderance of DEW Line communications traffic over the four main circuits of the Colorado Springs COC arrived garbled. A number of reasons were postulated as the cause: the absence of "repeat-back" radio facilities, of VHF backup equipment, of coordinated efforts among the 16 separate companies involved in transmitting messages between DEW main stations and Colorado Springs, and the lack of a published manual standardizing and systematizing procedures. In fact, so bad was the network connecting the Barter Island main station with Anchorage that no operational transmissions were passed over it during the last months of 1957.

(U) The next few months saw a major campaign to improve DEW Line rearward communications. These efforts were increasingly successful until at last the NORAD COC, once troubled with receiving as much as 98 percent of DEW Line transmissions in garbled form, by the end of 1958 received DEW Line data relatively free from this bothersome defect.

(U) A major test (code name RED SEA) was conducted 1 May through 2 September 1958 to determine the operational capability of the DEW Line. All told, 12 SAC aircraft of the B-52 and KC-97 varieties penetrated the DEW Identification Zone (DEWIZ) in 73 separate flights, at altitudes ranging from 2,000 to 45,000 feet. Not one slipped by the chain of FPS-19 search radars unnoticed. Seventy-two of the 73 flights were reported rearward, 71 of which were appropriately received by personnel manning the COCs at NORAD and the RCAF Air Defense Command.

(U) This is not to say that the test showed the system to be free from problems. Some lax operators reported nothing, and their targets were reported by others. As a result, it was recommended that a better training program be instituted for civilian operating personnel. Some of the worst difficulties, however, involved the automatic alarm systems of the FPS-23 and FPS-19 radars. During the test, both alarm systems triggered more false alarms than actual ones. In the case of the FPS-23, at times as many as four false alarms per minute went off, to the point that the operators lost confidence in the system. As for the FPS-19 search set, while it performed excellently in general, its alarm system actuated some 9,750 alarms in all, of which only 14 percent were assessed as genuine. Cloud formations, ice flows, and electronic interference, among other things, were believed to be the causative agents responsible for the false alarms. Once again, major development programs were set in motion to isolate the problems and secure solutions to them.

3. <u>DEW Line Extensions</u>

(U) On 1 April 1959, the Aleutian sites became officially operational, operated largely by USAF rather than contractor personnel like the remainder of the DEW Line. Joined on one side by the AAC's land-based radars ringing the Alaskan Peninsula, and on the other by the Navy-operated Pacific Barrier, the three systems in combination extended DEW Line coverage to Midway Island.

(U) During the construction phase of the Aleutian segment, the Navy's Pacific Barrier, which began operations on 1 July 1958 with four DEW picket stations and four AEW&C stations, compensated for the lack of radar coverage by patrolling from Midway to Kodiak Island. When the Aleutian stations became operational in April 1959, the Navy's Pacific Barrier assumed its regular Midway to Umnak coverage, estimated to comprise a distance of some 2,840 miles--practically the length of the DEW Line proper. The number of DEW picket stations, increased from four to five in 1958-59, was later reduced to two. Indeed, the Navy Department, for reasons of economy, in late 1960 sought to abolish the entire Pacific Barrier by early 1961, but the Secretary of Defense turned down the request.

U ([redacted]) Regarding the DEW eastern extensions, a USAF-Danish agreement was consummated on 19 March 1958 authorizing four sites in Greenland, to be separated by an average distance of 163 miles. Construction began in July 1958 and in October-November 1960 the Air Force accepted them, whereupon Western Electric commenced installing the electronic equipment. On 1 August 1961, the Greenland sites became operational. In the next month they were tested and all targets, whether employing chaff or not, were successfully detected and tracked out to a maximum distance of 200 nautical miles. Meantime, when the Greenland sites became operational, the Navy-operated Atlantic Barrier (which had worked four DEW and four AEW&C stations between Argentia, Newfoundland, and the Azores since July 1957) was switched to the Greenland-Iceland-United Kingdom (G-I-UK) configuration. Radar coverage thus extended from Greenland to Iceland, thence by water to the Faeroes Islands, and finally to Scotland.

4. Retrenchment and Contraction

(U) By late 1961, DEW Line operations had been stretched both ways to their utmost limit. They reached halfway around the world, from Scotland clear across the top of North America to Midway Island--close to 12,000 miles in all. The DEW Line thus lay fully manned and equipped: poised to detect, track, and report any bomber attacks aimed at North American targets. While refinements and improvements to the network continued, what was to follow in later years was for the most part retrenchment and contraction of DEW Line coverage.

(U) The chief reason, of course, was the shift in the enemy threat from manned bombers to ICBMs. The justification for DEW Line now became that of acting as a surveillance net calculated, simply by virtue of the differing speeds of aircraft and missiles, to delay manned bomber attacks planned to follow up an initial strike by ICBM weapons. While the ADC insisted that this modified role was essential to the nation's safety, it was considerably less than "the first line of strategic defense" status formerly enjoyed by the DEW Line.

(U) The DEW Line's changed role was perhaps best put by Secretary of Defense Robert S. McNamara:

> The surveillance, warning and control network constructed during the 1950s was oriented to manned bomber attack through the northern approaches over Canada and around the flanks through the Atlantic and Pacific Oceans.... But [during the 1960s], in any deliberate, determined attack upon the United States, we can assume that the enemy would strike first with his missiles and then with his aircraft. Thus, the arrival of the missiles would, in itself, signal the attack long before the bombers could reach their targets. As a result, large portions of the existing surveillance, warning and control system constructed during the 1950s are either obsolete or of marginal value to our overall defense.[9]

(U) As the 1954-60 period had begun, so it ended for the US aircraft control and warning system--in dissension, ambivalence, and yet a continued deep concern over US vulnerability to Soviet strategic attack. Just what, on the other hand, were the principal motivating forces for the direction taken in the US aircraft warning system is not easily answered. The massive initial efforts resulting from the October 1953 decision to expand US warning and air defense capabilities, of course, were clearly a reaction to the suddenly heightened perception of a dire Soviet strategic-nuclear threat to the United States. But the other forces that then began to act almost immediately upon the incipient warning system--i.e., the growing demands for economy by both the Congress and the Department of Defense, the severe technical requirements for equipment operating in an unprecedentedly rigorous environment, and the lack of either a political or military constituency for air defense and warning that could compete with the strategic forces for national resources--can be only indirectly related to the weapons, forces, and actions of the US strategic adversary. At the end of the decade, the changing threat--the anticipated "missile gap"--appears once again to have heightened the influence of a specific strategic interaction with the Soviet Union.

C. SEMI-AUTOMATIC GROUND ENVIRONMENT (SAGE)

1. Origin of SAGE

(U) Development of SAGE began in 1953 when the Air Force contracted with MIT's Lincoln Laboratory to set up an experimental automatic air defense command and control system on Cape Cod, Mass. Several long-range radar stations and gap-filler stations were netted into a small direction-center operation built around the Whirlwind I computer, With this test system, MIT scientists worked out the techniques of converting radar sightings to digital bits and feeding them back over special communication lines for storage in the computer. Programs were then devised that enabled the commander to draw from the computer the up-to-date picture he needed to make his battle decisions.

(U) By 1954, the experimental project had evolved into what seemed the answer to the data transmission and display problem. In January of that year, the National Security Council decreed that SAGE should be installed with all practicable speed and thereafter kept current with threat developments. On this authority, the Air Force ordered equipment and drafted plans for computerizing the continental US portion of the system.[10]

(U) The heart of the SAGE system was to be the direction center, consisting of a duplex computer and its attendant input, output, and display facilities. Initially it was projected that 46 such direction centers would be built, with highest priority accorded to those in the northeastern United States. It was anticipated that the first subsector would become operational by 1 January 1957, and the forty-sixth by 31 January 1961. The complete system was expected to cost $1.128 billion.[11]

2. Planning and Production Problems

(U) Even the early R&D planning for such an ambitious and technologically advanced system as SAGE experienced numerous unforeseen difficulties and revisions, however, and these problems did not end with formalization of an official program. Indeed, they multiplied. R. F. McMullen, an ADC historian, states:

> The Transition System Program [the name was changed to SAGE a few months later] of 18 January 1954, which called for 46 computerized direction centers divided among 16 sectors began to spring leaks soon after publication. Almost immediately it was discovered that the Washington and Chicago target areas were so divided that the responsibilities of commanders of adjoining subsectors were not adequately defined; the closely integrated Cleveland-Detroit target complex was divided among two subsectors; the small size of some subsectors unduly complicated weapons handover and radar overlap problems and the geographical irregularity of some subsectors made it difficult to display the area on a cathode ray tube. Revision of the January program began 15 February 1954 and produced a revised plan which called for 42 subsectors (two of which--covering Colorado, Utah, and Wyoming--would not be automated) and only nine sectors.... The locations of the first seven subsectors were also substantially changed.[12]

(U) Air Force approval of the 9 sector-42 subsector concept came on 17 May 1954 and work began on a SAGE Operational Plan, which was completed and made available to the ADC staff for comment in late November 1954. When the various comments had been written and studied, Maj. Gen. Kenneth P. Bergquist, DCS/O, ADC, noted "a general air of pessimism concerning the practicality of the Plan":

> There was skepticism concerning the ability of IBM to deliver FSQ-7 computers according to schedule, the continued lack of complicated components (such as Slowed-Down Video--SDV--and Fine-Grain Data--FGD) needed to make the system work, doubt about the timely availability of the necessary communications circuits and qualms about the readiness of Congress to provide the necessary funds. There was also some doubt that all 40 subsectors required automation.[13]

The final plan was published 7 March 1955, however, and submitted to USAF on 20 April 1955. The principal difference from the draft plan was a reduction from 42 to 34 subsectors (now known as sectors and given geographical names) and from 9 to 8 sectors (now known as numbered air divisions).

(U) Hints that the SAGE installation schedule contained in the ADC's SAGE Operational Plan of March 1955 might require revision began to be heard in the summer of 1955. A July USAF "management survey" of SAGE suggested that it might not be necessary to implement SAGE as rapidly as planned and that perhaps the ADC could absorb a proposed cut in FY56 funds without greatly harming the total semiautomatic system. The ADC replied that, on the contrary, it was essential that SAGE be completed as rapidly as planned in order that the threat posed by Soviet supersonic bombers could be met in a timely manner. "In the ADC view, the biggest danger SAGE faced was the lack of adequate funds."[14] Despite ADC protests, a revised SAGE schedule was prepared, which reflected reduced funding in FY56-FY58 and put off the proposed completion date of the total system from November 1960 (the date set in the Operational Plan) to March 1962. Essentially, the USAF's revised installation schedule was intended to reduce the financial risks involved in a concurrent development-production program.

(U) By the end of 1955, SAGE equipment assembly and building construction had begun. Production of the FSQ-7 computer was basically on schedule. However, technical problems with the AN/FST-2, the Coordinate Data Transmitting Set through which data gathered by long-range radars would be transmitted to the FSQ-7, slowed the delivery schedule by some six-to-nine months.[15]

3. Interservice Difficulties

(U) A major jurisdictional problem involving SAGE operations arose in late 1955 when CONAD attempted to write an operational plan for SAGE control of antiaircraft weapons.[16] On 15 December 1955, CONAD called a conference to discuss the question, explaining that such a plan was required by USAF, the JCS executive agent for CONAD. One of the representatives of the Army Antiaircraft Command (ARAACOM) immediately pointed out that ARAACOM and CONAD already had operational plans for the use of antiaircraft and wondered what type of plan it would be possible for CONAD to write. Another ARAACOM representative added that he would be unable to serve on the proposed working group in connection with the CONAD plan until he had checked the USAF-furnished guidelines with ARAACOM to determine their consistency with Army concepts of operation.[17]

(U) The planning project then came to an immediate dead end, because ARAACOM was unalterably opposed to any type of SAGE control over antiaircraft. "The USAF Directive," wrote Lt. Gen. S. R. Michelsen, ARAACOM commander, "furnishes detailed guidelines ... which embody principles with which this headquarters has expressed disagreement in the past, since they operate to weaken the capability of the antiaircraft weapons available to this Command...."[18] Thus was reopened the old controversy that had exacerbated Army-Air Force relations in the air defense field for many years. The crux of the difficulty lay in the impingement of the Air Force "area defense" concept, based on longer range interceptors, upon Army "point defense" based on short-range antiaircraft guns and missiles. An interceptor engaged in hot pursuit of a target might enter the airspace defended by antiaircraft, and interceptor crews were convinced that antiaircraft gun crews shot at anything airborne.[19] As a result, the Air Force had continually attempted to impose controls on the unrestricted use of antiaircraft, and the Army steadfastly resisted any restrictions on its freedom of action.

(U) Early in February 1956, the Secretary of Defense asked the JCS to provide him with an interpretation of the extent of CONAD's authority to control antiaircraft weapons. The JCS thereupon asked CONAD for a briefing on the matter and on 21 February 1956, Maj. Gen. Frederick H. Smith, CONAD deputy commander, presented the CONAD point of view, i.e., that it was imperative for antiaircraft weapons to be taken into the larger air defense family, where SAGE would assign targets and generally direct the air battle. The Army Signal Corps presented the case for divorce between SAGE and Missile Master (the Army's own control system embodying a long-range radar and automation).

(U) In April 1956, the JCS answered the Secretary of Defense's query with a split opinion, the Air Force backing the CONAD position and the Army and Navy taking a contrary view. Secretary of Defense Wilson came to a "something for everybody" decision in June 1956. He agreed that SAGE should have complete control of all weapons intended for air defense of the United States. At the same time, he agreed that the Army should have Missile Master and that SAGE commands should be relayed to antiaircraft batteries through Missile Master. CONAD raised no objections, and plans were made for the integration of Missile Master with SAGE.[20]

4. Beginnings of an Actual System

(U) During 1956, the SAGE system began to take physical shape. Two blockhouses were completed, four others were near completion, and construction was under way at six more. Two FSQ-7 computers were delivered and the production line moved into high gear. Delivery of AN/FST-2 coordinate data transmitters was about to begin. Meanwhile, however, the installation schedule for SAGE suffered a series of setbacks. The defense budget for FY58, presented to Congress in early 1957, recommended that air defense expenditures be "stretched out" over a number of years. The House subcommittee to which the budget was initially presented was itself particularly irritated over the sharply rising trend of operations and maintenance costs in the air defense field. As a result, the completion date for SAGE dropped back even further to September 1963.[21]

(U) The SAGE system first reached token readiness in 1958. The New York sector was declared operational on 26 June 1958, the Boston sector on 11 September 1958. Also, the Syracuse sector and the 26th Air Division (also at Syracuse) reached operational readiness on 1 January 1959. The first SAGE "module," involving control of the New York, Boston, and Syracuse sectors by the combat center at the 26th Air Division, was in operation at the end of the year. An area running from southern Vermont and New Hampshire to Delaware along the east coast and inland to Ohio was now covered by automated air defense.[22]

(U) The continued slippage of SAGE operational dates stopped in the latter part of 1958. A new schedule, approved by USAF in June 1958, indicated that the date for completion of SAGE could be moved forward from September 1963 to July 1963 through speedier construction and shorter test periods. By the end of the year, the blockhouses for 11 additional direction centers and 2 combat centers were completed. Seven other direction-center blockhouses were between 27 percent (Phoenix) and 99 percent (Spokane) completed at the end of 1958. As to the FSQ-7/8 computers, 14 systems had been shipped by IBM by the end of 1958 and production was on schedule. Production of the AN/FST-2 coordinate data transmitters was also on schedule.[23]

5. "Hardened" SAGE?

(U) Throughout 1958, however, planners for the SAGE system were increasingly confronted by a looming strategic fact that would not go away: on 4 October 1957, the Soviets had put Sputnik I into orbit and, suddenly, the intercontinental ballistic missile age had arrived. It was painfully obvious that SAGE could contribute nothing to the destruction of ballistic missiles. Moreover, SAGE blockhouses were conspicuous structures that dominated the landscape wherever they were located. A mere handful of enemy missiles, therefore, could severely cripple US defenses against the manned bomber. This problem now began to dominate the thinking of air defense planners.

(U) It was perhaps fortuitous that about this time--the spring of 1958--IBM announced the development of a transistorized, or "solid state," computer. By substituting transistors for vacuum tubes, the construction of a computer that would do more and occupy less space was possible. In view of the reduced space requirements, the possibility that ground environment control centers might be placed underground and hardened against ICBM attack began to be explored. In early May 1958, the ADC plans organization launched an investigation of the solid state computer.[24] IBM suggested that the new transistorized computer--designated the AN/FSQ-7A--be incorporated in the last 10 direction centers and also substituted in earlier locations, where it was deemed imperative. A study was made of the funding ramifications, as a result of which major changes in the installation plan were deemed feasible. An Operational Employment Plan (OEP) was then developed for nine "Super Combat Centers (SCC)" in the United States and one in

Canada. One salient feature of the SCC was that any center could perform the direction-center function for any or all of the other sectors within the SCC if necessary. In short, each of the nine hardened SCCs could conduct the detailed air battle anywhere in the country.[25]

(U) The hardened SAGE concept was approved by Headquarters USAF on 5 February 1959. Because of problems involving feasibility of occupancy by the desired dates, however, and lack of agreement on the desired degree of hardness for the centers, a revised OEP was issued on 19 June 1959. This deployment schedule called for the first SCC (the first of 10) to be operational by August 1963. But on 19 June, the Department of Defense also published its Master Air Defense Plan, which was considerably less ambitious. The DoD plan reduced the total program from 10 to 7 hardened sites. After a vigorous ADC and NORAD reclama, DoD placed a hold order on the purchase of all SCC equipment pending an evaluation of the total program.[26]

(U) When the DoD study was completed, about 1 February 1960, DoD recommended that SAGE assume an all-soft configuration, because of the cost of hardening. Once again there was a vigorous ADC-NORAD rebuttal, but the DoD concept prevailed. On 30 March 1960, USAF canceled all Super Combat Centers. Meanwhile, the basic SAGE system was completed in December 1961, when the Sioux City Direction Center became operational. McMullen states: "It was perhaps ironic that SAGE was completed at about the time plans for operating the ground environment following the destruction of SAGE became solid."[27]

D. WARNING OF MISSILE ATTACK

1. Ballistic Missile Early Warning System

(U) With the growing threat in the last years of the decade from Soviet ICBMs, the problem of attaining warning of a missile attack was given high priority. While much of the actual accomplishment in the missile warning program falls in the next period (Part III), most of the planning and a considerable amount of construction took place in the last years of this one. On 14 January 1958, the Secretary of Defense gave initial approval for the construction of the Ballistic Missile Early Warning System (BMEWS) being developed by the Air Force. It was directed that the Thule site be operational in 1959 as a first priority, a site in Alaska as the second priority, and a site in Scotland as the third priority. Interim computer and display facilities at NORAD were to be activated for the Thule station and later expanded to provide capability for the full system. Scanning radars were designated for initial site capability pending development of tracking radars, which would later be installed to supplement the target verification and prediction capability.[28]

(U) On 9 May 1958, after extensive reviews of costs and system designs, the Secretary of Defense directed the Air Force to proceed with the radar stations at Thule and Alaska and a computer and display facility at NORAD. The total cost for this portion of the system was estimated at slightly over $800 million. Authorization to proceed with the station in Scotland was deferred pending negotiations with the United Kingdom for a joint venture.[29]

(U) On 13 October 1958, Headquarters USAF approved the BMEWS final operational plan. The total system would consist of three radar installations, associated rearward communications, and the computation and display facilities in NORAD headquarters. Operational target dates of September 1960 for Thule and September 1961 for Clear, Alaska, were now established.

(U) The program remained in an unsettled state throughout 1958-59, however, largely because of funding difficulties. It became necessary for the Air Force to aim at only a limited operational capability in order to remain reasonably close to the projected target dates. The time of construction of the planned third site, to be located at Fylingdales Moor in the United Kingdom, was also thrown into doubt. By June 1959, after much discussion, DoD confirmed the USAF proposal for an interim BMEWS program to include all three sites and to be carried out in two phases. An interim display facility was approved for installation at the existing NORAD combat center, to be operational in September 1960 and used until the hardened NORAD combat center was completed, possibly in 1963.[30]

(U) On 30 September 1960, the Thule BMEWS site did reach IOC, as scheduled. This constituted a major step toward a warning capability against missiles, since the Thule location covered four sections with a total azimuth scan of 160 degrees. Also in September 1960, work began on installation of a SAC display warning system, with three display consoles to be eventually installed at SAC headquarters. Plans for sending ICBM raid information directly to SAC from the BMEWS site were disapproved by Headquarters USAF, however; instead, SAC would receive data from NORAD.[31]

(U) In the meantime, experience was being gained with the system. On 5 October 1960, moon echoes appeared in one of the Thule fans and were mis-identified as a potential missile threat. However, impact points were not predicted, and both NORAD and SAC treated the alarm as false. Subsequent investigation showed that it was indeed radar echoes from the moon that had caused the false alarm. Improved "gating" procedures --i.e., means of filtering out interference or aurora from a radarscope or system--were later instituted in order to prevent another false moon alarm.[32]

2. Bomb Alarm System

(U) The Bomb Alarm System (BAS) was designed to detect detonations, locate precise blast locations, and indicate the intensity and pattern of attack. The complete system, leased from the Western Union Company, depended upon three optical sensors sensitive to thermal radiation and located within 11 miles of each target site. Each sensor was connected to a signal generator, which was linked by telegraph line to one of six remotely situated control centers. In turn, the control centers were integrated with the system users.

(U) The bomb alarm prototype system began operation in March 1960. Covering 97 targets in the continental United States--including SAC bases--and the Thule and Clear BMEWS sites, the BAS was accepted by the Air Force on 10 February 1961.[33] Like so many of the other highly sophisticated systems in the US command, control, and warning setup, the BAS was later to be plagued by a series of outages and false alarms. It was also dependent on public power sources, and thus limited in its survivability as an operating system.

3. Other Sensor Systems

(U) Other major sensor systems being developed at the end of the decade of the 1950s were the Satellite-Missile Observation System (SAMOS), which would use both photographic and electromagnetic sensing satellites to collect intelligence data (contributing to strategic warning), and the Missile Defense Alarm System (MIDAS), a system for establishing a series of reconnaissance satellites in polar orbit. The MIDAS satellites would carry payloads consisting of infrared-detection scanners capable of detecting emanations from ballistic missiles as the missiles rose above the atmosphere, thus providing tactical warning of attack.[34] On 26 February 1960, the first MIDAS flight test vehicle was launched from the Atlantic Missile Range, and on 24 May 1960, MIDAS II was launched successfully.[35]

E. SUMMARY COMMENTS ON SAGE, BMEWS, AND OTHER SENSOR SYSTEMS

(U) The story of SAGE is essentially that of a technologically advanced system, whose pioneering achievements were to be of incalculable benefit to the entire US computer and defense industry, that was nevertheless behind the times in regard to the strategic environment. It became increasingly difficult to justify such an immensely expensive air defense system that only began to attain partial operational status after the Soviets had demonstrated an initial ICBM capability and that would not be finally completed until the Soviets were expected to have a substantial number of intercontinental missiles in their inventory. The initiation of SAGE stemmed directly from the growing Soviet strategic bomber threat, and SAGE's decline can largely be attributed to the ICBM's replacement of the bomber as the major threat to the United States. The BMEWS, the Bomb Alarm System, SAMOS, and MIDAS were all initiated in recognition of the new environment in which missiles would be the dominant threat and warning would be a matter of minutes at best. Increasingly, moreover, such systems were to reflect a strategic environment in which the United States was almost totally dependent upon advanced technology and split-second procedures for warning indications whose implications human decisionmakers were nevertheless not fully prepared to accept.

XVI

NATIONAL COMMAND POSTS

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(●) The Air Force command post in the Pentagon, established at the time of the Korean war, constituted the first major step toward a national command post. Subsequent US governmental concern with such a center arose from the same environment that produced a number of other measures, in late 1953 and early 1954, to heighten the nation's preparedness against strategic air attack. In February 1954, President Eisenhower had approved the NSC-recommended DEW line, and soon afterwards Canada had agreed to build a second line of radars along its 55th parallel to close possible gaps in DEW coverage and provide more precise headings on enemy penetration. The ADC headquarters operations center in Colorado Springs would assess the meaning of DEW sightings and, on suspicion or confirmation of attack, simultaneously alert the SAC control center in Omaha and the Air Force command post in the Pentagon. While the ADC and SAC alerted their forces, the Pentagon command post would pass the warning to the President, the Secretary of Defense, and the Joint Chiefs of Staff. If the intruding aircraft were positively identified by the ADC as enemy forces, air defense weapons were authorized to be utilized immediately against the attackers. Meanwhile, SAC bombers would fly to launching points and there await orders which only the President could release. In accordance with this policy, the National Security Council in 1955 officially designated the Air Force command post as the nation's air defense warning center. As T. A. Sturm, an Air Force historian, states:

> This did more than merely confirm what the post had been doing all along. It stimulated a

greater sense of urgency among non-defense agencies in Washington toward their emergency action preparations. This in turn eased the way for JCS and the Air Staff to improve and test communications between the command post and all agencies and military commands that had important defense responsibilities.[1]

A. THE AIR FORCE COMMAND POST

(U) While the Air Force command post had almost from its inception in June 1950 been serving as the *de facto* national air defense warning center, the post-Korean emphasis on massive retaliation and defense against Soviet bomber attack had nevertheless shifted the priority for funds, personnel, and equipment to the ADC and SAC. These two commands, in turn, had eventually established command posts of their own that surpassed that of Headquarters USAF in both accommodations and effectiveness. In late 1954, the chief of the Air Force command post complained that the war room had "deteriorated into a show place tending to stagnate around long-range presentations." He urged that the operation be staffed and equipped so that it could, if occasion arose, "depict the current operational situation of the major combat commands during actual hostilities."[2]

(U) This was a period of considerable interservice sensitivity, however, regarding the precise means and locations through which command and control of the nation's combat forces would be exercised in wartime, and Air Force officials did not feel confident enough to attempt to push through OSD a request for funds for the costly and major improvements that would have been required in the Air Force command post system. Instead, such limited improvements as were feasible with existing funds were made in staff planning and attack warning communications, and meanwhile preparations continued for emergency evacuation of the Air Force Battle Staff to the JCS Alternate Joint Communication Center (AJCC) at Fort Ritchie, Md. In September 1955, the Air Force did replace the command post's outmoded telephone system with a modern switchboard with 100 long-distance lines and room for more, so that 20 people in various parts of the country could hold as many as four conferences at a time. T. A. Sturm refers to this modernization as evidence of the "ambiguous national command and control objectives" at the time and notes that the Air Force Directorate of Operations declared the added equipment was far more than needed under "the present approved concept of operation that direction of a future war" would come from the Fort Ritchie site. However, he continues, "since the switchboard backup equipment was being provided and maintained by the telephone company at no cost to the Air Force until a line was activated, the post had at its disposal a long line capacity which required very little expenditures of resources."[3]

(U) In December 1955, the command post assumed greater importance when the JCS adopted a more reliable procedure for holding conferences in an emergency. It was decided that during duty hours the Secretary of Defense, the JCS, and operations deputies of the services would go immediately to the USAF command post for emergency sessions before carrying out evacuation plans. For after-duty hours, the JCS directed the Air Force to make the command post the hub of a communication system that would permit key figures to hold telephone conferences while in their individual homes.[4] In December 1956, the USAF facilities became in effect a JCS command post for sending messages that implemented the decisions made at these after-duty telephone conferences.[5]

(U) This establishment of the Air Force command post as the crisis alert link between the JCS and joint commanders around the world foreshadowed later changes that were to be made after the 1958 reorganization in NCA relations with the joint commands. President Eisenhower had repeatedly expressed his concern over the time that elapsed before field commanders received operational orders in a crisis. The new procedures now required the command post to augment communications in such a way that the Joint Chiefs could go directly to the joint commanders, bypassing executive agents. As a result, a dangerous rigidity in US top-level communications was eliminated, and at the same time a further dimension in US national command and control was created:

> While nuclear attack would remain the primary threat, it became increasingly accepted that joint commanders would frequently encounter non-nuclear crises which would require immediate, secure, and constant communication directly with the Joint Chiefs. This meant, in turn, that the Ft. Ritchie site alone could not afford the central, decisionmaking facilities required to satisfy this broadened concept of national command and control requirements--not unless the Joint Chiefs and other military leaders were prepared to deploy there every time a crisis occurred.[6]

These new considerations led the Defense Department to initiate studies and actions that were to contribute to the decision made during the 1958 reorganization to open a direct operational channel from the President to the Secretary of Defense and then through the Joint Chiefs to the joint commands, after the Congress and the administration had been shocked into a reappraisal of top-level command and control procedures by Soviet space and ICBM advances in 1957-58.

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([redacted]) The new philosophy of command and control in crises less than all-out war was soon to be exercised. In April 1958, Communist-inspired demonstrations against Vice President Nixon in Caracas prompted President Eisenhower to dispatch four companies of US troops to the Caribbean to help the Venezuelan government protect the Nixon party, if necessary. The Air Force command post installed communications from the Joint Chiefs' conference room to all service operation centers in the Pentagon, and, since only the Air Force had direct landline contact with military bases in the Caribbean, it generally

functioned as the JCS communication center throughout the affair. The Venezuelan episode was followed by the Lebanon and Taiwan crises of July-September 1958, which uncovered serious defects in US nonnuclear war preparedness and worldwide communication reliability and security.

B. THE JOINT WAR ROOM

U ([redacted]) Up to this time, Air Force command post personnel had also staffed and operated for the JCS what came to be called the "Joint War Room Annex," established by the JCS early in 1952. In May 1957, the JCS considered setting up a war room of their own and using it for emergency sessions instead of the USAF command post, but the Director, Joint Staff, decided that existing facilities and procedures were adequate. After the 1958 emergencies, however, the Joint Chiefs assumed operational control of the annex. Finally, in August 1959, the JCS established their own Joint War Room (JWR) and, during the next year, acquired the trained staff to operate it. In December 1960, although continuing to provide JWR communications, the Air Force command post formally relinquished its joint and national duties to the JWR and became in fact, as well as name, a strictly USAF agency.[7]

U ([redacted]) At the time the JCS decided to establish their own JWR in the Pentagon, a highly controversial issue arose as to whether the Army should procure, install, and maintain JWR communication-electronic equipment. The Army, which was responsible for communications at the AJCC and certain other agencies in the Washington area, argued that JWR communications had to be compatible with its systems. The Air Force was adamantly opposed to Army control over the JWR and to the prospect that USAF communication systems supporting the JCS would have to be routed through and controlled by Army facilities. The Air Force argued that JCS communication with the unified and specified commands was the issue, and not compatibility with the AJCC. It pointed out that the USAF command post had a great deal of experience in the kind of communications required, and that the Air Force had a larger network than the Army. Following the time-honored pattern of the services in a dispute over functions (i.e., the function should if possible be assigned to the service itself; if not possible, the function should be a joint responsibility; and last choice was assignment to another service), the Air Force argued that since the JWR was to be a national command post for strategic direction of the unified and specified commands, its communications systems should be a joint responsibility of all the services.

U ([redacted]) The issue was resolved in December 1959 in favor of the Air Force, and in 1960 the Air Force was assigned the task of designing and installing the JWR communication-electronic facilities for the JCS War Room. As noted above, at the end of 1960 the JWR replaced the USAF command post as the primary emergency and wartime command and control facility, with communications systems compatible with those of the major Air Force operating commands.[8]

C. THE ALTERNATE JOINT COMMUNICATION CENTER

U ([redacted]) The Soviet acquisition of a nuclear capability in 1949, and the further leap to thermonuclear weapons in 1953, created for US political and military leaders a dilemma that was never really to be resolved--how to maintain top-level command and control of US strategic offensive and defensive capabilities when the base for such control, the national capital, was subject to sudden and total destruction in wartime. Throughout the decade of the 1950s, the nation's leadership failed to settle fully on either of the two possible answers to the dilemma--"emergency evacuation" or "stay set and take it." As noted in Part One, an Alternate Joint Communication Center (AJCC), with elements both above and below ground, had been established by the JCS at Fort Ritchie in 1953, to serve as an alternate headquarters in the event Washington became untenable. But even though it became official policy that, if the President declared a strategic alert and the JCS placed the AJCC in operation, the Battle Staffs of the services, the JCS, the Secretary of Defense, and perhaps the President would relocate to the underground site and direct the combat forces from there, numerous critical questions for effective command and control remained unanswered.

(U) Some of the most troublesome of these questions involved the precise set of circumstances that would trigger the activation of the AJCC, the amount of warning that might feasibly be expected before an attack, just who would go to the AJCC and how they would get there, whether the AJCC and (even more significantly) its communications would be likely to survive a direct attack, and whether control of combat forces could be maintained in a post-attack environment. All these questions remained subjects of dispute throughout the decade, until the importance of the AJCC itself was reduced by the arrival of the missile era.

(U) In 1954, however, a vast amount of time and effort were devoted by OSD, the JCS, and the services to the detailed planning of the procedures and actions required to operate from the AJCC. To make this planning even approximately reasonable, favorable assumptions were usually necessary regarding warning time and the speed of presidential decisions. Thus, in May 1954, the Secretary of Defense wrote as follows to the JCS and the services:

> It is considered that we should continue to place primary reliance on the predesignation of field activities to assume command. In view, however, of planned increases in warning time and the possibility that the President may direct an emergency relocation based on strategic warning, consideration should be given to the development of plans for the movement of all essential activities of the Department of Defense from the Washington area in advance of an actual attack.[9]

One-quarter of the space in the AJCC was allocated to OSD and the JCS, and one-quarter each to the Army, Navy and Marine Corps, and Air Force. This space in turn was suballocated, which required an almost infinite number of time-consuming decisions to determine the personnel and functions authorized to occupy the all-too-limited space.

U ([redacted]) Beneath the problem of space assignment at the AJCC resided a much larger question concerning both the nature of the war to be fought and the roles of civilian personnel and agencies in the strategic direction of that war. As early as December 1953, the JCS had suggested that the President and certain designated advisers might wish to go to the AJCC in an emergency, and it was generally assumed that the President or his representative might under some circumstances wish to take up that option. The presence at the AJCC of any sizable increment from OSD was a different question, however. When this issue surfaced several times in conceptual planning for operation of the AJCC, the JCS stated their policy firmly, as follows:

> Current facilities at the AJCC are not adequate to provide both a center for strategic direction of U.S. armed forces and a center for the overall operations of the Department of Defense.
>
> A concept which will insure continuity in the joint strategic direction of the U.S. armed forces in wartime should be confirmed.[10]

For the JCS, the AJCC was a combat center from which the strategic war would either be initiated or continued, and the decisions pertaining to the overall direction of that war were military decisions--after, of course, the President or his representative had given the initial approval. The eventual statement of the official DoD concept for the AJCC was something of a compromise, but in essence it accepted the JCS position:

> The Alternate Joint Communication Center is a facility in a protected location, under the management service of the Army, for use as an

emergency relocation site by an element of the Office of the Secretary of Defense, other elements of the J.C.S. organization, and staff groups representing each Service, to insure continuity in the joint strategic direction of the U.S. armed forces in wartime.[11]

(U) In October 1957, the JCS approved a plan for a Joint War Room at the AJCC through which they would exercise strategic direction over the unified and specified commands if the Pentagon were destroyed. The Secretary of Defense in April 1958 approved the inclusion of the JWR in the program for new construction. After the Reorganization Act of 1958 strengthened the position of the JCS, the AJCC became in effect the emergency command post of the Armed Forces.[12]

(U) The issue of space allocation in the AJCC for non-service and JCS personnel was to surface again, however. In September 1958, the Secretary of Defense approved plans to assign AJCC space for a member of the executive branch (not necessarily the President). The thrust of this decision, of course, was in accord with JCS philosophy. But when OSD proposed on several subsequent occasions that it receive additional space, JCS and USAF planners became increasingly perturbed. Greater OSD representation at the AJCC would have to be at the expense of staff support for the JCS, as well as the services. It was feared that moves were afoot to change the character of the AJCC from a JCS operational command post to an OSD support facility. The Air Force maintained that people should be located in the AJCC according to the direct contribution they made to wartime strategic control of combat forces. To each OSD request, the JCS replied that the wartime use of the AJCC had to be limited to those who directed the combat forces.[13]

(U) It was becoming apparent to many in the administration, however, that, with the Soviet acquisition of an intercontinental missile capability, the decisions made in the AJCC (if any were made there at all) had much less chance than formerly of being straightforward military implementations of presidential directives. If there should be a Soviet missile attack on Washington without tactical warning, the staff in the AJCC --whether prelocated or moved there on strategic warning-- might be required to make what were in effect national decisions. For in spite of the optimistic assumptions regarding the possible presence of the President at the AJCC, there was also an increasing recognition on the part of the JCS that in the real world the President would probably not move to the AJCC (leaving his regular advisers) in the absence of fairly unambiguous warning--and that such warning might not be forthcoming. And whatever happened, the Joint Chiefs themselves believed that they must remain close to the President. Thus, as early as 1954 we find the JCS stating:

> In order that necessary military decisions may be formulated and implemented, a close and intimate relationship must exist between the principal military planners and advisors (the JCS) and the President and civilian heads of various Executive Departments. The Joint Chiefs of Staff, in particular, should be immediately available to the President, the National Security Council and the Secretary of Defense whenever their professional advice and assistance is required. Whether in peace or in an emergency situation, wherever the Executive Office of the President is established, the Joint Chiefs of Staff should be located in close proximity. Present indications are that the President will continue to maintain his office in Washington until such time as an emergency develops. During an emergency he will probably utilize Camp David initially as an alternate headquarters. Until such time as it is determined by proper authority that the United States is faced with a grave emergency, and alternate headquarters and emergency relocation plans are placed in effect, it is considered that the Joint Chiefs of Staff should remain in Washington.[14]

(U) It must be remembered that the underground site at Fort Ritchie was intended to be the *military* command post for strategic direction of the war. It had been expected that most of the civilian agencies requiring a protected site during a nuclear emergency would be located at High Point in the Blue Ridge Mountains. But if the President was going to remain in Washington or at Camp David until the very last minute, and if most of his advisers (including the JCS) were to remain near him, then the center of governmental decision would fairly clearly be where the President was--and not at High Point. On the other hand, if the President relocated to Fort Ritchie, than he would probably want his civilian, as well as military, advisers near him. In any event, it began increasingly to appear that only one emergency center, if any at all, was going to have substantial influence on US national decisions in an emergency--and that was the military command post at Fort Ritchie. Moreover, if the Secretary of Defense himself expected to have any significant influence on military operations during an emergency (and the 1958 reorganization had increased his decision-making role), then he too would want to have members of his staff available for consultation. In short, the question of space allocation at the AJCC raised the entire issue of civilian influence on military direction of the war.

(U) In 1960, the JCS approved a limited number of spaces in the AJCC for the National Security Council staff, and then took up the question of providing room for other agencies at the Center. President Eisenhower suggested the possibility of granting space to the State Department, and as a result the JCS began to review requirements for additional space and construction. Since available funds were slated primarily for hardening, additional construction to provide more space was delayed.[15]

(U) During the latter half of 1960, Secretary of Defense Gates proposed that the JCS give additional space and facilities to the White House Office of the President and to the State Department. The JCS replied that military requirements made this impossible.[16] Gates then directed the allocation that he had requested, and the space for the JCS and services was readjusted accordingly. In January 1961, the JCS submitted a plan limiting the number of AJCC occupants to 3,000. In May, however, the Director, Joint Staff, informed the JCS that the number had to be cut to 2,200 until further construction was completed. The Joint Staff and the services then reexamined space requirements and submitted a minimum number for operating on an austerity basis.[17]

(U) Late in 1959, the Air Force revived its 1952 proposal that the AJCC be activated and constantly manned with permanently assigned and experienced personnel. After considering current national intelligence estimates and requirements for personnel and support, the JCS decided not to approve the proposal at that time. On 20 October 1960, however, the JCS accepted the Air Force view and directed the Joint Staff to prepare plans for establishment of a Joint Alternate Command Element (JACE) that would be prelocated at the AJCC to ensure survival of military leadership. When completed, the plans called for full activation of the JACE on 1 July 1961. There would be five battle staffs and a command and administrative section, or a total of 228. The battle staffs would be stationed in the Washington area and rotate to the AJCC for temporary duty. On 11 July the JACE became operational.[18] In the interim, on 13 April, JCS Chairman Lyman L. Lemnitzer appointed Brig. Gen. Willard W. Smith, USAF, as Chief, JACE.

D. MOBILE COMMAND POSTS

(U) There was no guarantee, of course, that the AJCC itself would survive in a nuclear war, and by the end of the 1950s it was recognized that increased missile accuracy--and therefore a rapid increase in the vulnerability of the AJCC--was only a matter of time. In September 1960, the Winter Study Group suggested interlocking the various fixed command posts so that one succeeded another as necessary, as well as backing them up with a mobile center to ensure survival and continuity of command for the President, the Secretary of Defense, and the JCS. A month later, WSEG Report 50 also called for a coupled command system (discussed in Chapter XVII). This would consist of primary fixed command centers and one or more mobile centers closely coupled to them by communications and a bomb alarm system. These mobile centers would assume control once the bomb alarm data told them that the fixed centers were no longer operating.

(U) There was no question, of course, of a mobile center duplicating the capabilities of a large, fixed facility like the Pentagon or even the AJCC. But at the end of the 1950s, with the threat of an intercontinental ballistic missile attack and little or no warning, the problem was increasingly seen as one of guaranteeing retaliation against a surprise attack, and hence strengthening deterrence. To ensure such authorized and directed retaliation, only three functions would be required: the decision as to whether the situation warranted such action, the selection from preplanned operations of the appropriate actions, and the transmission of short execution messages to all strategic forces. These functions did not require large numbers of people or large amounts of equipment and could be contained in modern mobile vehicles.

U
([redacted]) The Weapons Systems Evaluation Group maintained that a soft mobile center had a better chance of surviving than a hardened fixed site, whereas the Air Force felt that primary reliance should be placed on the latter, even though the hard sites should be backed up by alternate mobile centers. With both hardened and mobile centers, the Air Force believed that the US command structure could not be knocked out by the Soviets at a single blow. To USAF planners, an airborne command post was clearly the best type of mobile center, and they believed that successful tests of airborne command communications, both at Headquarters USAF and SAC, supported the conclusion.

U
([redacted]) In November 1960, Admiral Burke presented the Navy proposal for a mobile center. He advocated use of the cruiser USS *Northampton* as an alternate National Emergency Command Post Afloat (NECPA), arguing that a naval flagship would not only be the least vulnerable emergency post for the President and his key advisers but could also be an alternate command post if those officials were caught unawares by a surprise attack. The ship would cruise on the Chesapeake Bay and on random routes in coastal waters, communicating with facilities ashore by various types of high frequency networks. The President and his staff would move to the ship by car, helicopter, speedboat, or submarine. On 1 December this proposal was referred to a JCS study group for analysis.

U
([redacted]) The Air Force was highly critical of the Navy's proposal, maintaining that a nuclear attack that might destroy the AJCC might cover the *Northhampton*'s cruising areas as well, and also that the cruiser would be vulnerable to surveillance and attack by enemy submarines, trawlers, and armed reconnaissance aircraft. While the JCS were considering the Navy's concept, the Air Force readied its own proposal, the National Emergency Airborne Command Post (NEACP). On 14 December, the Weapons Board of Headquarters USAF recommended that the Air Force propose the NEACP to higher authority, and on 26 January 1961 it was submitted to the JCS.[19]

U
([redacted]) In presenting the USAF argument, General White noted that communications equipment was already available for transmitting execution orders from the NEACP to field commands and other government agencies. Either before or after tactical warning, the President and key officials would go to an airfield by helicopter and be airborne and out of the Washington area within 15 minutes (the time expected to be available from warning by BMEWS). The NEACP would orbit an area west of the city until the initial strikes were over, then proceed to a surviving fixed site as quickly as possible. While in flight,

it would contact ground stations and SAC's airborne command post by ultra high and very high frequency, single side band communications. Three aircraft (that could be bought off-the-shelf) would be needed on 24-hour alert.

(U) On 9 February, the JCS study group decided that mobile national emergency command posts were sufficiently practicable to warrant further study. It not only considered using ships and aircraft but also a train that the Army had fitted out as a mobile command post. On 22 March, the JCS decided that command posts both afloat and airborne were feasible. In the preliminary phase, the cruiser *Northampton* would be used as a command post afloat and modified KC-135 aircraft would be used for the airborne command post.[20]

E. ENSURING COMMAND POST DECISION IN THE ABSENCE OF THE PRESIDENT: EXPLICIT RETALIATORY DOCTRINE

(U) The actions considered above, decreasing the vulnerability of the national command and control system by hardening or mobility, would increase the chances of survival of command authorities. But if the President or his successors were not able to man the alternate centers, there would be no assured continuity of command. In view of the political leadership's vulnerability to attack and the nation's requirement for political control over military decisions, the JCS raised the question of an explicit retaliatory doctrine.[21]

(U) Under this concept, subordinate commanders with operational control of nuclear weapons would have available to them systems that provided warning data and displays of nuclear detonations in an enemy attack. This equipment would tell them why command channels were interrupted and when the enemy attack reached a point that should trigger an agreed response--i.e., specific measures previously agreed upon by political-military leaders. The JCS believed that adoption of such an explicit retaliatory doctrine would act as a restraint upon the Soviet

Union; on the other hand, if the restraint failed, then the United States would be assured of a more closely coordinated retaliatory response.

(U) In addition to an explicit response, the JCS proposed a simple, direct, and clear national chain of command in order to ensure effective command and control arrangements during a period of grave peril. As the system stood in 1960, the President, the Secretary of Defense, and the JCS would participate in reaching a decision to use US forces in a general war. If the President were not able to make such a decision when one was required under emergency conditions, however, the decision was supposed to fall to an official in the political line of succession to the presidency.[22] Attempting to follow this procedure, the JCS were convinced, would be too time-consuming and would also involve officials who were not fully qualified to make such a fateful decision.

(U) On 20 October 1960, the JCS recommended a new three-level national chain of command for a critical emergency: (1) President or Vice President; (2) Secretary of Defense or Deputy Secretary of Defense; and (3) Chairman, JCS, or senior service chief. In this chain of command, the second official in each echelon would be empowered to act for the first, and the responsible official within each echelon would also act for individuals in upper echelons if they were not immediately available. The JCS recognized that these procedures would apply only when survival was at stake and that this condition had to be clearly and specifically defined.

(U) The JCS were primarily concerned, of course, with ensuring a capability to retaliate effectively in a sudden nuclear attack, whereas the laws affecting presidential succession had been primarily aimed at securing an orderly succession of government in the event of the death or incapacitation of the President. The JCS were convinced, in any event, that the existing laws and procedures were not adequate for the missile age. Yet the JCS recommendations themselves offered no firm assurance of survival of the top-level chain of command, as the extracts from WSEG Report 50 (see following chapter) point out. And the JCS made no provision for the traditional American concern for maintaining political control over important military decisions--especially one that would launch US strategic-nuclear forces in a vastly destructive attack against another country.

XVII

NATIONAL COMMAND AND CONTROL VULNERABILITY AS PERCEIVED AT THE END OF THE DECADE: SYNOPSIS OF WSEG REPORT 50

U ([redacted]) In September 1960, the Weapons Systems Evaluation Group published (some two months ahead of the main body of its Report 50) Enclosure C, a study of national command and control procedures and vulnerabilities.[1] The entire report constituted a comprehensive review of strategic weapons systems in the anticipated environment of the years 1964-67 and was, of course, specifically concerned with the growing Soviet ICBM threat. Enclosure C is particularly useful for the purposes of this study because of the incisive picture it gives of the national command and control situation at the end of the 1954-60 period. For that reason some extensive extracts are included below.[2] (Emphasis has been added in selected portions.)

A. EXTRACTS FROM WSEG REPORT 50

U ([redacted]) Enclosure C of WSEG Report 50 made the following strategic assumptions:

> Only ballistic missiles will be in the first wave, and the Soviets will aim part of the attack in such a way as to jeopardize the national political and joint military command structure, control systems for strategic nuclear delivery forces, and supporting communications for these structures and systems.

U ([redacted]) The study's basic conclusions were that:

> Under surprise attack conditions, there can be little confidence, *if the present configuration is continued* in the 1964 to 1967 time period, that the Presidential decision would be made and military execution orders be received by the combat elements of the strategic nuclear forces before the high command is disrupted.

The problems of assuring control are problems first of the national political-military command apparatus since *delivery systems and local weapons control capabilities could outlive the national political and military command structure* common to all.

A few Soviet weapons on the U.S. high command structure could seriously reduce the effectiveness of the retaliatory attack.

It is the *vulnerability of the terminals* at which high command is exercised that dominates the problem. Communications between terminals are also vulnerable but solving this problem would not in itself significantly increase the probability that the political and military high command structure could operate during and after enemy attack.

In the 1964 to 1967 time period, command succession arrangements would promote survivability of viable command only if command passed to commanders in significantly less vulnerable installations.

In the 1964 to 1967 time period, alternate high command centers that are not constantly operationally manned can be ascribed little confidence of effectiveness. Operational manning in this context means manning by individuals of authority, rank, and responsibility commensurate with the decisions and actions for which they may be responsible.

Hardening of a small number of fixed command centers does not promise a high confidence solution to the problem against weapons with the CEP and yield characteristics possible in the 1964 to 1967 time period.

Mobility can provide a high confidence solution to the problem of preservation of command facilities. Vehicles of the general nature of ships or trains, or possibly even smaller types, would provide the weight and volume capacity to contain, and thus to provide high confidence of survival of, the facilities and personnel for the essential trans-attack functions, but not the preattack functions.

Installations, such as damage assessment centers, whose capabilities are needed by command in the period after the initial strikes would be less certain of destruction in the initial attacks if they were not collocated with important primary targets that an enemy must include in his counterforce attacks....

> *All primary communication modes for missile and bomber system control are vulnerable to direct enemy attack on terminal facilities. This includes wire systems for land-based missiles and aircraft, HF systems for airborne aircraft and VLF systems for POLARIS SSBN's.* HF systems are susceptible to nuclear blackout effects. HF and VLF communications to forces deployed outside of CONUS (including SAC aircraft under Positive Control and SSBN's) are susceptible to enemy jamming interference of increasing effectiveness as forces are deployed closer to enemy targets.

([redacted]U) The report then proceeded to lay out the basis for its conclusions:

> The general nature of the process designed to make possible the Presidential decision and to give it effect is as follows. BMEWS and other tactical warning systems feed data to an interpretive center at NORAD so as to: (a) provide air defense alert and permit defensive combat action; (b) provide alert to offensive strike forces; (c) provide alert to the Joint Chiefs of Staff and Secretary of Defense; (d) provide alert to the intelligence and political advisors to the President; and (e) provide alert to the President himself. The President may, on the basis of military intelligence and warning and political advice, order military offensive action. If he does, his decision must be transmitted through the Secretary of Defense and the Joint Chiefs of Staff to the striking forces....
>
> * * * *
>
> [The national political and joint military command structure] ... is highly vulnerable and could not be counted upon to complete its minimum essential retaliatory functions if attacked.
>
> On the basis of tactical warning, the time the President may confidently think he has for the response decision, prior to bomb impact, is between *zero and about 15 minutes. In using the upper extreme of 15 minutes* he will be assuming that every procedural and physical element in the whole warning and strategic command and control structure *works perfectly* and that the enemy will not employ SLBMs or sabotage effectively against it. *A President could not be*

confident, based on operating experience or exercises, *that the whole system would work perfectly*.

In a deliberate attack on the national political and military command structure under present circumstances, the enemy might wish to attack all major centers of command from the President, through the Secretary of Defense-Joint Chiefs of Staff (SecDef-JCS) level, to include nuclear capable CINC's and their alternate command posts and designated successor command posts. To do so he would have to attack *14 such installations*. The allocation of some *35 ICBM's* typical of those possible in the time period 1964 to 1967 would give the enemy more than a *90 percent probability of destroying the entire higher political-military command of strategic nuclear forces*. In many instances, the first weapon delivered at an installation will wipe out its communications if not destroy or incapacitate the installation itself. *Of these installations, only six are not collocated with important strategic delivery system targets. Two of these six are collocated with each other*.... Only five additional aiming points over and above those provided by counterforce target systems need be targeted. From about *7 to 11 additional Soviet weapons* would be required to achieve more than 90 percent probability of complete destruction of the higher political-military strategic command structure if the attack were viewed as part of an *overall counterforce attack*.

Table I shows that *only a few* Soviet weapons, with CEP's of one mile or less, are needed to eliminate the *U.S. capability to make or transmit either a political or a high-level military decision at or from any of the five places in which such command would be centered as the structure is presently configured*. In routine states of alert even fewer than these five centers might need to be targeted, because alternate centers, such as the Alternate Joint Communications Center (AJCC) and HIGHPOINT are not normally operationally manned....

Table I

Ballistic Missiles[a] Required to Destroy Present Highest Political-Military Command Centers
(Pk equal to or greater than 0.9)

Installation	CEP (n. mi.) 2.0	1.0	0.5
White House) Joint War Room)	12	4	2
Camp David	15	5	3
AJCC	6	3	2
HIGHPOINT	10	3	2
TOTAL	43	15	9

a. Yield: 8 MT
Reliability: 0.7
Reprogramming: None

Both the Presidential and the SecDef-JCS levels of command are presently subject to operational incapacitation by the same events. Surviving military commands may be without political direction for some time while political reconstitution is in process.

This outcome would appear to be *unlikely to be modified by* actions associated with or following from *the present law with respect to Presidential succession.* In the first place, under many circumstances nearly all of those on the succession list would be as likely to be incapacitated as the President and by the same event....

In the second place, it appears that there is *no mechanism for* nor organization charged with, *locating, identifying, and providing essential defense communications* to the senior, non-incapacitated member of that list in the event of a nuclear attack presumed to have removed the President from control.

Members of the list are provided with a *telephone number to call,* from any place in the U.S., which connects them to the Joint War Room (JWR) in the Pentagon. The intent is to enable members of the list to assume responsibility should they hear or believe that the President was incapacitated. Successful operation of this procedure would require:

a. That the JWR and its communications survive the event which removed the President from control.

b. That circuits between the surviving members of the list and the JWR remain in service.

c. That a judgment be made by the senior officer on duty in the JWR as to when he has in fact received a communication from the senior non-incapacitated member of the list. The situation could develop such that the first calls were received from junior members of the list and the fate of other, more senior, members remained unknown. *The possibility exists that the man to wield Presidential authority in dire emergency might in fact be selected by a single field grade military officer.*

Finally, it is noted that, of all those posts on the succession list, *only the Vice President, in addition to the President, is fully briefed* at all times by the intelligence, political and military authorities. Only these two men may be presumed to be fully cognizant of all of the inputs potentially required to classify threatening situations and select actions most nearly appropriate to all aspects of the situation--the decision process.

Of the remaining members of the list, those from the legislative branch of government are, and have historically been, rigidly excluded from access to documents and information privy to the executive branch. Often one or both of them are a member of a political party in opposition to that of the President and Vice President. These facts raise particularly serious obstacles to adequate regular briefings of the nature required to discharge Presidential responsibilities without notice and under potentially dire circumstances....

[Of the others] one or two have duties resulting presumably in deep and continuous knowledge of some of these elements [intelligence, political and military], but the duties of most lie outside areas closely related to them.

* * * *

It might be assumed that the situation a *President would be most likely to desire--and might be willing--to make provision for*, by advance delegation of his authority and responsibility, would be an *all-out Soviet nuclear attack on the U.S.*, a holocaust situation. He might be assumed to desire assurance of a full-scale reflex retaliatory response on the part of all possible U.S. nuclear delivery forces. The discussion ... [above] shows, however, that, *if even a small fraction of such a holocaust attack were directed at the U.S. strategic command structure, there would not be a high probability that any of the instructed commanders or their command apparatus would survive the President*. His instructions could have little effect in such an instance. If there were a retaliatory response it *would not have been influenced* by whether or not prior Presidential instructions had been given to and held by a few senior commanders.

A political leader who contemplated giving instructions in advance to his military leaders to cover circumstances *less than a holocaust* would have to accept the risk that he may well have issued instructions *which he would wish to change* if he could when the occasion actually arose. He would also have to accept the risk that *his instructed military commanders may not in real life perceive and classify equivocal events (of less than holocaust violence) in the same way he had envisaged*. An instruction for one contingency might evoke action he had intended for another. If he had instructed more than one commander, possibilities for confusion would increase if they were isolated from each other.

Briefly, *in the one situation* for which it is relatively easy to contemplate prior instructions, *a holocaust, the central command structure as presently configured is so vulnerable as to prevent the instructions from having effect;* in *less* than holocaust situations, *a President could not have adequate confidence* that a prior instruction would result in actions he would judge to be in the best interests of the nation at the time of the real event.

* * * *

If the nuclear capable CINC's and their command apparatus were also incapacitated before execution orders had been issued, delays and confusion would be increasingly likely and severe and the probability that large-scale or well-coordinated retaliatory attacks could be mounted would be small. *Subordinate officers* at launch control centers, at airfields, on board POLARIS submarines, or in the airborne aircraft would, in present circumstances, have *no way of assessing the situation with confidence and no explicit doctrinal instructions to carry out if they could.* In the context of the present high command apparatus, *it is not practicable to give doctrinal instructions* to subordinate commanders because of the liability to destruction of the high command or interruption of its control by accident and the current lack of any means by which subordinate commanders could assess the situation. *Such a procedure would be dangerous in the extreme.* Under present circumstances the most that would be likely to be launched against the Soviets would be a *delayed, uncoordinated, and ragged response* of reduced size. (Delay of even a few hours would allow fixed-base retaliatory systems to be struck by Soviet missiles and manned bombers and U.S. mobile systems to be subjected to search and kill efforts.) If the Soviets knew of these possibilities they might consider this an efficient use of a modest fraction of their weapons in an attack on the U.S. *No other target system can at present offer equal potential returns from so few weapons.* They may or may not know it or come to know it in the future. The important fundamental point is that, should even a few weapons fall on the central high command structure, the results to our retaliatory capabilities could be catastrophic.

Although estimates of overall command and weapons control primary systems response times vary from two to sixteen minutes, *it is academic to speculate whether one strategic nuclear delivery system is more responsive to control than another in the event of nuclear attack.* All delivery systems and local weapons control capabilities could *outlive the central political and military command structure common to all. The problems of assuring control are problems first of the national political-military command apparatus.*

One of four is little more likely to survive or to survive longer than one of one.

* * * *

... the only succession which can be meaningful in the future is one in which command

> would pass to commanders in significantly less vulnerable installations. If the reduction in vulnerability is not large, no real benefits can be confidently ascribed to succession plans in terms of survivability of viable command. The *small size* of the overall target system provided by the high command structure will dictate that *minor changes in weapons requirements can easily be absorbed by the Soviets*, should they wish, in the time period of interest.
>
> Communications between high command centers are vulnerable ... [but] it is the vulnerability of the terminals at which high command is exercised that dominates the problem.
>
> ... *the surest way to retain a capability to arrest pre-planned and direct strategic military action before capabilities are exhausted would be to preserve political control on both sides.*
>
> All primary overseas communications [to strategic forces outside CONUS] are dependent upon the survival of a relatively small number of soft, fixed gateway stations.

B. SUMMARY COMMENTS

U ([redacted]) While the threat posited in WSEG Report 50 was that anticipated from intercontinental missiles in the 1964-67 period, the national command and control system described was as it existed in 1960. Essentially, that system, despite the fact that it contained certain highly sophisticated elements, was fragmented, inelastic, fragile, and highly vulnerable to a surprise nuclear attack. Even assuming the maximum of two hours warning hoped for against a Soviet bomber attack, the system contained glaring weaknesses--e.g., the rigidity and yet uncertainty of the political chain of command, the lack of flexibility in nuclear options, and the vulnerability of communications to nuclear attack.

(U) A major portion of the problem, of course, was simply endemic in the task of attempting to maintain effective political-military control under nuclear war conditions--and these difficulties would certainly have been shared by the Soviets.

Thus, the nearest to a practicably effective national decision-making structure was undoubtedly the system as it operated in peacetime, embodying an accustomed chain of command and division of functions and utilizing tens of thousands of people, scores of agencies, and uninterrupted communication and control procedures. The further one departed from this peacetime system (and the sheer transition to the emergency mode of operation required drastic departures, aside from the possible fracturing of the system by a nuclear attack), the more one entered a decision-making environment in which the chain of command would be *ad hoc* and unaccustomed, consultation and deliberation hurried and incomplete, and the transmission of instructions uncertain and difficult.

([redacted]) During the period 1954-60, the problem of command and control had been seen primarily as one of ensuring execution of the retaliatory strategic strike, and not as one of devising a structure capable of carefully weighing the circumstances of a crisis, apportioning the means suitable to the occasion, and if necessary carrying on a continuing war and perhaps bringing it to a close by negotiation. Ironically, the US command and control system in 1960 had only a questionable capability to accomplish even the objective of ensuring retaliation against the force of manned bombers and missiles possessed at that time by the Soviets, and had considerably less against a determined attack by the enemy in what was anticipated to be the coming "missile gap." As for ensuring effective political control of all aspects of the process through which the nation might become engaged in a nuclear war, and of the continuing decisions that might be required before the war's close, this was a problem that the US command and control structure in 1960 had only just begun to turn its attention to.

XVIII

OVERVIEW, 1954-60

U ([redacted]) This period was essentially one of building the operational systems for command and control of the nation's forces for waging strategic war. So much was accomplished, indeed, that one must guard against the impression that nothing existed before. That inference, of course, is incorrect. In 1954, SAC possessed a basically workable system--though it was plagued with many problems--for command and control of its forces. A rudimentary warning capability against strategic attack also existed. But it is apparent that in the years between 1954 and 1961 most of the basic requirements usually associated with command, control, and communications--e.g., redundancy, reliability, and survivability--were all given significantly heightened operational meaning. Additional systems were added --systems with vastly increased capabilities--and those systems were operationally tested to ensure that their potential contributions were made actual. Most of the impetus for the improved systems capabilities came from the responsible services, and within the services from the operational commands charged with the respective functions.

U ([redacted]) The keynote of the drive for increased systems capabilities during this period--overridingly in the case of SAC and only slightly less so in the case of the ADC and NORAD--was the attempt to improve speed of reaction, while at the same time maintaining reliability. These requirements necessitated technological gambles that were often near the boundaries of the "state of the art." Systems became inordinately complex, modifications were frequent, costs spiraled, budgetary revisions were necessary, and schedules were delayed. From a technical standpoint, however, the advances made in this period were enormous.

(U) During the years 1954-60, SAC developed from a force that had had to deploy overseas in order to launch the strategic strike, to an intercontinental bombing force that by the aid of refueling could attack directly from the United States. Command, control, and communications were further centralized to accord with the new concept of operations; increasingly larger portions of the force were placed on an alert status from which an attack could be launched within 15 minutes after warning; and capabilities were developed for "positive control" of aircraft already airborne prior to receipt of a strike execution order. Ever more sophisticated communications and data processing and display systems were required to maintain control of the strike force under such conditions.

(U) Major advances were also made in US warning capabilities against strategic attack. The outermost line of radars was moved over a thousand miles closer to the Soviet Union; radar detection and rearward communication capabilities were vastly improved; and the entire air defense and warning system was increasingly automated and centralized. By the end of the period, an initial capability for warning against missile attack also existed--and it was only the fact that intercontinental missiles at one technological bound had revolutionized strategic warfare that now caused all the immense achievements in warning against bomber attack to appear obsolete.

(U) Many of the "incongruities" noted in the discussion in Part One of the 1945-53 period were eliminated during the years under consideration here. The US armed services substantially accepted the implications of nuclear weapons, whereas in the early years they had been cautious and even resistant. The services increasingly geared their planning to the use of these weapons and service operational capabilities (and intent) to use them became very real, where before the nuclear forces had constituted at best a specialized contingent within a military structure that was overwhelmingly conventional in equipment and thought. On the other hand, some incongruities remained. Despite the almost total emphasis on nuclear weapons, skepticism regarding the actual wisdom and utility of strategic nuclear war remained widespread in the American nation at large, and in some isolated cases even within the military. Despite continued, though somewhat abated, interservice rivalry over "shares of the atomic pie," military unanimity continued to prevail regarding the primacy of the strategic offensive over the defensive. Despite the clearly increasing Soviet strategic threat to the United States, building an effective warning and air defense system remained an uphill fight throughout the decade.

(U) The dominant strategic fact of the period--especially after 1957 but with a long shadow cast before--was the recognition that intercontinental ballistic missiles would reduce warning to minutes or to nothing, that the aircraft control and warning system so laboriously constructed would be useless against these weapons, and that command and control of the nation's combat forces in the face of a surprise missile attack would be an enormously difficult and chancy task--even to secure an effective retaliatory strike. By the end of the decade, the problem of survivability dominated all other considerations in regard to the exercise of political and military command and control.

(U) Through the decade, and especially after the 1958 reorganization of the Department of Defense, there was a growing centralization of top-level control of the nation's Armed Forces. Most notably, the role of the JCS in relation to the services was strengthened, and the decision-making power of the Secretary of Defense was increased. Throughout the period, command and control procedures at top level concentrated upon the execution of a retaliatory strike in the face of a surprise attack. As the period ended, there was beginning to be an increasing awareness of the necessity of flexibility in response options and of continuing political direction of a war once it was initiated, as well as the potential problem of negotiating to end such a war.

(U) The question of the influence of an action-reaction process upon US command and control developments during this period can be given only a limited answer. In the broadest sense, of course, everything was geared to the Soviet threat. Even in some specific respects the action-reaction process appears at work. Thus, the heightened US concern with survival of the command and control system toward the end of the decade was in direct response to the Soviet demonstration of an imminent ICBM capability. Throughout the decade, the concern with speed of reaction by US strategic forces was motivated by the threat of a Soviet surprise attack. The entire development of the US air defense and warning system was obviously a direct reaction to the threat of a Soviet bomber attack.

(U) Many of the subordinate developments in US strategic command and control during this period, however, appear also to have been driven by an internal dynamic, either to replace an existing system with a better one or to shoulder out another service that might contest the alignment of "roles and missions." Thus the air defense and warning forces continued to evangelize for increased funds and capabilities when their *raison d'être* had already become secondary to the threat of missiles. And the decisions on command and control of Polaris, as well as the apportionment of functions in air defense and warning, appear to have been governed at least as much by the necessity to compromise among competing interservice claims as by logic or the Soviet threat.

(U) By the time the 1954-60 period ended, the basic US command, control, and warning systems were largely either in existence or under development. Problems of division of functions among the services had been essentially resolved. For the future, the problem was increasingly to be seen as one of ensuring effective political control of strategic decisions.

FOOTNOTES

Chapter XI

[1](U) The concept apparently originated even earlier, in the spring of 1950, when NSC-68 predicted that 1954 would be the "crisis year." Too much should not be made of the term, of course. As Glenn Snyder states: "The 'year of maximum danger' concept was somewhat suspect in that it just happened to correspond roughly with the lead time for attainment of the force goals which the Joint Chiefs of Staff recommended in October 1951.... Nevertheless, there were fairly solid reasons for selection of the year 1954 as a crucial year," e.g., by 1954 the Soviets should attain a nuclear capability substantial enough to cause serious damage to the United States, based on US experience in building up its own nuclear stockpile; NATO force goals had 1954 as their objective, and the Soviets would know their chances of overrunning Europe would be lessened if they waited until completion of the buildup; the rebuilding of Soviet industry, and the relocation of much of it beyond the Urals, would be largely completed by 1954. Warner R. Schilling, Paul Y. Hammond, and Glenn H. Snyder, *Strategy, Politics, and Defense Budgets* (New York: Columbia University Press, 1962), pp. 402-3.

[2](U) George F. Lemmer, *The Air Force and Strategic Deterrence, 1951-1960* (U) (Historical Division Liaison Office, US Air Force, December 1967), p. 4, TOP SECRET.

[3](U) Office of the OSD Historian, *History of the Strategic Arms Competition, 1945-1972* (U), 3 vols., Vol. I, *Chronology-US, 1945-1960* (U), October 1974, p. 187, TOP SECRET/RESTRICTED DATA.

[4](U) Thomas W. Wolfe and Fritz Ermarth, *The Interaction Process and Its Influence on Major Soviet Arms Decisions* (U), R-1180-PR, (Rand Corporation, Santa Monica, Calif., August 1973), p. 44, SECRET.

[5](U) Quoted in Robert F. Futrell, *Ideas, Concepts, Doctrine: A History of Basic Thinking in the United States Air Force, 1907-1964* (U), 2 vols. (Aerospace Studies Institute, June 1971), I:381, UNCLASSIFIED.

[6](U) Quoted in ibid., p. 384.

[7](U) Ibid., p. 385.

[8](U) From the end of World War II, Soviet forces in Eastern Europe were far stronger than could reasonably be required for policing purposes. It does not necessarily follow, however, that they were intended for the conquest of Western Europe. As Thomas Wolfe has written: "Although the extent to which Stalin had actually embraced a specific concept of 'hostage Europe' remains subject to historical dispute, it would appear that the Soviet postwar stance in Europe was shaped to a significant degree by Stalin's having banked on the threat of Soviet land power as the main counterpoise to U.S. nuclear power." *Soviet Naval Interaction with the United States and Its Influence on Soviet Naval Developments* (U), P-4913 (Rand Corporation, Santa Monica, Calif., October 1972), p. 5, UNCLASSIFIED. See also Robert Endicott Osgood, *NATO: The Entangling Alliance* (Illinois: University of Chicago Press, 1962), pp. 14-17 specifically, and *passim*, for the view that the Soviets saw their large ground forces as a lever for political advantage rather than for military attack.

[9](U) Osgood, *NATO*, pp. 35 ff.

[10](U) Headquarters, Strategic Air Command, *History of the Strategic Air Command, 1 July 1954-30 June 1956* (U), I:73-74, TOP SECRET/RESTRICTED DATA.

[11](U) Ibid.

[12](U) Quoted in Futrell, *Ideas, Concepts, Doctrine*, p. 390.

[13](U) Ibid.

[14](U) Ibid.

[15](U) General LeMay in US Congress, *Study of Air Power*, 84th cong., 2nd sess., pp. 126-27.

[16](U) Interview with SAC Historical Office personnel, 13-14 March 1975.

[17]([redacted]U) NIE 11-6-54, published October 5, 1954, concluded that the Soviets had undertaken an extensive guided missile program, giving highest priority to air defense missiles. It was predicted that the Soviets would make a concerted effort to produce an ICBM and could have this weapon ready for series production in 1963, or at the earliest, in 1960. However, it was thought that at least until 1958, the USSR would continue to rely primarily on high performance bombers, because of their superior range and accuracy. The estimate warned that if the USSR should produce an ICBM before the United States developed adequate countermeasures, it would acquire a military advantage that would "constitute an extremely grave threat to US security." Quoted in OSD Historian, *History of the Strategic Arms Competition*, I:193.

[18](U) Speech at Quantico, Virginia. Quoted in *History of the Strategic Air Command, 1 July 1954-30 June 1956*, I:14.

Chapter XII

[1](U) Quoted in Headquarters, Strategic Air Command, *History of the Strategic Air Command, 1 July 1954-30 June 1956* (U), Vol. I, TOP SECRET/RESTRICTED DATA.

(U) The phonetic commands had been established in 1951 because of concern by the Air Force that in the event of another worldwide conflict the strategic air forces in overseas theaters might be relegated to tactical and close support roles. The phonetic command structure was therefore established, with the commander a deputy to CINCSAC and exercising command and control of SAC forces operating through the various theaters. As CINCSAC's personal representative, this officer could deal directly with the theater commander on an equal footing. This arrangement, of course, reflected SAC's 1951-55 concept of operations wherein the numbered air forces would deploy to forward bases and fight the war from there. The numbered air force commander was thus designated as the commander of the phonetic command, with the SAC overseas air division commander as his deputy. SAC also established a liaison office within the theater command headquarters, headed by a Senior Representative (brigadier general), with a planning staff and communications. This office made a rapid exchange of information concerning theater support possible and provided the theater commander with a staff experienced in atomic operations--experience that in the early 1950s was very rare.

(U) The phonetic command system gradually deteriorated as SAC's war plans and organization changed. Colonels eligible for overseas duty began to be appointed as Senior Representatives, instead of brigadier generals. These officers often had little real experience in SAC operations and intelligence. Meanwhile, SAC's command and control emphasis had been shifting to the ZI and to air refueling areas. But the formal phonetic command structure continued to survive, as an increasingly useless anachronism, until near the end of the decade.

[2](U) Ibid, p. 10.

[3]([redacted] U) Ibid., p. 8. In a 15 July 1955 speech at Quantico, Va., General LeMay said SAC had the potential to launch a predominantly intercontinental attack of 180 atomic and thermonuclear strike aircraft within 12 hours of alert and to launch additional strikes each 12 hours until at the end of 48 hours a total of 880 strike aircraft would have been dispatched. If given 3 to 4 days alert time, "over 1,000 aircraft can participate in the first simultaneous strike against Soviet objectives.... Most of these sorties would be directed against Soviet air power targets. The air battle must be won first, and as quickly and decisively as possible." Ibid., p. 78.

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[redacted]

[4](U) Thomas A. Sturm, *USAF Overseas Forces and Bases, 1947-1967* (U) (Historical Division Liaison Office, US Air Force, March 1969), p. 23, UNCLASSIFIED.

[5](U) Ibid., p. 12.

[6]([redacted] U) On 30 June 1960, SAC had 696 aircraft on alert in the ZI and overseas (113 B-52s, 346 B-47s, 85 KC-135s, and 152 KC-97s). SAC's Emergency War Order (EWO) called for all alert aircraft to be in the air 15 minutes after notification, with the first airborne within 8 minutes. Headquarters, Strategic Air Command, *History of the Strategic Air Command, 1 January 1960-30 June 1960* (U), p. 135, TOP SECRET/RESTRICTED DATA.

[7](U) Headquarters, Strategic Air Command, *History of the Strategic Air Command, 1 July 1959-31 December 1959* (U), p. 41, TOP SECRET/RESTRICTED DATA.

[8](U) Office of the OSD Historian, *History of the Strategic Arms Competition, 1945-1972* (U), 3 vols., Vol. I, *Chronology-US, 1945-1960* (U), October 1974, p. 383, TOP SECRET/RESTRICTED DATA.

[9](U) This section depends primarily on Headquarters, Strategic Air Command, *SAC Communications in an Age of Transition: A Consideration of Problems Past and Present* (U), Historical Study No. 78 (30 December 1969), SECRET; and Headquarters, Strategic Air Command, *Strategic Command Control Communications, 1959-1964* (U), Historical Study No. 98 (October 1965), SECRET.

[10](U) Hq SAC, *SAC Communications in an Age of Transition*, p. 19.

[11](U) TWX, Hq USAF to CINCSAC, 12 February 1958, in ibid., p. 10.

[12]([redacted] U) Early SAC efforts to this end had been focused on the Military Affiliated Radio System (MARS), and through this means the aid of amateur radio operators was enlisted. This willingness to consider unorthodox solutions was typical of SAC's approach to problems. When coupled with an intense conviction of both the overriding importance of SAC's mission and the superiority of SAC's ways of doing things, it helps to explain SAC's high *esprit de corps* and professionalism.

[13](U) Hq SAC, *SAC Communications in an Age of Transition*, p. 38.

[14](U) It is worth noting that the SSB radio in which SAC became interested, and which was eventually purchased, was an "off the shelf" commercial system produced by the Collins Radio Company.

[15](U) Headquarters, Strategic Air Command, *History of the Strategic Air Command, 1 July 1957-31 December 1957* (U), I:55, TOP SECRET/RESTRICTED DATA.

[16](U) Headquarters, Strategic Air Command, *History of the Strategic Air Command, 1 January 1958-30 June 1958* (U), I:68, TOP SECRET/RESTRICTED DATA.

[redacted] UNCLASSIFIED

[17](U) OSD Historian, *History of the Strategic Arms Competition,* I:403.

[18](U) Hq SAC, *SAC Communications in an Age of Transition,* pp. 45-49.

[19](U) Ibid., p. 57.

Chapter XIII

[1](U) Carl A. Berger, *USAF Strategic Command and Control Systems, 1958-1963* (U) (Historical Division Liaison Office, US Air Force, November 1964), p. 2, SECRET.

[2](U) Ibid.

[3](U) Ibid., and Headquarters, Strategic Air Command, *Strategic Command Control Communications, 1959-1964* (U), Historical Study No. 98 (October 1965), p. 15, SECRET.

[4](U) Ibid., p. 16.

[5](U) Berger, *USAF Strategic Command and Control Systems,* pp. 4-5.

[6](U) Ibid., p. 5.

[7](U) Ibid., p. 6.

[8](U) Ibid., pp. 6-7.

[9](U) Ibid., p. 7.

[10](U) Ibid., p. 9.

[11](U) Ibid.

[12](U) Hq SAC, *Strategic Command Control Communications,* p. 24.

[13](U) Ibid., p. 25.

[14](U) Headquarters, Strategic Air Command, *History of the Strategic Air Command, July-December 1960* (U), I:11, TOP SECRET/RESTRICTED DATA.

[15](U) Berger, *USAF Strategic Command and Control Systems,* p. 11.

[16](U) Ibid., p. 12. These systems will be treated in more detail in Part Three, which deals with the 1961-68 period.

Chapter XIV

[1](U) The following material is drawn chiefly from Headquarters, Strategic Air Command, *History of the Joint Strategic Target Planning Staff: Background and Preparation of SIOP-62* (U), undated, TOP SECRET/RESTRICTED DATA.

[2](U) Headquarters, Strategic Air Command, *History of the Strategic Air Command, January-June 1957* (U), p. 52, TOP SECRET/RESTRICTED DATA.

[3](U) The weapons in a commander's actual possession were known as "dispersed weapons," and they could be deployed to locations desired by the commanders, provided they were approved by the President. All weapons stored in such locations, or "service storage facilities," fell into the category of dispersed weapons. The President, however, retained technical AEC custody of weapons over 600-kilotons yield. Through February 1957, this custody was exercised by placing civilian AEC custodians at military installations where high-yield weapons were stored. The civilian custodian retained the keys to those storage facilities that contained the high-yield weapons. On 15 February 1957, the custodian arrangements were changed to replace the civilian AEC custodians with designated military AEC custodians--in effect, the military base commanders. Ibid.

[4](U) Memorandum, Office CNO, OP-941, Ser. 002603P94, 28 September 1959, "Atomic Weapon Coordination Machinery" (U), SECRET.

[5](U) Hq SAC, *History of the JSTPS*, p. 3.

[6](U) Memorandum, Secretary of Defense Gates to Chairman, JCS, 29 December 1959, "Subject: Organization of the Joint Chiefs of Staff and Relationship with Office of Secretary of Defense" (U), UNCLASSIFIED.

[7](U) Robert D. Little, *Air Force Operational Problems, 1958-1959* (U) (Historical Division Liaison Office, US Air Force, June 1961), p. 6, SECRET.

[8](U) Arthur K. Marmor, *USAF Command and Control Problems, 1958-1961* (U) (Historical Division Liaison Office, US Air Force, January 1963), p. 61, SECRET.

[9](U) Enclosure to JCS 1620/209.

[10](U) It should be noted that even though the Navy concept study on Polaris operations had been optimistic regarding the problem of communicating with the FBM submarines, the Navy was aware from the beginning of the special difficulties involved. The subject was specifically taken up, for example, during the wide-ranging Study of Naval Command and Control Systems by the Endicott House panels from 13 June to 31 July 1960. All aspects of the communication problem were considered, including the various links, current and future; the difficulties of submerged reception, including the need for floating wire antennae and further research in propagation characteristics of VLF, LF, and HF transmission; the desirability of multiple channels; the importance of "fail safe" doctrines; and the possibilities of satellite relay and VLF transmitting station mobility.

(U) It is also interesting to note that one of the studies of this period, in addressing the question of "fail safe" procedures for the Polaris weapon system, defined the problem in a somewhat unusual manner: the study proposed FBM retaliation against the Soviet Union after the "silencing of a number of continuously (or periodically) operating fixed shore-based transmitters." Naval Warfare Analysis Group Study No. 11, "Preserving the Security of the FBM Submarine System, 1965-1970" (U), 12 June 1969, SECRET. This did not become the official concept, of course.

[11](U) Enclosure to JCS 1620/209.

[12](U) Ibid.

[13](U) Hq SAC, *History of the JSTPS*, p. 6.

[14](U) Ibid.

[15](U) It should be noted that, as the CNO had indicated, there were "basic differences of philosophy" between the Air Force counterforce doctrine and the Navy "cities" concept for Polaris targeting. The switch, in just over a decade, from the Navy's earlier moral recriminations against the B-36 and strategic bombing has been commented upon by a number of writers. It can only be said that in 1959 the Navy had a solid prospect for an operational strategic weapon system (with limitations in accuracy), and in 1948 it did not.

[16](U) Hq SAC, *History of the JSTPS*, p. 8.

[17](U) Ibid., p. 10.

[18](U) Ibid., p. 14.

[19](U) Office of the OSD Historian, *History of the Strategic Arms Competition, 1945-1972* (U), 3 vols., Vol. I, *Chronology-US, 1945-1960* (U), October 1974, p. 415, TOP SECRET/RESTRICTED DATA.

[20](U) Headquarters, Strategic Air Command, *History of the Strategic Air Command, 1 July 1959-31 December 1959* (U), p. 49, TOP SECRET/RESTRICTED DATA.

[21](U) Emphasis in original.

[22](U) Arthur M. Schlesinger, Jr., *A Thousand Days* (Boston, Mass.: Houghton Mifflin Co., 1965), p. 155.

Chapter XV

[1](U) In the years immediately after World War II, not only had the War Department assigned both the Army and the Air Force responsibility for the air defense function, but in hearings before the House Subcommittee on Appropriations for the Military Establishment, in February 1947, several different military leaders had said very different things regarding the nature of air defense and how it should be accomplished. As one study put it: "If any member of the subcommittee had shown a deep interest in air defense, he would undoubtedly have been confused. What, really, did the War Department

mean when it mentioned air defense? Did it mean a group of fighter planes protecting ground forces (General Hull, Army)? Did it mean offense against the source of attack (General Spaatz)? Did it mean an electronic early warning network supported primarily by Air National Guard and Air Reserve interceptors (General Eaker)? Or did it mean an in-being regular force standing ready for instant response to air attack (General Weyland, Air Force Plans)? No attempt was made to reconcile this conflicting testimony during the hearings on the budget for Fiscal 1948." Richard F. McMullen, *Air Defense and National Policy, 1946-1950* (U), Historical Study No. 22 (Headquarters, Air Defense Command, undated), p. 29, SECRET. Nor was much of the confusion resolved for many years thereafter.

[2](U) Richard F. McMullen, *Air Defense and National Policy, 1951-1957* (U), Historical Study No. 24 (Headquarters, Air Defense Command, undated), pp. 50-53, SECRET.

[3](U) Ibid., p. 59.

[4](U) Thomas A. Sturm, *Command and Control for North American Air Defense, 1959-1963* (U) (Historical Division Liaison Office, US Air Force, January 1965), p. 2, SECRET.

[5](U) Memorandum from Chairman JCS to Chiefs of Staff, CM-47-54, 15 January 1954, Subject: "Command Arrangements for the Air Defense of the United States" (U), TOP SECRET.

[6](U) JCS 2086/12, "Basic Defense Plan for Continental United States" (U), 17 November 1955. The identical statement appears in other JCS policy papers.

[7](U) McMullen, *Air Defense and National Policy, 1951-1957*, p. 72. McMullen remarks on "Congress' dismay when it found that the fully implemented SAGE system would incur an annual communications cost (phone bill) of 200 million dollars or more." Ibid., p. 74.

[8](U) Much of the data in this discussion of DEW Line developments is drawn from Thomas W. Ray, *A History of the DEW Line, 1946-1964* (U), Historical Study No. 31 (Headquarters, Air Defense Command, June 1965), pp. 1-54, SECRET.

[9](U) Statement of Secretary of Defense Robert S. McNamara in US House of Representatives, Committee on Armed Services, *Hearings on Military Posture and HR 4016*, 89th cong., 1st sess., 18 February 1965, pp. 253-54.

[10](U) Sturm, *Command and Control for North American Air Defense*, pp. 10-12.

[11](U) Richard F. McMullen, *The Birth of SAGE, 1951-1958* (U), Historical Study No. 33 (Headquarters, Air Defense Command, undated), pp. 24-26, SECRET.

[12](U) Ibid., pp. 27-28.

[13](U) Ibid., p. 31.

[14](U) Ibid., p. 36.

[15](U) "For one thing, the FST-2 was becoming increasingly complex as time went along. It was originally estimated that the simplex model of the FST-2 would contain 800 vacuum tubes. By the end of 1955 the tube count for the simplex model had grown to 3,300." Ibid., p. 41.

[16](U) While this problem does not concern warning, *per se*, it is instructive regarding the interservice problems in planning SAGE's command and control functions.

[17](U) McMullen, *The Birth of SAGE*, p. 44.

[18](U) Ibid.

[19](U) As General LeMay was to put the problem later, in connection with SAC's need for "safe passage" routes through the US air defense system, the Army concept of "shoot 'em down, sort 'em out on the ground" was totally unacceptable to the Air Force.

[20](U) McMullen, *The Birth of SAGE*, p. 52.

[21](U) Ibid., pp. 70-73.

[22](U) Ibid., p. 76.

[23](U) Ibid., pp. 77-78.

[24](U) Richard F. McMullen, *Command and Control Planning, 1958-1965* (U), Historical Study No. 35 (Headquarters, Air Defense Command, undated), p. 1, SECRET.

[25](U) Ibid., pp. 2 and 4.

[26](U) Ibid., p. 5.

[27](U) Ibid., p. 30.

[28](U) Office of the OSD Historian, *History of the Strategic Arms Competition, 1945-1972* (U), 3 vols., Vol. I, *Chronology-US, 1945-1960* (U), October 1974, p. 335, TOP SECRET/RESTRICTED DATA.

[29](U) Ibid.

[30](U) Robert D. Little, *Air Force Operational Problems, 1958-1959* (U) (Historical Division Liaison Office, US Air Force, June 1961), p. 13, SECRET.

[31](U) Headquarters, Strategic Air Command, *Strategic Command Control Communications, 1959-1964* (U), October 1965, p. 10, SECRET/RESTRICTED DATA.

[32](U) Ibid. On this occasion, duty officers did not act on the warning because they found it incredible, in the context of the worldwide political-military situation--including the

incongruous fact that Chairman Khrushchev was in New York at the time--but the problem was serious. The BMEWS alarm threshold was necessarily set at a level that was a compromise between the desire to report all remotely conceivable attack events and the desire to keep the false alarm rate low. A reasonable statement of BMEWS objectives might be something like the following: provide, with high confidence, 10-30 minutes of warning of an attack by more than 2-15 ICBMs on direct trajectories above 15 degrees from any part of the USSR. See Weapons Systems Evaluation Group, *Evolution of Strategic Offensive Weapons Systems* (U), Report 50 (21 September 1960), Enclosure C, "Command and Control of Strategic Offensive Weapons Systems in the Period 1964-1967" (U), TOP SECRET.

[33](U) Hq, SAC, *Strategic Command Control Communications, 1959-1964*, p. 13.

[34](U) OSD Historian, *History of the Strategic Arms Competition*, I:402.

[35](U) Ibid., p. 408.

Chapter XVI

[1](U) Thomas A. Sturm, *The Air Force Command and Control System, 1950-1966* (U) (Historical Division Liaison Office, US Air Force, August 1967), p. 5, SECRET.

[2](U) Ibid., p. 7.

[3](U) Ibid., p. 9.

[4](U) Until 1956, the Air Force was prevented by law from installing telephones at government expense in private residences. At that time, after several years of trying, the Air Force managed to have the law changed sufficiently to put telephones in the homes of the Joint Chiefs and top Headquarters USAF, ADC, SAC, and European Command officers. Eventually approval was granted to install telephones wherever they were needed. Ibid.

[5](U) Arthur K. Marmor, *USAF Command and Control Problems, 1958-1961* (U) (Historical Division Liaison Office, US Air Force, January 1963), p. 34, SECRET.

[6](U) Sturm, *Air Force Command and Control System*, pp. 9-10.

[7](U) Ibid., pp. 10-11, and Marmor, *USAF Command and Control Problems*, p. 35.

[8](U) Ibid., pp. 36-37.

[9](U) Letter from C. E. Wilson, Secretary of Defense, to the Secretaries of the Army, Navy, and Air Force, and the JCS, Subject: "Emergency Relocation Planning--Continuity of Essential Operations" (U), 3 May 1954, TOP SECRET.

[10](U) Decision on JCS 1851-75, "Concept for the Use of the Alternate Joint Communication Center (AJCC)" (U), 7 June 1955, TOP SECRET.

[11](U) Memorandum from the Secretary of Defense to the Secretaries of the Army, Navy, Air Force, and JCS, Subject: "Concept for the Use of the Alternate Joint Communication Center (AJCC)" (U), 12 August 1955, TOP SECRET.

[12](U) Marmor, *USAF Command and Control Problems*, p. 43.

[13](U) Ibid., p. 44.

[14](U) JCS 1851/67, 28 December 1954, TOP SECRET.

[15](U) Marmor, *USAF Command and Control Problems*, p. 45.

[16](U) Ibid.

[17](U) Ibid.

[18](U) Ibid.

[19](U) Ibid., p. 49.

[20](U) Ibid., pp. 46-50.

[21](U) Ibid., pp. 50-53.

[22](U) The succession to the presidency was as follows:

Elective Officials: Vice President
Speaker of the House
President Pro Tempore of the Senate

Appointive Officials: Secretaries of State, Treasury, Defense
Attorney General
Postmaster General
Secretaries of Interior, Agriculture, Commerce, Labor

(*United States Code Annotated*, Title 3, "The President" [Act 25 June 1948, c. 644, para. 1, 62 Stat. 672].)

Chapter XVII

[1](U) Weapons Systems Evaluation Group, *Evolution of Strategic Offensive Weapons Systems* (U), Report 50 (21 September 1960), Enclosure C, "Command and Control of Strategic Offensive Weapons Systems in the Period 1964-1967" (U), TOP SECRET.

[2](~~TS~~ U) So far as can be determined, there was no JCS reaction to Enclosure C when it was first published. The study was briefed to outgoing Secretary of Defense Gates, however, who appeared greatly impressed and declared to the briefers: "This report may be Top Secret to you, but it is much more than that to me." After Secretary McNamara took office, WSEG 50 was briefed to him for an entire day. Subsequently,

the conclusions of the report were briefed to the JCS, and when Enclosure C was covered, the Chairman of the JCS, General Lemnitzer, turned to his staff and remarked: "Now we know the origin of some of those questions we're getting from the Secretary." Shortly afterward, Secretary McNamara sent a memorandum to the JCS specifically raising the question of command and control vulnerability. Another study was then instituted, which appears to have come to the same conclusions as WSEG 50. The proposals for mobile command posts--the airborne and naval versions--were then quickly approved. (Above information obtained in interview with Dr. George Contos, the project leader for WSEG Report 50.)

PART THREE

1961-1967

XIX

THE NEW ADMINISTRATION

(U) The dominant theme of the Kennedy administration that took office in January 1961 was movement, and in national security affairs the incoming leaders promised vigorous new policy departures. During the 1960 election, conducted in the wake of sputnik, Cuba, the U-2, and other disqueiting events abroad, Kennedy and his supporters attacked the Eisenhower administration for policies of "weakness" and "defeat." They criticized the Republicans for letting a "missile gap" develop in the strategic arms race with the Soviet Union, for relying excessively on the threat of "massive retaliation" across the spectrum of Soviet military challenges, and for neglecting forces to deal with the limited wars and lesser contingencies that confronted the United States all over the world. They plamed such policies for a serious decline in US international prestige and power.*[1]

(U) The new administration proposed to make changes, and the President's inaugural address on 20 January was a stirring summons to revive the nation as a strong and dynamic society with "arms ... sufficient beyond doubt," pledged to the defense of freedom everywhere.[2] In his State of the Union message to Congress ten days later Kennedy announced that he had instructed the Secretary of Defense

> to reappraise our entire defense strategy--our ability to fulfill our commitments--the effectiveness, vulnerability, and dispersal of our strategic bases, forces, and warning systems--the efficiency and economy of our operation and organization--the elimination of obsolete bases

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*Footnotes for Part Three begin on p. 353.

> and installations--and the adequacy, modernization, and mobility of our present conventional and nuclear forces and weapons systems in the light of present and future dangers.

He had asked for preliminary conclusions, the President said, by the end of February.[3]

(U) The reappraisal ordered by the President was already under way at the Pentagon, under the direction of the new Secretary of Defense, Robert S. McNamara. Selected by Kennedy for his managerial skill and drive, McNamara was primed to take a fresh look at virtually everything. He was an independent Republican not previously involved in national policies or identified with established foreign or defense policy positions, including Kennedy's. He apparently had no fixed commitments in military strategy or doctrine, but started with an evident willingness to function as the President's executive agent in Defense matters, a concept of the Secretary's role as active leader (rather than mere arbiter or referee) in managing the Department, and a predilection for rational, analytical, quantitative approaches in administration. Within a few days of his selection in mid-December 1960, McNamara was in Washington, getting acquainted with the Kennedy team, arranging to take charge of the Department of Defense, and digging into the policy and budgetary issues that were being formulated on Kennedy's agenda for early presidential decision. By the end of December, i.e., within just two weeks, McNamara was working with a formidable list of questions from the President-elect:

> Should there be a supplemental Defense Budget ... additional funds now for Polaris, Minuteman and Atlas missiles ... an air alert ... continental defense ... modernization of conventional forces ... airlift capabilities...?
>
> [We] will have to undertake a basic re-evaluation of our defense strategy, targets and capability ... the place of manned aircraft ... aircraft carriers ... present troop strength ... bases abroad ... the overlapping of services and missions ... the coordination of intelligence functions ... command and control systems,

> particularly with regard to the authority to use nuclear weapons....[4]

(U) McNamara made no attempt to respond to all of the President's questions at once, and he did not try to produce a single comprehensive evaluation of the national defense posture. His initial report was in the form of broad conclusions that generally accorded with the preliminary predispositions of the White House and paved the way for the further, in-depth studies that he believed were needed. McNamara found, he told the President:

> A strategy of massive retaliation as the answer to all military and political aggression, a strategy believed by few of our friends and none of our enemies and resulting in serious weaknesses in our conventional forces....
>
> A strategic nuclear force vulnerable to surprise missile attack, a nonnuclear force weak in combat-ready divisions, in airlift capacity and in tactical air support, a counterinsurgency force for all practical purposes nonexistent....[5]

He thereupon appointed four ad hoc task forces under OSD civilians to survey the four problem areas of strategic nuclear forces, limited war, research and development, and military installations, in order to develop "quick fix" modifications of the Eisenhower FY-62 Defense budget, which was already before Congress, and also to identify specific problems requiring additional study.

(U) After submitting his "quick fix" recommendations to the President in February, McNamara issued his famous list of 96 questions on a host of Defense topics, assigned variously to the Joint Chiefs, the services, and assorted Defense agencies and offices, under varying but relatively short deadlines.[6] The questions launched perhaps the most hectic period of crash study efforts the Pentagon had ever experienced and covered virtually all important aspects of Defense. They essentially extended the initial concentrated reappraisal of strategy through the rest of 1961 and into 1962, merging it into the process of preparing the forthcoming FY-63 budget and the new Five-Year Defense ("Master") Plan, both of which were intended to become more definitive expressions of the new administration's policies. The sixth question asked for a complete review of the strategic command and control system.

(U) The McNamara approach permitted the Kennedy administration to make a prompt show of action--on the strategic nuclear front, to respond to widespread "missile gap" anxieties, and on the limited war front, to begin the promised shift in the balance and structure of the Armed Forces--while deferring final decisions on many of the larger and more difficult issues. The President announced three immediate new steps as early as 30 January, in his State of the Union speech: to increase airlift capabilities, speed up the construction of Polaris submarines, and generally accelerate the rest of the strategic missile program. He outlined additional steps, based on further results of McNamara's review, in his Special Message on the Defense Budget on 28 March.[7]

(U) The 28 March message was an explicit first attempt by the new administration to adapt US military strategy and force structure to the unfolding era of nuclear missiles, and to delineate the requirements for deterrence in a more evently balanced two-sided situation, against an enemy who was actively developing a powerful strategic deterrent of his own, in deliverable megatons, second as well as first strike. The message presented the administration's rationale for the intended switch from an overall strategy of "massive retaliation" to one of "flexible" or "graduated" response, and it proposed a series of measures to achieve a suitably diversified and versatile defense posture. In the case of strategic nuclear forces, the President emphasized that numbers alone were not as important as realistic qualities of survivability and effective response in the face of enemy attack, especially a surprise missile attack. He accordingly proposed substantial increases in the Polaris and Minuteman programs, at the expense of the more vulnerable Atlas and Titan ICBMs, Snark cruise missiles, and B-70 bombers. He also proposed a more rapid phaseout of B-47 medium bombers; an increase in the number of B-52s on 15-minute ground alert from one-third to one-half of the force; an "on-the-shelf" (standby) capability to put one-eighth of the B-52s on continuous airborne alert; improvements in BMEWS, bomb alarm, and other warning systems; and improvement in the machinery for high-level command and control.[8]

(U) Kennedy's message was perhaps the first authoritative pronouncement of a US president that devoted appreciable attention to the subject of command and control. In line with the approach taken under McNamara, it implicitly treated the command and control apparatus--the decision-making elements, organization, facilities, equipment, procedures, and communications for directing operations--as an integral element of the total posture, on a par with the forces and weapons themselves. Survival of the apparatus was important to assure a retaliatory response, and hence was one of the critical ingredients of retaliatory power and a prerequisite for credible deterrence. Its continuity was particularly important in assuring that any response that was carried out was appropriate, by decision of duly constituted authority, and in furtherance of approved national objectives.[9]

(U) The existing command and control system did not fulfill the requirement. What was needed, said Kennedy, was a "new emphasis" on developing a better system, one that was

> more flexible, more selective, more deliberate, better protected and under ultimate civilian authority at all times ... a truly unified, nationwide, indestructible system to insure high-level command, communication and control and a properly authorized response under any conditions.

In this, he said, he proposed to start a major--"absolutely vital"--effort.[10]

(U) The President's strong statements did not lead to wholesale changes in strategic command and control arrangements overnight, but they succeeded in attracting considerable attention to command and control issues. Precipitated into the foreground of consideration at the highest national level, the subject of command and control came under intensive scrutiny in the McNamara Pentagon, and it remained high on the Secretary's checklist of action items for some time, long after the new administration's initial "shakedown" period.

(U) Most of the basic policy directions of the new Kennedy administration that had a major bearing on the evolution of command and control were set in the first several years, although policy controversies did not necessarily stop and policy implementation problems continued to arise. Even after Kennedy's assassination in November 1963 and the assumption of office by Vice President Johnson, the earlier defense policies and concepts continued with little change, carried on by Secretary McNamara and other key officials who remained in their posts. The key external events of the period from the command and control standpoint were the Cuban missile crisis of October 1962 and the deepening US involvement in South Vietnam in 1964 and 1965, both of which influenced a shift of interest from strategic nuclear war to more immediate contingencies.

(U) Of the major strategic force posture issues and decisions during the Kennedy-Johnson years, the new administration's initial urgent concern about the survivability, strength, and control of strategic striking forces became more muted as the 1961 strategic-buildup decisions were translated into operational force levels. By 1963, officials were expressing great confidence in the overwhelming strength of US retaliatory power, founded in sure second-strike capabilities that could devastate the USSR even after absorbing a worst-possible surprise attack. Deterrence of deliberate, calculated attack seemed as well assured as it could be, the Secretary of Defense reported, and the likelihood of strategic nuclear war was low.[11] After the Cuban missile crisis, especially, the sense of any imminent national danger declined considerably. Survivable and effective strategic command and control arrangements were still important, but less urgently so, as insurance against the remote contingency that deterrence might fail.

(U) After 1963, strategic posture decisions continued to emphasize second-strike forces of great survivability, like Polaris and Minuteman, and continued to stress the deterrence-oriented goal that McNamara termed "assured destruction" as the "vital first objective" of US defense strategy. Despite annual budgetary controversies, "war-waging" aims such as "damage limitation" receded in official stature as the Soviets were perceived to be acquiring large submarine-launched and hardened missile forces against which greater US damage-limiting efforts were expected to have declining marginal utility.[12]

(U) By the mid-1960s, the size and composition of US strategic offensive forces had largely been stabilized. In the official McNamara posture statements of the time, the expansion of Soviet strategic forces, largely anticipated and already discounted, was not perceived as unexpectedly threatening. The prevailing image of the US-Soviet strategic balance became one of mutual deterrence--the mutual assured destruction publicized under the pejorative acronym "MAD" in the later 1960s. The principal hedge against the potential menace of offsetting Soviet ABM measures was sought in improved offensive technology (MIRVs and penaids) rather than in quantitatively greater offensive force levels. At the same time, the potential US advantages of full-scale anti-Soviet ABM deployment (first with Nike-Zeus, then Nike-X) were repeatedly deferred as premature, at best--

until the 1967 decision in favor of the limited Sentinel "anti-Chinese" ABM--because similar countermeasures were also considered available to the USSR.[13] It was not until after 1967 that the ABM issue assumed different proportions. Meanwhile, the United States had undertaken active overtures toward the USSR concerning strategic arms limitations based on some kind of equilibrium of forces.[14]

(U) Throughout the 1961-67 period, these strategic force posture issues were mainly "how much is enough" questions that did not greatly affect the functional role or substance of command and control. Despite the variations in the size and structure of US and Soviet strategic forces, the command and control challenge remained essentially the same, that of devising arrangements, systems, and procedures to cope with the requirements imposed by the advanced military technology of the missile age. This was the challenge confronting the new administration in 1961.

XX

STRATEGIC COMMAND AND CONTROL PROBLEMS IN 1961

(U) In mid-February, in preparation for the Kennedy decisions announced in the 28 March Special Message, Secretary McNamara put before the White House what may be as stark an appraisal of US strategic command and control as any president has ever received. It was this appraisal, delivered as part of McNamara's summary report on the US strategic posture, that was responsible for the President's focus on command and control in the message.[1]

(U) The chain of command from the President to the strategic forces, McNamara reported, was "highly vulnerable in almost every link." The destruction of "a dozen or fewer sites," most of them soft, none adequately hardened, could well eliminate ("deprive the forces of") all high-level command and control. Communications connecting key military headquarters with each other and with the strategic forces were soft, concentrated, and vulnerable to sudden missile attack.[2] Yet without the survival of some of the sites, including at least one containing the President, a legitimate successor, or a designated alternate, and without reliable communications to strategic retaliatory forces, there would be no assurance of an authorized response to attack.

(U) McNamara's assessment was not new, but reflected perspectives that had surfaced with increasing frequency and force during the 1950s. The new military technologies--thermonuclear weapons coupled with the intercontinental bomber and then the missile--had more than ever established surprise attack as the supreme threat to the nation, and had further confirmed nuclear retaliation as the ultimate national strategy. At the same time, the new technologies threatened to undermine the strategy by increasing the risks to the survival of the retaliatory forces, and beyond the forces, the means for their actual employment, including the means for their direction. It was clear that if retaliation was to be more than an automatic reflex--and even Herman Kahn's "doomsday machine" needed an actuating mechanism, at least a sensor and a programmed computer--a secure and effectively operating command and control system was absolutely essential. Yet, in the missile age, an adequate system had become more problematical than ever.

A. THE HIGH COMMAND

(U) Eisenhower officials had grappled with this problem, but had found it intractable. Under US law and custom, elaborated in settled political and military procedures, a nuclear response required the express decision of the President or one of a limited number of presidential successors, all normally in Washington, highly exposed as a group to nuclear attack and destruction.[3] The rest of the central high command, including the Secretary of Defense, the JCS, and their principal staff entities, were similarly concentrated in Washington and equally subject to simultaneous destruction. Plans for the survival of these command authorities were predicated on advance warning and timely relocation to a few alternate sites, dispersed to be sure but also vulnerable.

(U) All collateral and subsidiary strategic command and control arrangements were geared to the continuity of presidential decision-making authority and centralized direction of the forces by the national high command. Warning of an attack, prior to its launch if possible but immediately after launch if need be, was required to determine that an attack was imminent or in progress, to inform appropriate authorities, and to transfer them to safe locations; or in any case, with or without physical relocation, to inform authorities of the attack, obtain a retaliatory decision, and issue it to executing forces--all of which had to be accomplished before both the authorities and the forces were destroyed. Fast, reliable, and secure means of communication were also required to insure the flow of vital information, from the initial warning indications to the decisive "go-code" orders, but communications were also subject to destruction in a nuclear attack, and their survival long enough for the high-command process to function was by no means certain.

B. STRATEGIC AND TACTICAL WARNING

(U) In the missile era after sputnik, the extreme compression of attack time and urgent pressure for utmost speed during the attack-response cycle dominated all aspects of the strategic command and control problem.[4] Specialized reporting and estimative activities of the national intelligence community, in such agencies as the National Indications Center and the Watch Committee of the US Intelligence Board, and high-speed communications systems and procedures for handling critical intelligence information, as in the CRITICOMNET, were mobilized to provide advance indications of possible attack. It was unlikely that such indications would produce certain warning, of course, but even tentative warning could buy time for precautionary measures like alerting planners and decisionmakers or increasing the readiness status of forces. The declaration of JCS defense conditions of "DEFCONS," for example, ranging from normal or routine readiness at DEFCON 5 to maximum readiness for war at DEFCON 1, could invoke a series of actions to foreshorten the decision process and initiate preparations for executing war plans, up to and including launching SAC bombers on scheduled attack routes under "positive control" rules that kept them prepared to strike but held in check until they received an authenticated directive to proceed.[5]

(U) Advance ("strategic") warning from intelligence or other information was inherently unpredictable, however, and it was generally recognized that the first useful warning information might not be available until an attack was already under way (so-called "tactical" warning). Several attack detection systems were in operation in 1961, the most important of which were the Distant Early Warning (DEW) Line of antiaircraft radar stations across northern Canada and the seaward approaches to North America, all but a few segments of which were completed, which could provide several hours warning of attack by aircraft; the Ballistic Missile Early Warning System (BMEWS), with two of its three large radars just coming into service, which was expected to provide some 15-25 minutes warning of ICBM attack; and the Bomb Alarm System (BAS), being installed with prototype equipment at many target locations (including SAC bases) but not yet completed as a national network, designed for "instant warning" of nuclear detonations.[6]

(U) Other systems with a warning mission or application were under development and test, including the MIDAS infrared satellite system for detecting missiles during their boost phase, Over-the-Horizon (forward-scatter) radar for remote detection of missile launches, and the SAMOS system for satellite and missile observation. The space detection and tracking system (SPADATS) for monitoring objects in orbit was already operational, but was not oriented toward attack warning.[7]

(U) Sensor data from the attack warning systems were rapidly and automatically processed and delivered for immediate display at major command centers, such as the headquarters center of the North American (US Continental) Air Defense Command, the Strategic Air Command, or the facilities of the JCS. The warning coverage of the systems was incomplete, however, and their output was not altogether reliable, so that they could not be counted upon for unequivocal warning. BMEWS could be avoided by submarine-launched missiles, or by ICBMs on depressed or indirect "end-run" trajectories; and its equipment was liable to outages and malfunctions. On at least one occasion, as noted earlier, a definite BMEWS warning at the highest alarm level was triggered by spurious signals ("moon echoes")--without serious consequences but hardly strengthening confidence in the system.[8]

(U) Some SAC commanders, like Gen. Thomas S. Power, openly doubted that the United States would ever launch missiles until there was "definite proof" of an attack, perhaps not until hostile bombs or missiles had already fallen.[9] And even the latter, it might be added, might require more than the evidence of detonations registered by the Bomb Alarm System, which was itself fallible and subject to errors and breakdowns.

C. COMMAND FACILITIES

(U) Whether conclusive or not, it might take only a few minutes for warning indications to reach emergency command facilities at the national level. In 1961, these were rudimentary, the products of an earlier period when it was reasonable to assume warning times of three or more hours and, in comparison with the new assumptions of the 1960s, weak and fairly inaccurate Soviet strike capabilities. The installations planned for the emergency use of the President, the Secretary of Defense, and the JCS included the basement bomb shelter at the White House (rated at 70 psi blast resistance); the Joint War Room operated by the JCS in the Pentagon (above ground and soft); and, outside the Washington area, the presidential retreat at Camp David (100 psi), the OCDM[10] Federal Government relocation center at "High Point" (50 psi), and the Alternate Joint Communication Center of the JCS at Fort Ritchie (30 psi, programed for 80-100 psi), all some 30 minutes away from Washington by helicopter. These installations may have offered reasonable protection against weapons with large CEPs and yields in the kiloton ranges, but they were not designed to withstand the more accurate and powerful attack systems already in view by the late 1950s.[11]

(U) Normally, none of the above sites was continuously manned or adequately equipped for the immediate takeover of wartime functions in support of any surviving national authorities who might be able to use them. There was as yet no coherent National Military Command System (NMCS) with its National Military Command Center (NMCC), alternate standby centers, and specialized communications, data processing, and other facilities.[12] The Joint War Room in the Pentagon was activated as a possible joint military command post only in 1960, superseding temporary improvised arrangements for the JCS use of Air Force facilities there. The development of the AJCC as an alternate command center for continuity of operations was still in planning stages, and the establishment of more survivable centers, with essential communications and information-handling capabilities, was still under study by the JCS. The JCS had formed a Joint Command and Control Study Group to explore alternative programs, and the discussion had narrowed down to several specific proposals, but by 1961 no final determination had yet been made.[13]

D. COMMUNICATIONS

(U) Prior to 1961, communications from emergency command facilities to the strategic nuclear delivery forces consisted of an amalgamation of separately planned, equipped, and operated networks designed by the individual military services primarily to support individual service roles and missions. Plans to combine major segments of existing networks into a single, interconnected Defense Communications System were just getting started in 1960, and the new Defense Communications Agency was only in the early stages of trying to coordinate all-service communications support for the joint operational use of the JCS. Technical as well as procedural problems of compatibility and interoperability still interfered with timely and reliable operational communications, particularly outside of USAF and

SAC channels--but by this time strategic nuclear operations involved the forces of at least one other service, three other commands, and, since the 1958 Reorganization Act, a joint operational control system.[14]

(U) Moreover, all communications modes were susceptible to disruption from attack--at fixed terminals and switches and on landlines and landline links, which were generally designed for commercial use, often collocated with critical targets or funneling through probable target areas, and seldom hardened or otherwise protected against blast, collateral nuclear effects, or jamming interference. Efforts during the 1950s to harden facilities and re-route lines, to furnish alternate or backup facilities and multiple circuits, or to institute other corrective measures for communications survivability, were generally offset by advances in the threat (especially increases in weapon yields), or defeated by prohibitive costs.[15]

E. SIOP EXECUTION

(U) Emergency command functions and procedures were developed ahead of time and streamlined insofar as possible to permit effective operations even in the degraded communications environment of a nuclear attack. This was especially the case with respect to absolutely critical actions, like directing the execution of the strategic war plan. Assuming the continuity of political authority and a prompt retaliatory decision, the procedures in effect called for transmitting a simple, short, prepositioned "go code" to the strike forces, giving them the signal to carry out previously designated assignments to deliver prescribed weapons in a specified manner against preselected targets, all in quasi-automatic fashion that reduced communications and other command requirements to the barest human and technical minimums. This called for a thoroughly developed, clearly understood, and well-rehearsed operational plan that could be implemented with a simple unambiguous decision, almost without further command intervention--in the previously quoted words of General Twining, "pre-planned for automatic execution to the maximum extent possible and with minimum reliance on post-H-hour communications."[16]

(U) The strategic war plan of 1961, basically the Single Integrated Operational Plan (SIOP) developed by the Joint Strategic Planning at SAC Headquarters, was as all-inclusive as it was possible to make it.[17] In what must have been a unique advance in modern war planning, it incorporated a comprehensive set of individual strategic strikes, prescribing tasks, targets, tactics, timing, and other operational particulars in minute detail, and demanding utmost precision in execution by earmarked forces. Once the plan was put in motion, it was expected to run its course. (There was, in fact, no way to stop it after an authentic execute order was issued.) After the initial strike list was exhausted and the initial strike weapons were expended, any continuation of strategic operations depended on whatever surviving authorities might be able to improvise with whatever forces remained at their disposal. It was a plan, it was said, oriented toward a "one-shot war"--not entirely unsuitable, it may be added, for what may well have been at the time a one-shot command, control, and communication system.[18]

(U) A strategic command and control system that could only manage a semiautomatic all-out response, if even that, and that required risky split-second reactions on penalty of catastrophic failure, was hardly acceptable to the leaders of the incoming administration. They sought alternatives to a strategic predicament in which at the first signs of attack decisionmakers were under great compulsion to fire everything at once against the entire enemy target system because it was the only really feasible retaliatory option--"spasm war," they called it. They sought greater latitude and flexibility, a variety of options for use in a range of contingencies in a controlled and deliberate manner, not merely in the initial strike decision but continuing afterward until hostilities were terminated.[19]

(U) Highly concerned about the hair-trigger tensions in the system, the Kennedy officials also sought stronger safeguards against war precipitated by accidental or unauthorized actions, such as human or mechanical error, miscalculation, aberration, or other faults. They wished to be sure not only that the forces would react as desired when duly authorized and directed, but also that they would not initiate action when not so authorized and directed.[20]

(U) These new strategic policies imposed severe demands on the command and control system. They required a system with more built-in endurance and toughness under stress, capable of sustained operation during and even after an attack, adaptable to a wide range of circumstances and responsive to discriminating policy direction, able to function in an orderly, sure, yet timely manner. The system in being fell far short of such standards, and the Kennedy administration set out to improve it.

(U) The improvements desired did not come quickly, easily, or without significant costs. Insuring positive control of nuclear weapons and precautions against unauthorized or accidental use could easily involve real risks of operational degradation, or a loss in operational flexibility or readiness, trade-offs that frequently pitted the White House and OSD against the JCS and operational commanders. Controversies continued for years over the application of procedural safeguards like the "two-man rule," which required several persons at every level of operation of handling of nuclear weapons, or the strict safety regulations in storing, transporting, or otherwise managing them. Instituting physical safeguards, such as tamper-proof arming switches, electro-mechanical locks, or similar devices that did not unduly interfere with weapon reliability or responsiveness, called for difficult decisions that were often carried up to the highest national levels for resolution. A whole family of ingenious Permissive Action Link-Permissive Arming and Protection (PAL-PAP) Systems were developed in order to strengthen the physical and administrative controls over nuclear weapons use, whether strategic or tactical, at home or abroad. In the case of strategic missiles, like Minuteman, in which the weapon was physically mated to the delivery vehicle, such controls took the form of Launch Enable Systems that required encoded signals from higher headquarters, sometimes the highest echelons, to prepare and fire individual missiles.[21] For administrative officials, these controls were required by basic national command and control policies with respect to nuclear decisions; any further exposure of the weapons to communications or other command and control weaknesses was only another additive factor in an already difficult and complicated nuclear world in which command and control over military actions assumed entirely novel dimensions.

XXI

DOCTRINAL/FUNCTIONAL ISSUES: FLEXIBLE RESPONSE

(U) Major issues regarding functional roles and requirements for the strategic command and control system recurred repeatedly throughout the 1960s, and at the end of the Kennedy-Johnson period in 1968 were far from completely resolved. The most important were traceable to difficulties in developing a command and control system to fit the strategic policies and corollary doctrines that were adopted in 1961 and maintained thereafter, even in the face of serious reservations as to their actual feasibility in a thermonuclear missile environment.

U ([redacted]) The broad rationale for decisions on the US strategic nuclear posture during the 1960s was predicated on what was variously labeled "flexible" or "graduated" or "variable" or even simply "controlled" response. To the extent that it amounted to a doctrine, it was open to different interpretations, and it is not easy (if at all possible) to find a single coherent, clear statement of it, even among authoritative pronouncements of the President and the Secretary of Defense.[1] Officials of the Kennedy administration worked for several years attempting to hammer out an agreed formulation so that it could be enshrined in a Basic National Security Policy (BNSP) document, but after wrestling with many drafts they eventually gave up.[2] Their successors under Johnson may not have even tried--McNamara pretty clearly did not believe it was necessary. "Do the Chiefs suffer without it?" he asked.[3]

U ([redacted]) The major implications of the "flexible response" strategy for purposes of the present discussion relate to two separable but frequently associated aspects: multiple options for initial strategic retaliation, most relevant for considering command and control requirements in the pre-attack or early trans-attack period; and continuing options for sustained military operations after an initial retaliatory response, most relevant for considering requirements in the subsequent post-attack period.[4] The two aspects were often combined, as in W. W. Kaufmann's thumbnail characterization of flexible response:

> a posture ... so designed and controlled that it could attack enemy bomber and missile sites, retaliate with reserve forces against enemy cities, if that should prove necessary, and also exert pressure on the enemy to end the war on terms acceptable to the United States.[5]

In other formulations, the two aspects can be distinguished, as in one of the BNSP formulations: "an increasingly wider range of options, at alternative levels of violence and against alternative target systems, which the President ... could review in advance and choose among in the event" (aspect one), as distinct from "ensure ... that the conduct and termination of operations are also continuously and sensitively responsive to political decisions by the President or authorities predesignated by him" (aspect two).[6] Both aspects of "flexible response" placed heavy functional demands on the command and control system, but the second posed greater and somewhat different demands than the first. They both required survivability, but to different degrees and for markedly different purposes.

(U) When the JCS were asked by McNamara in 1961 to prepare a "doctrine" to permit "controlled response"--and negotiation pauses--in the event of thermonuclear attack ("controlled" was not precisely defined but clearly included less than all-out responses by all available forces), their reply was that the United States lacked the essential prerequisites to implement such a concept. It lacked survivable and effective early warning and active defense systems, survivable and effective nuclear retaliatory forces, and a survivable and effective national command and control system. Without these preconditions, the United

States could not risk withholding portions of its strategic forces in order to provide for variations in the timing, scope, or intensity of retaliatory action--a "full response" was the only feasible option. The Chiefs did not unanimously agree that implementation of controlled response was necessarily desirable, but they agreed that it could not be considered realistically until the mid-1960s, if then, when presumably the prerequisite conditions could be met.[7]

(U) Of the prerequisites named by the JCS, the survivable and effective command and control system proved the most difficult to achieve and remained the greatest impediment to a credible and practicable flexible response posture. The administration moved rapidly to provide secure retaliatory forces, so that within the next several years the Secretary of Defense was confidently claiming "secure, protected retaliatory forces able to survive any attack within enemy capabilities and capable of striking back and destroying Soviet urban society, if necessary, in a controlled and deliberate way."[8] Active defense lost its critical importance in the US strategic posture as the predominant threat shifted from manned aircraft to missiles, with anti-missile defenses pursued as R&D rather than operational programs; and early warning capabilities became important for providing retaliatory decision-time, as well as retaliatory force survival.[9] But uncertainty about the command and control systems continued to cloud the prospects for flexible response. As the Secretary of Defense warned the President in late 1961, the validity of the concept (using strategic forces "in a controlled and deliberate way under a wide range of contingencies") depended on having "a survivable high-level command and control system,"[10] a point that echoed one of the key JCS reservations.

A. SIOP OPTIONS

(U) The JCS skepticism about flexible response did not dissuade policymakers, and in early 1962 new policy guidance was issued requiring greater flexibility and latitude of choice in the SIOP.[11] Whereas the existing strategic plan (SIOP-62, which was prepared in 1960 and became effective April 1961) envisaged simultaneous strikes by the entire strategic retaliatory force, the new version (SIOP-63) was intended to be more selective and provide more choice, especially to permit the withholding of a retaliatory "reserve" from the initial response, if so desired, to permit the avoidance of urban-industrial targets, and to permit the exclusion of one or more Soviet bloc nations. The SAC position on the new guidance was not unlike that previously expressed by the JCS: doubt that there were sufficient forces available to withhold a reserve for later use, doubt that forces held in reserve would survive, and doubt above all that the command and control system would operate long enough or effectively enough to launch and direct them.[12] Nevertheless, the new SIOP was written to include multiple strike options, varying with the nature of the attack, ranging from "limited" reactions in the event of an equivocal attack that unfolded gradually, at one extreme, to full or massive retaliation against all military and urban-industrial targets of value in the event of an indiscriminate attack, at the other; provision was also made for selected forces of high survivability (the "protected reserve" or the "secure retaliatory force"), to be employed as the last-resort threat in any retaliation situation.[13]

(U) The chief SIOP options that were stressed by McNamara and other leaders were mainly choices between military ("counterforce") targets, especially opposing nuclear strike forces, and "cities"--urban-industrial targets. In his budgetary DPMs, posture statements, and public speeches, McNamara referred to distinctions between the two types of target, more specifically between striking back at "the entire Soviet target system simultaneously" and, for example, "Soviet bomber bases, missile sites, and other military installations associated with their long-range nuclear forces to reduce the power of any follow-on attack--and then, if necessary, striking back at the Soviet urban and industrial complex in a controlled and deliberate way." Or he spoke at times of a strategic force "that would permit you to launch in waves, a second strike and a second strike prime, one against their military targets and the other against their urban centers." Or he spoke of counterforce ("city-avoidance") wars in which strikes against cities might be avoided, or at least delayed or withheld rather than struck immediately, perhaps in a "coercive" strategy that would keep "cities" as "hostages" under threat for negotiation purposes. In 1962, when even the sophisticated public was accustomed to visual images of "all-out" nuclear war in which cities would be prime targets, especially in a retaliatory context, McNamara created no small public stir when he suggested that the United States had adopted a new strategy in which the principal military objectives would be "the destruction of the enemy's military forces, not of his civilian population."[14]

(U) Other references to "options" were made in terms of possible responses to small-scale events, which might be accidents, miscalculations, or other species of unauthorized strikes (about which the Kennedy officials seemed acutely conscious); third-party attacks, already seen as a complication to the simple bipolar competition; sanctuary treatment of political-military command and control centers, in order to preserve a negotiating partner of some kind; or, perhaps with less conviction in McNamara's case, "limited strategic nuclear options," essentially forceful demonstrations of will in a crisis.

B. COMMAND AND CONTROL PROBLEMS

(U) There was no doubt in any of McNamara's formulations that a second strike, "multiple options" strategy would require a command and control system ("communications links and command headquarters") with greater survivability than would be required for a single, fixed, predetermined response that would simply "let everything off at once."[15] The latter, for example, required a capability to detect the fact of an attack, defined at whatever threshold of action was deemed sufficient to trigger a "salvo" response. It could be managed with a crude go/no-go decision and a minimum of command control thereafter.

(U) A flexible response strategy, in contrast, required prolonged survivability in command and control, primarily because it could well involve a more complicated and less predictable decision, more versatile potential responses, and the exercise of a greater degree of precision in both option selection and implementation. It required a capability to go on and classify the attack, as small or large, for example, accidental or deliberate, selective or indiscriminate, against cities or not, against high command or not, and the like, in order to support a decision as to an "appropriate" retaliatory response. It would require a capability to determine not only that an attack was under way but also the apparent size, pattern, and timing of the attack, its source, its objectives, even the intentions of the attacker. It would require a considerable capability to assemble, evaluate, and utilize information, almost certainly in an extremely fast-moving situation, probably with normal information systems, communications, and command operating under great stress, overload or other abnormal conditions, and perhaps even with impaired or degraded capabilities.

(U) The attack-assessment function in a flexible response strategy could be a severe challenge to any command and control system.[16] So could the selection of an appropriate response, whether a choice of already preplanned options or an ad hoc improvisation. Information requirements might also be considerable, including up-to-the-minute estimates of capabilities to carry out various options with varying degrees of success, possibly for determination (along with attack assessment and other aspects of option selection) within the 15-25 minute warning period before strike capabilities became subject to enemy action.

(U) The functional requirements of flexible response could also continue beyond an initial selection of preplanned options, of course. Flexible response could involve the incremental employment of forces, continuing throughout some period of hostilities, even, as Kennedy-Johnson officials liked to believe, until the termination of the conflict. It could logically require a "war management" capability, including continuing assessment of damage to the country, its forces, and its resources; continuing assessment of strikes and their results; continuing appraisals of residual capabilities for further action and residual threats in prospect, and so on, all on a virtually real-time basis and in a situation of potentially severe degradation of all capabilities to organize and carry out any kind of action whatever.[17]

(U) The NMCS system established during the 1960s was a major advance over the strategic command and control arrangements of the 1950s (perhaps an even greater advance outside the strategic nuclear context), but it was hardly designed to satisfy the above functional requirements of flexible response, at least in "worst case" attack situations and for the degrees of flexibility desired by some proponents. There were some who believed that no command and control system within reason could attain the standards of survivability and functional performance that flexible response appeared to require. They argued, for example, that it was futile and perhaps even unnecessary to gear all command and control planning to no-warning, no-crisis contingencies;[18] or to realistically expect attack assessment, option selection, and controlled war management to operate in the trans-attack timespans of the missile age; or to count upon fast recovery and continuation of control in periods measured by hours and days. They proposed waiting periods and delays, instead, and, except for the extremely limited, small, and conceivably containable nuclear event, giving serious reconsideration to the practicability of flexible response.

XXII

THE ISSUE OF CONTINUITY OF THE HIGH COMMAND

(U) Perhaps the greatest uncertainty and the most difficult challenge in the strategic command and control system inherited from the 1950s was the question of continuity of national authority at the very top. The unique role of the President as the Commander in Chief, as well as Chief Executive, and his particular statutory powers with regard to nuclear weapons, made the survival of the presidency--the office if not the man--indispensable for legitimate nuclear action. Neither the President nor his legal successors were safe from attack, yet the US system provided no standby alternates or substitutes. The successors, like the President, were ordinarily in Washington, no less vulnerable than the President, and could easily be put out of action in the same strike.[1] Even if they were not all simultaneously disabled, there was little assurance that the senior official on the succession list could reestablish effective control without a period of confusion and delay; or even that he could be readily identified, located, and provided with essential presidential services, including communications, for uninterrupted strategic nuclear decision-making functions.

(U) It was entirely possible, therefore, that an attack directed against the President and other national leaders might disrupt the retaliatory command and control machinery, immobilizing strategic forces, subjecting them to piecemeal destruction, and preventing a coordinated response. "Should even a few weapons fall on the central high command," concluded the Weapons Systems Evaluation Group in 1960, "the results to our retaliatory capabilities could be catastrophic.... No other target system can at present offer equal potential returns from so few weapons."[2] Under these conditions, the national high command made a tempting target, more vulnerable than the forces themselves, offering the enemy an opportunity for a "decapitating" strike that appeared easier and more profitable than "disarming" strikes alone.

A. JCS PROPOSALS

(U) In 1960, the JCS had proposed a solution based on the civil-military chain of command rather than the line of presidential succession.[3] It essentially involved a contingent delegation of nuclear decision authority that the JCS considered manageable within the existing constitutional-legal structure, or with only minor modifications thereto. It called for a three-echelon arrangement for duly declared emergencies in which national survival was clearly at stake: the President or Vice President at the top, the Secretary of Defense or Deputy Secretary of Defense next, and the Chairman JCS or senior service chief third. If the primary official at a given echelon was not immediately available, the second would be empowered to act temporarily in his place; and if neither one was available the acting official at the next subordinate level would act for both of them. The intent was to maintain a clear order of emergency authority for critical military decisions, amounting to a conditional delegation rather than a transfer of power, one that did not involve officials usually remote from authoritative national security decisions, as the presidential line of succession did, and that did not entail time-consuming delays to find and install a successor while the nation was under attack.

(U) Similar proposals were offered in 1961, after McNamara, in one of his battery of 96 questions, asked the JCS to review the entire command and control system, "particularly as it relates to strategic forces," and to recommend changes to insure that the system would be continuously responsive to "duly constituted authority."[4] The query enabled the JCS to reiterate the importance they attached to having presidential authority "immediately available" for emergency decision, a condition that could only be met by some kind of predelegation of presidential authority to predesignated subordinates, at least for last-resort situations entailing "grave peril" to the nation. The JCS urged the adoption of an "explicit retaliatory doctrine," a previously approved retaliatory plan to be executed in a previously understood set of circumstances, such as an all-out or indiscriminate attack.[5] Approval of such a doctrine would permit the President's subordinates in the civil-military chain of command--that is, the Secretary of Defense, the Joint Chiefs of Staff,[6] unified and specified commanders, and so on--to act with a prior grant of presidential authority to execute a presidentially authorized military course of action, such as a retaliatory response.

(U) The concept of an explicit retaliatory doctrine, the JCS noted, would require further study at the national level, with other government agencies participating, in order to establish political-military agreement on specific triggering thresholds and appropriate responses. It would also presumably require a resolution of a number of other questions, such as the echelons, if not the commanders, that would be empowered to invoke the doctrine.

B. THE PARTRIDGE REPORT

(U) Another set of such recommendations was submitted later in 1961 by an *ad hoc* National Command and Control Task Force appointed by the Secretary of Defense to re-study strategic command and control problems.[7] The task force was headed by Gen. Earle E. Partridge, USAF retired, former CINCNORAD, who had been on record for several years with proposals to strengthen the national command system and reorient it toward the prospective ICBM threat.[8] The final report of the task force, the "Partridge Report," confirmed most of the current criticisms of the existing systems, including the inadequate provisions for continuity of the high command. The report proposed a single supreme military commander (CINCUSCOM) as the channel for operational direction of the unified and specified commands, instead of the corporate body of the JCS, and 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 eligible successor.

(U) The Partridge recommendations encountered opposition in both the Pentagon and the White House and were never adopted. The functions and duties of CINCUSCOM, for example, duplicated or conflicted with those of the JCS, and almost surely ran counter to statutory injunctions against a single chief of staff, so that controversial changes in legislation would probably be required. Moreover, the delegation of presidential authority to the EMREP seemed rather sweeping, both in function and duration, much more than required for the immediate task of ordering the execution of the SIOP; and any delegation of broader powers to prosecute general war, involving much more than purely military matters, raised sensitive issues of civilian control and civil-military jurisdiction in emergencies.[9]

(U) Even if proposals for prior delegation of presidential authority did not require changes in legal arrangements, they were not necessarily compelling or practicable. Specifying what functions were to be delegated, under what circumstances, for what period of time, and to whom, required more than a simple choice among obvious options. In perhaps the clearest contingency, that of an all-out nuclear attack in which a President might well authorize a full-scale response, it was not self-evident that any of the senior officials or commanders to whom the President might delegate authority stood a better chance of surviving than he did--or if so whether the survivor would have a sufficiently viable command and control system at his disposal to make much difference.[10] The question of *relative* survivability was crucial. Conversely, in less than all-out situations, the potential range of feasible responses might be considerably greater, and a President might not wish to restrict his own or a successor's courses of action by issuing fixed instructions beforehand. To policymakers opposed to a single-minded massive retaliation and strongly inclined toward flexibility of decision, this was a particularly important consideration.

(U) In the absence of explicit doctrine and *de facto* predelegation, many responsible officers apparently believed that if the national leadership were suddenly wiped out military commanders who survived could be counted upon to "do the right thing."[11] The difficulty with this proposition, however, was that those military commanders did not necessarily have the means to determine that the nation was actually under full attack, that all high command was lost, not merely out of contact, or that independently initiated retaliatory strikes would be "the right thing." As the JCS recognized, such military commanders would require sophisticated, reliable, and comprehensive sensing and communications systems, which they did not have.[12] Consequently, if they undertook military action at all, on their own, it might be disjointed and either erroneously conceived or ineffectual. Such a state of affairs would put national objectives at serious risk, to say the least, and would be the antithesis of controlled response.

C. THE OEP STUDY

(U) There seemed to be no satisfactory way around the predelegation dilemma. After the Partridge Report was reviewed at the White House, the President directed an interagency committee under the head of the Office of Emergency Planning to reexamine again Federal policies on continuity of government in the event of nuclear attack, "with particular emphasis on plans to insure the survival of the Presidency."[13] The committee, which included representatives of OSD and the JCS, reported in mid-1962. It conceded the almost insuperable difficulties in relocating the President to a safe haven outside Washington during a crisis--"the more closely we were approaching an emergency," in the words of one White House aide, "the more necessary is it for the President to be in Washington"[14]--and went on to propose alternative ground rules for handling officials on the succession list. In order of preference, so as to furnish a reasonable degree of survivability without excessive upset to regular activities, the choices presented were:

(a) ensure that at least one presidential successor was located in a dispersed, hardened, or mobile site at all times;

(b) ensure that several successors were randomly dispersed away from likely target areas at all times;

(c) ensure that several successors were dispersed away from target areas at times of high international tension.

The report suggested that such measures also be augmented by doctrinal response authority "for recognized catastrophic situations," such as attacks on national command, that might interrupt essential communications or other elements of the system even if presidential authority survived.[15]

D. THE PRESERVATION OF OPTIONS

U
([redacted]) The various proposals for the survivability of the presidency were apparently held in abeyance: this study uncovered no documentary evidence that they were either approved or disapproved. The JCS at the Pentagon went on to incorporate them into their planning assumptions, and JCS documents on command and control continued to postulate some sort of delegation of power by the President.[16] No effort was made to alter or extend the presidential succession list, or to change the

statutory requirement for presidential release of nuclear weapons, both of which remained as they were in the 1950s.

(U) No explicit retaliatory doctrine was promulgated during the 1960s--although JCS documents continued to assume that one might be, especially for the "catastrophic situation" that they believed was a serious possibility.[17] Even without official promulgation, of course, it was always possible for a President to quietly instruct the Secretary of Defense, the JCS, and operational commanders as to the actions he would wish them to take if they were unable to obtain command direction from him in certain nuclear attack situations, but if that was done it was one of the best-kept secrets in government. At one point at least the JCS felt that if their proposed "explicit retaliatory doctrine" were adopted it should be made clear to the Soviets, as a contribution to deterrence, in order to discourage any temptation to strike at the national chain of command or try to "decapitate" the strategic forces;[18] on the other hand, whether or not such an advance delegation existed could be considered an extremely sensitive question, and the uncertainty itself a sufficient contribution to deterrence. As WSEG Report 50 noted about the possibility in 1960, "it is not intended to suggest whether such measures are or would be taken and, if they were, it would not be expected that their having been taken would necessarily be evidenced."[19] A prudent enemy would have to surmise as much.

(U) There is little point here in speculating further about whatever may have been the actual decisions on presidential continuity and devolution questions as they were presented in the 1960s. In terms of the objective strategic command and control situation, however, it should be noted that even if the President had issued advance declarations of his intentions, as many military planners obviously desired, there was nothing to prevent him from overruling or changing them at any time, perhaps even suddenly in the midst of critical events. By the same token, a situation that was apparently left indeterminate, without such advance declarations, hardly ruled out presidential intercession at will, whenever he thought desirable or necessary--including whenever the nature of any real emergency became clear--to set in motion whatever emergency action he chose. A President could start sending successors out of town at any time, and he could plant contingent orders with his commanders whenever he liked, very quickly, without telling them beforehand whether, how, when, and under what hypothetical circumstances he was going to do it. Apart from the prospect of being caught absolutely unprepared by a completely unsuspected bolt-from-the-blue attack, which was a risk even with specific presidential guidelines, the military command and control situation might not have been appreciably affected one way or the other.

XXIII

COMMAND CENTER ISSUES

(U) Even if the continuity problem could be resolved and a national decision authority could survive "somewhere," there was an obvious need for surviving command instrumentalities as well--staffs, plans, information, procedures, equipment, means of communication, and the rest--to enable command functions to be exercised. These matters were interrelated, since both the decision-making authority and the command instrumentalities could be housed together in a survivable facility, and even if housed separately had to be at least connected if not physically integrated within a single system. But separate or not, the survival of either without the other was meaningless in terms of carrying out strategic military action. "Without communications," said General Power in a statement that was applicable to supporting command and control facilities generally, "all I command is my desk, and that is not a very lethal weapon."[1]

(U) Survivability was a pressing issue, but not the only one. In 1961, there were unresolved questions concerning what command functions were to be exercised, by whom, and over what forces. Specifics of the new national strategy of "deliberate, selective, controlled response" remained to be defined. Requirements for improved support of national authorities in peacetime and crisis situations as well as all kinds of war--not only strategic nuclear war--were under study. The organization of the military chain of command after the 1958 Reorganization Act, the degree of centralization within it, and the actual operational role of the JCS-Joint Staff were still being worked out.

A. THE USAF, SAC, AND NORAD

(U) The means for command and control had changed considerably during the 1950s and they were still changing. For more than a decade, the evolution of facilities like the command centers and communications facilities of the services and the major combatant commands was driven by a steady trend toward centralized control of increasingly large and complex operations, together with radical improvements in mechanized data acquisition, processing, and transmission. Such facilities were most advanced in the high technology strategic weapons areas, particularly within the Air Force, the Strategic Air Command, and the North American/Continental Air Defense Command, where major challenges were confronted in directing and coordinating forces of unprecedented range, speed, diversity, and destructive power.

(U) The USAF had planned a headquarters command and control system, still under development in 1961, that provided for the centralized receipt, processing, storage, and display of information on Air Force resources, plans, and operations worldwide, as needed to evaluate capabilities, make rapid decisions, and direct appropriate actions, all with the aid of batteries of computers and far-flung communications.[2] In strategic air defense, the SAGE system of internetted, semiautomatic centers for warning, communications, and antiaircraft action was coming into full operation, and a new, modernized NORAD combat operations center was under construction.[3] The Strategic Air Command was developing a sophisticated SAC Automated Command and Control System (SACCS) that largely dispensed with manual devices and techniques in favor of high-speed electronic data transmission, processing, and display, so that planning, directing, and controlling worldwide strategic operations could be accomplished centrally, under the direct cognizance of CINCSAC.[4]

U ([redacted]) Even with the use of advanced (and increasingly expensive) technology, however, command and control capabilities lagged considerably behind the fast-paced developments in weaponry, especially the introduction of strategic missiles. In 1961, McNamara and his staff found the SAGE system already obsolete, designed to meet mass raids of hundreds of bombers (a threat, he wrote in a memorandum to the President, that "failed to materialize"), and not only incapable of coping with the primary missile threat but incapable of sufficient survivability or recuperability under initial missile strikes to handle relatively modest attacks by follow-on bombers.[5] As a result of early 1961 staff studies he commissioned on continental air defense, McNamara directed that SAGE be continued as a peacetime "pre-battle" system, without further effort to expand its air battle functions, and that strategic defense funds be reallocated for backup interceptor control (BUIC) stations located outside likely target areas, protective measures for interceptors, and improved early warning.[6]

U ([redacted]) The SACCS (465L) program, several years from operational status and beset with technical difficulties, cost escalations, and delays, came under similar critical review. An April 1961 DDR&E report concluded that SACCS was satisfactory only as a peacetime "pre-strike" system. It would probably function as intended "in the absence of a nuclear attack on the US"; but in case of an attack, its continuing value "would probably be nil." It was a large and inflexible system, designed to operate between the time an attack was detected and the time of missile impacts; and the requirement to "race enemy missiles," limiting national authorities to a snap decision on an all-out response or none, was unacceptable from the standpoint of national policy. Yet simply redesigning SACCS to be survivable might cost billions of dollars.[7]

U ([redacted]) The Secretary of Defense's decision was to reorient and cut back the SACCS program to the peacetime command and control

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mission, and to direct the development of a separate "post-attack" command and control system "designed for high survival potential and long endurance potential in the wartime environment." In July 1961, USAF and SAC began the development of a separate, austere Post-Attack Command and Control System (PACCS), built around more survivable airborne and underground elements, employing communications expected to outlast an attack, and capable of transmitting the most elemental commands, including the order to retaliate.[8]

(U) The USAF Headquarters Command Post and its associated communications-electronics systems included a capability to perform strategic command functions at the request of national as well as service authorities, and the USAF in fact had plans to tie Headquarters USAF, SAC, and NORAD/CONAD command and control systems into a single operational network for national-level use. These plans were overtaken by the 1958 reorganization of the unified command structure, including the switch from the service "executive agent" system of command to the direct channel from the President and the Secretary of Defense through the JCS for operational direction of the forces. Yet for several years any JCS-operated command facilities were meager at best, requirements for JCS command support, beyond ordinary message center, switchboard, and similar services, were undefined, and the JCS continued to rely heavily on the USAF for emergency action command functions. The question of a special joint or national facility for sole support of national decision-makers had been periodically raised prior to 1961, but had not yet been acted upon.[9]

B. NATIONAL COMMAND FACILITIES

(U) Meanwhile, urgent concerns about the continuity of national command and suitable supporting facilities had led to several studies and actions in 1960 that were generating considerable momentum by 1961, when the new administration took over.

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In late 1960, after lengthy interservice debate, the JCS had directed the establishment of a Joint Alternate Command Element (JACE) at the AJCC (which had by this time become the *de facto* emergency command facility of all the Armed Forces if the Pentagon were destroyed). The JACE was intended as a pre-located JCS alternate battle staff to provide continuity of command and control if so directed, or if the JCS at the Pentagon were unable to act. Plans were held up while legal technicalities in the succession to the JCS were ironed out, but by mid-July 1961 the JACE was activated, with battle staffs from the Joint Staff stationed in Washington rotating to the AJCC for temporary duty.[10]

(U) In addition, proposals had been submitted in late 1960 for networks of multiple command centers, both fixed and mobile, for greater assurance of survival and continuity. In its report on strategic command and control, for example, WSEG proposed a "coupled command system" with one or more primary fixed centers backed up by one or more mobile centers and interconnected by reliable communications and bomb burst detectors so that the mobile centers could take over when the fixed centers were no longer operating.[11]

(U) Mobile command facilities were a relatively new idea in the late 1950s and early 1960s, prompted by the ever-increasing difficulty and cost of protecting fixed sites against thermonuclear weapons. Fixed centers were advantageous because they could be made relatively spacious and comfortable for people and equipment and hence could be designed for greater built-in capabilities, but for survival they required expensive hardening, duplication at several locations, and internetting. On the other hand, foreseeable advances in weapon yields, accuracies, and numbers tended to offset hardening and dispersal, so that soft, mobile centers, even with their space and weight limitations, had advantages of their own--particularly if the command functions envisaged were limited solely to the simple selection of preplanned options and the transmission of short precut execution messages. Among the mobile center concepts, the Navy recommended a National Emergency Command Post Afloat (NECPA) in a cruiser operating randomly in the Chesapeake Bay and adjacent coastal waters, ready to function as a safe haven and command center for the President and his key advisers. The Air Force proposed a National Emergency Airborne Command Post (NEACP) in an aircraft on ground alert at nearby Andrews AFB, similar to the airborne command post tested and put into operation at SAC headquarters, capable of receiving a presidential party, becoming, airborne, and orbiting outside the Washington target area in 15 minutes. The Army also outfitted a train to test as a land-mobile national command post. The new administration was sympathetic to all these ideas. In February 1961, a JCS study group decided that all three types were sufficiently practicable to warrant consideration as alternate national command centers, and in March 1961 the JCS approved trial operations of the NECPA on the cruiser *Northampton* and the NEACP in KC-135 tanker aircraft.[12]

U ([redacted]) Unresolved issues about fixed versus mobile command facilities persisted for years. Hardening remained a preferred alternative for large-capacity centers, especially if dispersed, but was widely criticized as a low-confidence measure against Soviet weapons expected in the middle or late 1960s.[13] Technical uncertainties about hardening (not easily resolvable in the absence of nuclear tests) and doubts as to the functional capabilities of mobile centers (in the midst of real doubts about what capabilities were required) kept considerable controversy alive. The basic judgment that a system of multiple centers was needed, however, and that it should include both fixed and mobile centers, seemed readily accepted by 1961. In their early appraisal of command survival for the Secretary of Defense in the spring of 1961, the JCS referred to the "current and planned" system of hardened and fixed facilities backed up by mobile command posts (together with the "explicit retaliatory doctrine" in case political authorities were not available), much like the WSEG 50 solution.[14] The Secretary of Defense, in his April posture statement, reiterated the need for additional, more survivable sites, specifically the airborne and seaborne command posts, and during the year he approved requested funds for further hardening the AJCC, modifying the USS *Northampton* (CC-1), and converting KC-135 tankers for command post use.[15]

(U) Nonetheless, progress toward the presidential objective of an "indestructible system to insure high-level command, communication, and control ... under any conditions" seemed slow.[16] The development of a more survivable national-level integrated system proceeded by incremental steps in 1961, did not get far off the ground until 1962, and was not fully committed to paper until 1963.

(U) It may be conjectured that some relaxation in urgency was caused by the quiet death of the "missile gap," which appeared to become caught in a double squeeze between downward reassessments of the Soviet threat and the US strategic-buildup decisions of 1961.[17] After all, the gloomiest appraisal of strategic command and control, as in WSEG 50, projected a mid-1960s situation in which the prospective missile threat would be substantially greater and US deterrence would probably be entering a seriously weakened phase--a situation that was still a few years off. In addition, however, it proved no easy matter to iron out the organizational and procedural details of a national command system, including relationships involving the JCS, the services, the CINCs, and the Defense agencies with an important participatory role, such as DDR&E, DCA, and DIA.

(U) The outlines of a national command center complex, based essentially on integrating and expanding existing facilities (much as the Partridge Report and WSEG had recommended), 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), an evolution of the JCS Joint War Room; the Alternate National Military Command Center (ANMCC), a redesignation of the JCS installation at the AJCC; and two mobile alternates, the NECPA and the NEACP.[18] The following October he issued a DoD directive on the World-Wide Military Command and Control System (WWMCCS) that outlined the NMCS in detail, to include the NMCC, ANMCC, NECPA, NEACP, and such other alternates as might be established, together with their interconnecting communications; and defined their relationship to the command and control "subsystems" of the service headquarters, the CINCs, and other DoD agencies.[19]

C. THE CUBAN MISSILE CRISIS

U ([redacted]) Probably no single event had a greater influence on the subsequent evolution of the NMCS during the 1960s than the Cuban missile crisis of October-November 1962. The crisis did not lead to specific changes in the principal concepts, arrangements, or procedures for command and control of strategic nuclear forces, as such. The latter played a major supporting role in the crisis and underwent a major real-life test of their command and control, as well as other, capabilities.[20] But the more important command and control lessons of the crisis related to the overall philosophy and style of national-level "crisis management" in a situation with escalatory nuclear potential. The net impact was to upgrade national-level interest in the new NMCS and to accelerate its development as a general purpose, national military command and control system.

(U) In broad historical perspective, the missile crisis may stand as a major watershed of the cold war. Walt W. Rostow, for example, has characterized it as the terminal gambit of a multi-faceted Communist offensive that began with sputnik in 1957.[21] Others have considered whether it may have been the catalyst for the ouster of Khrushchev and the subsequent acceleration of Soviet strategic programs.[22] However that may be, the crisis was followed by the test-ban treaty, the "hot line," and several other preliminary signals of easier US-Soviet relations, up to and including the subsequent SALT discussions. Nonetheless, in the evolution of the NMCS, the crisis is significant as the crucible and still classic model of "crisis management" in direct political-military confrontation with the USSR as the nation's paramount nuclear adversary. Secretary McNamara has been quoted as saying afterwards, "there is no longer any such thing as strategy, only crisis management,"[23] and the term gained widespread currency.

(U) At the decision-making level, the crisis appeared as a highly successful attempt to orchestrate military action and political-diplomatic negotiation. The naval "quarantine" of Soviet military shipments to Cuba, the preparations for alternative air or ground attacks on the island, together with a highly conspicuous worldwide alert by SAC forces, were combined with carefully controlled political and diplomatic actions, including inducements, to compel Soviet withdrawal of the missiles.[24]

(U) From the military command and control point of view, the crisis illustrated the now familiar phenomena of highly centralized, detailed control of military actions from the very top, with direct communications from the highest level national authorities to commanders at the scene of action, bypassing intermediate echelons in the chain of command in order to exercise close, real-time operational control. It raised to unprecedented levels the requirements for military responsiveness to civilian command, requirements that may have been considered highly unorthodox at first and violations of traditional principles of military command, but which became gradually accepted as characteristic features of command and control in the contemporary world. The experience brought home, as little else could, the manifest need for a highly flexible and responsive central command and control system at the direct disposal and in immediate support of decisionmakers, and from that time forward the evolution of the NMCS as the unquestioned core of such a system was assured.

(U) Apart from any tangible results, the Cuban missile crisis may well have had its chief impact on the subsequent outlooks, attitudes, and expectations among military officers generally. The experience of observing national leaders in front of their maps tracking hourly movements of individual ships, and at their telephones with their closest advisers directing the step-by-step moves during destroyer-level military encounters, unprecedented in detail, no doubt reverberated throughout the military establishment.[25] The highly centralized direction of operational details and frequent bypassing of intermediate echelons and channels that took place during the crisis, while probably dismissed by some as the idiosyncratic behavior of particular decisionmakers and an atypical departure from traditional principles of command, began to be viewed as fundamental alterations in the style of political-military crisis management in the nuclear age, particularly as they came to be repeated in other incidents. Stories of Kennedy in his Situation Room and McNamara in Navy Flag Plot did more than enrich the folklore of the Pentagon; they gave special emphasis and meaning to bland statements like those in NMCS directives: "Cold and limited war place their own peculiar demands on the National Command Authorities.... The use of military force in conditions short of general war, because of the threat of escalation, requires a greater degree of centralization ... when a timely and sensitive exchange of information in critical situations is required by the National Command Authorities, they may require direct communications to lower echelons."[26] In these respects, it is perhaps not too much to say that the Cuban missile crisis stands as a watershed in the evolution of US command and control practices, with ultimate implications affecting the responsiveness of all forces.

XXIV

NMCS DEVELOPMENTS AFTER CUBA

(U) From 1963 on, the NMCS received considerable visibility and support, although perhaps mainly as a set of arrangements for general purpose command and control, including crisis management, rather than for strategic nuclear purposes. 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 of command facilities along the lines proposed several years before by WSEG 50 and the Partridge Report and subsequently favored by the JCS. Although no one of the four facilities was invulnerable, each had particular survivability characteristics (hardening, mobility, dispersal, redundancy) that contributed to the survivability of the complex as a whole. While they may not have presented an attacker with targeting problems "complicated to the extent that the [US] national command ceases to be a profitable target" and may not have constituted a literally "non-interruptable" command system (as expressed in JCS objectives[1]), they no doubt added to the weapons costs of putting the US high command entirely out of action and reduced an attacker's confidence in his ability to interrupt it at will. The four centers offered a reasonable chance that one or more could survive even a deliberate effort to disrupt the command process.

A. THE NMCS CENTERS

(U) All four NMCS centers, fixed and mobile, were intended to constitute a close-knit team, linked with reliable, secure, survivable communications so that each could have continuous access to each other and to national decisionmakers, Service headquarters, unified and specified commands, and other designated agencies. These centers did not constitute a separate system of command communications, but were part of the consolidated Defense Communications System, which employed a variety of media and modes, dispersed facilities, multiple routing, and combinations of hardening, mobility, and redundancy in order to achieve survivability commensurate with the command terminals being served.[2]

1. The NMCC

U
([redacted]) The NMCC was developed in the mid-1960s as a continuously manned, unhardened facility, operated by the Joint Staff, to serve the JCS, the Secretary of Defense, and the President in their operational command functions.[3] It was manned around the clock by a team of field-grade officers under an operations officer of flag rank, with provision for staff augmentation as necessary. It included room for accommodating the JCS and other decisionmakers during emergencies, but it did not normally function as a center for decisionmaking or "command" for national authorities, who for the most part operated from their regular offices and conference rooms. Nor was it intended as a source of substantive staff support, unless time constraints or urgency precluded the use of normal staff channels or procedures. It was basically an information and communication center, providing rapid and secure access for the exchange of information, advice, and instructions among decisionmakers, their principal staffs, other government agencies, and US force commanders worldwide. It maintained contingency data files, operational and situational assessments, and status-of-actions score sheets for day-to-day command activities, including crisis and limited war management, up to the transfer of functions to one of the alternate centers in strategic nuclear war. As long as it survived and functioned as the primary center, it provided the capability to initiate emergency actions, including preparation and transmission of SIOP orders, meanwhile

keeping the other centers abreast of events and decisions so that any of them could take over as primary command center at any time.

(U) The NMCC was expanded in size from about 7,000 square feet in 1962 to about 21,000 square feet by 1965, still in temporary quarters in the JCS area of the Pentagon. (The JCS considered this an "interim" location, pending decision on a "first-generation" NMCC of 10 times the size, located underground between the Mall and River entrances of the Pentagon.) It gained considerable stature as a current military information center and communications hub, particularly as a result of crisis experience, such as during the Panama and Tonkin Gulf incidents of 1964, the Dominican Republic and Vietnam interventions of 1965, the Middle East crisis of 1967, and other high-pressure events of the period. Meanwhile, under the Operations Directorate (J-3) of the JCS, the NMCC continued to be the focal point for developing and exercising national-level command and control procedures for general nuclear war.[4]

2. <u>The ANMCC</u>

(U) The ANMCC was located underground at the AJCC near Ft. Ritchie, hardened further to about 140 psi blast resistance by 1963, and designed to operate for about 30 days in a "buttoned-up" condition.[5] It was continuously manned on a skeleton "battle staff" basis and prepared to accommodate national military authorities and supporting staffs if selected for relocation. The ANMCC was especially organized and equipped to carry out essential command center functional tasks in the trans-strike and post-strike phases of general nuclear war, including providing SIOP data bases, emergency action communications, and computational and other equipment for monitoring the readiness-status of nuclear forces, assessing attack damage, and evaluating strike progress and results. It was intended to provide sufficient information for ordering the execution, redirection, or termination of strategic nuclear operations, and the means for disseminating the relevant information and orders to other alternate centers and to commanders in the field.

3. The NECPA and NEACP

U ([redacted]) The two mobile alternates, also oriented toward the general-nuclear-war mission, but with bare minimum capabilities, were intended to be capable of operating independently for short period, outside the Washington area, with or without national authorities on board, until adequate command facilities could be reconstituted.[6] The NECPA consisted of two ships (the converted cruiser USS *Northampton* in 1962, plus the USS *Wright*, a refitted auxiliary aircraft transport, in 1963), with one continuously under way at sea and capable of operating for up to two weeks if necessary without extensive logistic support. The NEACP was operated with KC-135 (later redesignated EC-135) aircraft maintained on 24-hour ground alert, able to operate airborne for at least 15 hours without refueling and for about 10 days in an alternating air and ground mode with a national command contingent on board.

U ([redacted]) Both the NECPA and the NEACP had smaller watch teams and less equipment than the NMCC and the ANMCC, but were more survivable. The NEACP, the most space-restricted of all, was potentially the most survivable, once airborne and away from target areas. Both mobile centers relied heavily on the more extensive data bases and data processing capabilities of the fixed centers as long as the latter remained operational, but were then supposed to be able to operate on their own. They maintained summary types of information in standard or compatible formats, constantly updated, so that they could function as mutually substitutable alternates insofar as their physical limitations permitted.

B. THE DUCC PROPOSAL

U ([redacted]) The NMCS still lacked one of the fundamental prerequisites for a unified, survivable, and effective national command system: a firm umbilical to the national command authority itself--as the JCS liked to call it, "legally constituted surviving civilian authority." National authorities (or their alternates or successors) might "pre-locate" or "relocate" to any of the centers in order to exercise command from them in an emergency, but they had never done so in previous crisis situations, including Cuba, and no one could guarantee that they would do so in the future. The concept of relocation from the White House and the Pentagon to the more survivable ANMCC, NECPA, or NEACP seemed particularly unreal, since the time required for access to the sites (in the event of a surprise missile attack) could easily exceed the expected tactical warning time.[7] In the absence of relocation, of course, command procedures did provide for communications access to and from national authorities, including the President and his successors, wherever located, so that it might still be possible to obtain authority for critical command functions. But, as noted above, if the President were caught by a strike on Washington, identifying and locating a senior surviving authority would be no easy matter; and even if it were possible, necessary command communications would be precarious.

(U) Skepticism about relocation concepts and uncertainty about the capability of the NMCS to function effectively without a resident political authority (plus, it may be surmised, reluctance to leave supreme command in any other hands) led to a search for alternative approaches. One approach led to a major proposal for a Deep Underground Command Center (DUCC), a "super-hard" command post easily accessible to national authorities and designed especially for their use with minimum dislocation or interruption of their normal routines.

(U) The DUCC proposal apparently reached the Secretary of Defense level in a memorandum from the ASD (Comptroller), Charles J. Hitch, in January 1962.[8] The memo referred to the planned 1963 configuration of the NMCS as "the best that can be done to establish a survivable command facility in the near future," but pointed out several shortcomings, above all the problem that the most survivable elements, the NECPA and the NEACP, were not sufficiently accessible or convenient to support any great confidence that national authorities would actually be on board in the event of surprise attack. As a solution, the memo proposed a very deep underground center close to the Pentagon, perhaps 3,000-4,000 feet down, protected to withstand direct hits by high-yield weapons and endure about 30 days in a post-attack period. In the event of warning, the proximity of the center would facilitate the protection of key personnel; in a no-warning contingency, it was conceivable that decisionmakers would already be in it. As the Hitch memo to McNamara observed:

> For example, the center could include an office where people, such as yourself, could conveniently spend a day every week or two to conduct business almost as usual and be in a position to assume National Command in the event of a no-warning attack on Washington.[9]

(U) The DUCC proposal was controversial and raised many questions, including the technical-engineering feasibility and costs, the elements of the NMCS that it might displace, and the command authorities who might be included in it (the JCS were among those scheduled to be included if it ever came to pass).[10] Order-of-magnitude estimates of 5,000-10,000 psi hardening against 100-megaton weapons, for example, were based on theoretical calculations and were received in some quarters as speculations.[11] Even if the basic DUCC capsule could be built to survive direct hits, questions of communications coupling and lifeline logistics remained formidable. The DUCC proposal was sufficiently attractive at OSD level, however, that exploratory studies were initiated, and in late 1963, in connection with FY65 budgetary decisions, the Secretary of Defense put before the President a recommendation to begin actual construction.[12] Specifically, the Secretary proposed the options of an austere 50-man DUCC or an expanded 300-man version (with the former built to permit expansion into the latter, if desired). The fixed underground ANMCC would be phased out as superfluous, whichever version was chosen, and the other NMCS facilities would be cut back to some degree according to one or the other.

(U) The JCS reacted to the DUCC proposal without marked enthusiasm.[13] They took the position that the planned NMCS complex represented an optimum command and control posture for the time being and should not be reoriented toward primary reliance on a single, fixed underground facility of unproven reliability and operational effectiveness. Neither version of the DUCC was large enough to hold the staff personnel and facilities required for essential general war functions, and it was not likely that either could have the self-sufficient, survivable, and reliable communications that would be required. Until these capabilities were ascertained, it would be premature to eliminate or reduce the ANMCC or the other NMCS centers.

(U) The DUCC proposal did not survive White House consideration and was apparently set aside indefinitely.[14] It would have been relatively expensive, of course--at the time, some $310 million for the austere version, for construction costs alone, out of a total proposed five-year NMCS budget of $850 million--and the strong JCS misgivings, especially about communications capabilities, may have been persuasive. Whatever the reason, the basic NMCS configuration was retained substantially as planned, without the addition or substitution of anything like the DUCC.

C. FURTHER EVOLUTION

(U) During the next several years, NMCS capabilities were considerably improved, through added operational experience, procedural refinement, and equipment upgrading. The NMCC itself was expanded further, to some 30,000 square feet, was provided with expanded automatic data processing support, and became a prime beneficiary of a greatly enlarged Joint Operational

Reporting (JOPREP) system. The ANMCC was hardened to 400 psi. The endurance of the NECPA was increased from several weeks to two months, and that of the NEACP, even within the EC-135 airframe, to 20 hours of unrefueled flying time. Communications support was augmented and improved with the introduction of more sophisticated, flexible, and effective satellite, airborne, and mobile-transportable systems; and communications capacity, especially after the first satellite communications systems became operational in 1965, was multiplied several fold. But no major structural changes were made.[15]

(U) In the absence of a DUCC, or some functional equivalent that was not contingent on the relocation of national command authorities from Washington, and assuming that predelegating nuclear retaliatory authority was out of the question (or simply too hot to handle for planning purposes), the NMCS remained something of an incomplete solution to the problem of national strategic command as perceived in the 1960s. The NMCS encompassed a set of potentially survivable command sites, with communications and other supporting facilities and competent military staffs, available to support national authorities on demand--if the latter should survive without loss of contact. Even without the assurance, the NMCS could perhaps be justified on the grounds that its very existence at least provided options for on-the-spot, *ad hoc* relocation, delegation, or other conceivable measures for continuity of command that that might otherwise be foreclosed. But some dissatisfaction persisted over whether this permitted the desirable level of confidence in the reliability of the national strategic command process, and this basic policy issue remained sufficiently alive to reappear in later years.

(U) Throughout the years prior to 1968, the option of seeking to protect national authorities and the NMCS by means of an active ABM defense system remained a hypothetical possibility. Both the Nike-Zeus system of the late 1950s and the Nike-X system of the 1960s had been perennial JCS recommendations for deployment as active defense systems, justified primarily in terms of what McNamara called "damage limitation," i.e., protection of US population and industry. Protection of government and military command and control centers, when it was mentioned at all, was put forward as a distinctly secondary and presumably not decisive mission. This remained the case even with respect to the ambiguous 1967 Sentinel "anti-China" ABM decision. It was not until the Safeguard program was advanced by the Nixon administration, based on active ABM defense of strategic offensive forces, that protection of command and control was made a high priority mission for ABM defense.[16] As an early solution for the problem of command and control survivability, therefore, it remained in abeyance.

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XXV

THE SAC COMMAND AND CONTROL SYSTEM

U ([redacted]) Many of the troublesome issues with respect to flexible response, particularly those concerning trans-attack and post-attack command and control functions, were reflected in the evolution of the SAC Post-Attack Command Control System (PACCS).[1] As mentioned earlier, in 1961 SAC's primary command and control apparatus, the SAC Automated Command and Control System (SACCS), was ruled excessively vulnerable to missile attack and re-directed toward pre-strike day-to-day management and planning, and PACCS was established as a separate structure of more survivable systems to maintain continuous command and control of SAC forces in wartime.[2] The latter was intended to cover such functions as response to attack, strike evaluation, follow-on threat assessment, recovery and reconstitution of forces, replanning, and retargeting--functions that were far from a practical reality at the turn of the 1960s but were logically implied in the concept of flexible response.

(U) In the early 1960s, SAC was primarily a bomber force augmented by ICBMs. The last B-58 and the last B-52 were delivered to SAC in 1962. The B-47s were phased out rapidly after 1961, and the SAC B-47 inventory fell from some 1,100 in that year to none in 1966. No new-type manned bomber was introduced into SAC until the first of the FB-111As was delivered in 1969 as a replacement for some of the older B-52 models.[3] After early RDT&E successes, the Minuteman ICBM was introduced at an accelerated rate and soon constituted the mainstay of the ICBM force. In 1964, the number of operational ICBMs on alert surpassed the number of alert bombers for the first time, and by 1967 there were more than 1,000 ICBMs

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assigned to SAC missile units as compared with 670 bombers. All but 63 of the missiles were Minutemen; the rest were Titans.[4]

(U) In the early 1960s, there were serious doubts about the continuing role of manned bombers in the SAC force. The B-70 and RS-70 programs proposed as follow-on strategic aircraft were cancelled, as was Skybolt, the ballistic air-to-surface missile that was expected to maximize the utility and lengthen the service life of the B-52.[5] The Secretary of Defense openly questioned further requirements for strategic aircraft and accorded manned bombers a secondary operational role ("most of the aiming points in the Soviet target system can best be attacked by missiles"[6]), so that it appeared to be only a matter of time before missiles would entirely supplant aircraft. By the mid-1960s, however, it was clear that SAC would remain a mixed force of missiles and manned bombers at least through the remainder of the 1960s, and that the B-52/B-58 force would be stabilized at a level of 500-700 aircraft. McNamara proposed to keep open the option for a B-52 replacement in the 1970s ("if," he said, "a requirement exists at that time."[7]), but for the remainder of the decade SAC command and control remained oriented toward a mix of bomber and missile weapons systems.

A. THE EARLY PACCS

(U) The originally approved PACCS plan included redundant ground and airborne system packages. The first phase, scheduled for completion by 1963, included a network of Airborne Command Post (ABNCP) and communications relay aircraft, furnished with manual equipment and capable of continuous airborne operations. In the second phase, planned for 1964, the ABNCP and communications aircraft were to be fitted with automatic data processing and communications equipment. And in the third phase, scheduled for 1965, a Deep Underground

Support Center (DUSC) was to be added, very deep and super-hard, primarily to provide the airborne elements with "in-depth" computational and data processing support.[8]

U ([redacted]) The PACCS system was modeled after LOOKING GLASS, the SAC ABNCP put on 15-minute ground alert at Offutt AFB in July 1960 and on continuous airborne alert beginning in February 1961. It consisted of EC-135 (modified KC-135 Stratotanker) aircraft with a SAC general officer on board, designated as a CINCSAC alternate, and a small battle staff of nine members, including communicators and operations controllers. Additional EC-135s, similarly modified, were added as auxiliary ABNCPs at SAC numbered air force headquarters, on 15-minute ground alert, ready to take up airborne orbits and to disperse to alternate locations during emergencies. The communications relay aircraft were converted B-47s (EB-47L), on either ground or airborne alert at strategic locations, ready to provide air-to-air communications links between national authorities, the NMCC, CINCSAC, SAC numbered air forces, and the strike forces.[9] The entire PACCS fleet was operational by June 1963, with a total of 17 EC-135s and 36 EB-47s. In March 1965, the EB-47s were replaced by EC-135s as well, which provided more space and greater endurance for communications relay functions. At the same time, the total fleet was cut to 14 command post and 18 communications aircraft, all EC-135s.[10]

U ([redacted]) In the 1961 PACCS concept, the ABNCP and communications relay aircraft were intended to provide a survivable airborne network for minimal command and control functions, such as the transmission of execution messages to weapons control points, and the associated DUSC was intended to furnish post-attack assistance from the ground as a "wartime control replanning center."[11] The DUSC plan called for a hardened facility, 3,500 feet deep for protection against direct hits by 100-megaton weapons, able to accommodate some 200 people for some

30 days in complete isolation and to handle the large volume of data processing and analysis required for strike assessment, as well as follow-on strike and other decisions.

(U) The DUSC proposal ran into serious cost and other difficulties and was never implemented. The Air Force Council doubted its survivability against potential penetration-type nuclear weapons of the future and expressed misgivings about making SAC's post-attack command functions largely dependent on a single facility, however fortified. Cost estimates escalated from under $100 million to over $200 million, and the projected operational date slipped from 1965 to 1969. Economic considerations favored a construction site in a deep mine near Cripple Creek, Colo., but SAC found the location too remote from its main headquarters and operationally disadvantageous for continuity with the pre-attack SACCS facilities. In 1963, SAC reluctantly opted for a long-endurance, all-airborne concept instead, and the DUSC project was killed, with JCS and OSD concurrence.[12]

(U) Eliminating the DUSC left the PACCS complex with extremely limited capabilities for independent assessment of strike effectiveness in execution of the SIOP, for consolidating information on residual friendly and enemy forces, and for conducting other critical war management activities. The available EC-135 ABNCP was little more than a platform for receiving, reformatting, and retransmitting emergency-message traffic. It lacked the space for a sufficiently large battle staff to manually process necessary war management data, and initial hopes that suitable ADP equipment could be miniaturized and packaged for airborne use had not materialized. The Air Force FY63 budget request for R&D in airborne automation, for example, including improvements in computer-assisted techniques for decisionmaking and rapid planning, was almost eliminated in a cut from $20 million to $1 million.[13]

(U) The SAC solution was an Advanced ABNCP (AABNCP) in a larger airframe, with a larger battle staff (on the order of 30-40 people), more sophisticated communications and other equipment, and greater endurance--all in all a more flexible, survivable, self-sustaining, and operationally effective ABNCP than the EC-135. In 1964, SAC formally proposed such a project, and from that time the further evolution of PACCS largely consisted of studies and plans for the future AABNCP.[14]

(U) While plans for the follow-on to the EC-135 ABNCP were being formulated, SAC greatly upgraded the ABNCP's war-time role and the authority of the SAC general who commanded it, the Airborne Emergency Actions Officer (AEAO). The AEAO had been able to order SAC forces to assume "minimum reaction" status and to direct positive control launch of aircraft on his own authority, but only after verifying that his superiors in the SAC hierarchy--CINCSAC, the Vice CINC, and the commanders of the SAC numbered air forces--were unable to do so. In December 1964, SAC revised its procedures for continuity and command succession. The AEAO automatically became acting CINCSAC if LOOKING GLASS lost contact with the SACCS system and observed a nuclear detonation over SAC headquarters. As such, the AEAO was authorized to take emergency actions for the survival and readiness of SAC forces, including putting them on minimum reaction alert. Pending a more complete determination regarding command survival and succession, the AEAO was also authorized to execute SAC forces on receipt of a valid execution message from the JCS. Thus, next to surviving National Command Authorities, a surviving one-star SAC general in LOOKING GLASS was made a critical link in the chain for executing the SIOP, in some circumstances the most survivable link.[15]

B. SAC IN THE CUBAN MISSILE CRISIS

(U) Although PACCS was not yet a going concern, the Cuban missile crisis of October-November 1962 was the occasion of a real-life test of the SAC command and control system during an unprecedented strategic confrontation with the Soviet Union.[16] As noted earlier, SAC had a supporting military role in the crisis, which featured a naval "quarantine" of offensive military shipments to Cuba, preparations for air and ground assaults on the island, and, if necessary, a strategic nuclear offensive against the Soviet Union. The latter contingency was in connection with President Kennedy's declaration that:

> It shall be the policy of this nation to regard any nuclear missile launched from Cuba against any nation in the Western Hemisphere as an attack of the Soviet Union on the United States requiring a full retaliatory response upon the Soviet Union.[17]

SAC's prime operational role during the crisis was to back up those words of the President and to demonstrate forcefully the US will and ability to bring its full strategic power to bear.

U ([redacted]) In the highly orchestrated management of the crisis, SAC was only one of a number of instruments, and its contribution to resolving the crisis was arguable. General LeMay was convinced that "superior US strategic power, coupled with the obvious will and ability to apply this power, was the major factor that forced the Soviets to back down." Secretary McNamara said that the "cutting edge" of the action was conventional strength: "nuclear force was not irrelevant but it was in the background."[18] Neither view was necessarily incorrect. The military moves and countermoves actively contemplated on the US side were several steps away from escalation to major nuclear war and the execution of SAC, but perceptions of the escalatory risks influenced all major US decisions during the crisis, and doubtless did so on the Soviet side as well.[19]

U ([redacted]) The Strategic Air Command's participation in the crisis began on 12 October, when SAC took over the U-2 high-altitude air reconnaissance mission over Cuba from the CIA, and it was a SAC U-2 flight on 14 October that obtained the first conclusive photographic proof of the installation of Soviet MRBMs on the island.[20] Thereafter, SAC greatly intensified air surveillance over Cuba while decisionmakers deliberated alternative options and determined a course of action. On 22 October, when the President made his public announcement of the Soviet buildup and demanded the removal of the missiles, SAC was put on increased readiness at DEFCON 3 (ROUND HOUSE) worldwide. The SAC battle staffs were placed on 24-hour alert, leaves were canceled, and personnel were recalled to duty. At the same time, SAC B-52s were directed to initiate a one-eighth airborne alert, B-47s were dispersed to selected civilian and military airfields, and additional bombers were placed on 15-minute ground alert. The next day, on 23 October, the JCS in a formal Emergency Conference ordered SAC to step up readiness to DEFCON 2 (FAST PACE) and declared an "A-hour" for the "generation" (i.e., preparation) of maximum forces for SIOP execution, with bombers and missiles armed with nuclear weapons and ready for launch on receipt of execution orders.[21]

U
([redacted]) Within 24 hours, SAC "generated" a total of 1,436 bombers and 145 missiles (of a total operational inventory of 1,636 bombers and 201 missiles) and began to maintain a continuous stream of B-52s aloft in airborne orbits, 65 on the average, in position to proceed to their targets at any time if so directed. This was the first time that SAC had generated forces since the Lebanon crisis of 1958, when over 1,000 SAC aircraft were put on alert for a full show of force that lasted several days.[22] It was the first time that SAC had launched an actual one-eighth airborne alert or dispersed medium bombers, fully loaded, to civilian airports and non-SAC bases. And it was the first time that SAC ICBMs were put on comparable alert for immediate launch, including the first model-"A" Minuteman I missiles at Malmstrom AFB, Mont.[23]

(U) During the next tense week, while the SAC strike forces maintained this increased readiness posture, SAC reconnaissance aircraft joined in the search for Soviet ships bound for Cuba. On 28 October, when the Soviets finally agreed to remove their missiles, SAC also participated in aerial surveillance while the missiles and related equipment were dismantled, loaded on ships, and returned to the Soviet Union. On 21 November, after the Soviets consented to remove their IL-28 bombers as well and the US "quarantine" was officially ended, SAC shifted back to DEFCON 3, the one-eighth airborne alert dropped to a routine indoctrination-training level, B-52s returned to their normal 50 percent ground alert, and medium bombers went back to their home bases.

(U) The month-long crisis tested SAC airborne alert concepts, emergency communications, aircraft dispersal operations and procedures, and other aspects of SAC's general war planning. The combination of continuous one-eighth airborne and full ground alert for the B-52s required the rotation of aircraft from ground to airborne alert and back again, as well as the constant loading and unloading of weapons in the effort to keep weapons of the proper type matched to their assigned targets, so that some degradation of the SIOP posture resulted. On the other hand, the one-eighth airborne alert, which increased the airborne alert B-52s from a training rate of some 12 sorties a day to 65, with more than 200 weapons, was achieved in just 24 hours. The number of ICBMs ready to fire was increased from 132 to 145 in the first 24 hours (65 percent to 72 percent of those available) and reached a maximum of 186 (92 percent) on 3 November, 10 days later, which appeared to be reasonably effective considering the recency of crew experience and the relatively complicated characteristics of the first-generation weapons involved.[24]

(U) The bomber dispersal brought up both communications and operational problems. The dispersal had an important strategic mission in the crisis, since the chief effect of the MRBM-IRBM sites being built in Cuba on the overall US-Soviet strategic balance at the time would have been to endanger further the relatively soft and crowded SAC bases in the East and Southeast. The United States had no detection or warning system against a missile threat from Cuba, so that even ground alert aircraft within striking range were extremely vulnerable, more so than to ICBMs from the Soviet Union. Although only 42 MRBMs were observed being introduced into Cuba during the entire period (no IRBMs were seen, though sites were), when the Soviets called a halt construction was under way at launching facilities for at least 48 MRBMs and 24 IRBMs--a potential attack force approximately equal to the 75 or so ICBMs the Soviets were reported to have available at the time. In the circumstances, therefore, the dispersal requirement had a special urgency, for military as well as political reasons.

(U) Despite a concerted effort to implement the programmed bomber dispersal, SAC uncovered serious shortcomings in plans for deploying the communications equipment to dispersal airfields, and it encountered serious delays in establishing mobile communications links to the ABNCP, LOOKING GLASS. The general congestion of military communications circuits throughout the crisis area, primarily as a result of the massive build-up of tactical forces in the Southeast, made bomber dispersal an even greater problem, and consequently strengthened SAC's interest in the availability of separate, dedicated SAC communications facilities for command and control.[25]

(U) Other, more general command and control lessons of the crisis were presumably not lost on SAC, including a reappraisal--or perhaps merely confirmation--of the risk-taking proclivities of Soviet leaders with nuclear missiles at their disposal; the dependence of SAC forces on warning and on uninterrupted command and control; the critical importance of clear, unambiguous intelligence information (such as hard-copy photographs) for decisions near the nuclear threshold; the enormous value to decisionmakers of exploring alternatives and choices, and preserving time for deliberation, before taking irrevocable action; and the strong incentives at the top for direct personal control of forces and events at the scene of action, especially action with a serious escalatory potential.[26]

C. THE AABNCP, LAUNCH CONTROL, AND ERCS

(U) The Cuban confrontation only accentuated existing desires in Washington for tight high-level command and control of military actions of all kinds, and reinforced established convictions regarding multiple options and controlled selective response in strategic war. At SAC, the focus of command and control efforts accordingly shifted from assuring minimum survivable capabilities to launch the force, as provided in the new all-airborne PACCS, to the yet unresolved trans-attack and post-attack problems of continuity of control over and above the initial dispatch of execution orders.

(U) As already discussed, it was clear at SAC that there was little scope for enhancing PACCS capabilities within the physical constraints of the available EC-135 aircraft, especially after the DUSC portion of the program was canceled. The EC-135 was severely limited as an ABNCP, not only in elementary survival and endurance but also in functional performance, which was directly related to the space afforded for supporting staff and equipment. A larger aircraft seemed to be a large part of the answer, and a larger military aircraft was in the works, the C-5A, under development as a giant troop and cargo transport.

(U) SAC's proposal for an Advanced ABNCP coincided with parallel requirements for new ABNCPs in the National Military Command System (the NEACP) and in the headquarters of the other SIOP CINCs, especially CINCEUR (SILK PURSE) and CINCPAC (BLUE EAGLE), to serve as mobile alternates. Just as SAC had previously led in the development and operational testing of the initial ABNCP, it now led the way in the follow-on AABNCP and worked with Air Force agencies in developing a common configuration for all potential AABNCP users.[27]

(U) The AABNCP program underwent a series of troubles in the late 1960s and did not come into being until the 1970s. The early selection of the C-5A proved unfortunate, for one thing. It became a costly and politically controversial aircraft, which flew for the first time only in 1968 and did not enter service until several years later. Meanwhile, practical AABNCP interest shifted to another aircraft, a modified version of the civilian Boeing 747, the first of a new generation of large, wide-bodied jets. In 1971, long after SAC had declared the existing KC-135 completely inadequate, OSD at last decided to procure 747s rather than C-5As for the NEACP and CINCSAC's airborne command post.[28]

(U) Although the AABNCP did not materialize during the 1960s, the issues it raised were significant ones in the on-going development of strategic command and control functions during the period. Planning for the AABNCP also coincided with the development of an airborne launch control capability to back up ground-based missile launch control centers; with the introduction of considerably improved airborne, rocket, and satellite communications systems; and with the continued evolution of post-attack functional requirements, all of which were important aspects of the SAC command and control picture.

(U) As expressed by SAC, an ABNCP that was required to carry out trans-attack and post-attack strategic command and control functions during hostilities needed at least a commander and a supporting staff, a continually updated data base, and two-way communications with a national authority, assigned forces, and essential information sources.[29] At SAC it was assumed that national authorities would look to SAC for continuous and timely wartime information on the status of strategic offensive operations and for information on which to base decisions as to further actions. Such information logically included real-time assessments of SAC capabilities, evaluation of strike results, appraisal of residual enemy capabilities, proposals and plans for subsequent strikes, and so on.

(U) No claims were expressed by SAC, even in the mid-1960s, and even with the full PACCS airborne communications relay system intact--not degraded by nuclear attack--that the existing EC-135 ABNCP was capable of performing such functions. As SAC informed the JCS when pointing out current ABNCP deficiencies, the EC-135 version had only a very limited capability to assess the enemy target system. It could reconnoiter for damage to the national base but not for damage to allied or enemy nations. It lacked long-haul communications for controlling forces in forward operating areas, or for receiving operational reports from strike forces, and it lacked the long-haul (broad-band) communications capability to retrieve strike information from other sources. Its staff and equipment were too limited to process information on residual US and enemy capabilities. It could not, in short, begin to perform the desired command and control functions.[30]

(U) The Strategic Air Command was optimistic, however, about its capability to carry out such tasks in a considerably larger AABNCP--but, as indicated above, a suitable aircraft could not be expected until the 1970s. At that time, the much larger airframe--the C-5A contained some 3,500 square feet of floor space, for example, as compared with 900 for the EC-135--might permit the exploitation of substantially greater capabilities, such as a battle staff three or four times larger, a communications satellite terminal, and on-board computers. Direct access to the communications satellite system would obviate the necessity for ground or airborne relay and would permit more reliable communications access to the NMCS and the NEACP, as well as to similarly equipped ABNCPs of overseas CINCs. The LF/VLF transmit/receive communications that would be programmed for the AABNCP would also permit more reliable communications in nuclear environments than existing long-range HF/SSB communications permitted. Airborne ADP equipment (in prototype development) might make it possible to store and retrieve information for extensive high-speed damage assessment and replanning, incorporating timely reconnaissance and intelligence inputs, matching strike effectiveness and residual capabilities, computing target coverage capabilities and new trajectories, and so on. Needless to say, the promise of such capabilities opened up a whole new world of trans- and post-attack battle management possibilities.[31]

(U) SAC also anticipated that the AABNCP would solve some of the operational problems associated with Minuteman launch control. The Minuteman ICBM, by the late 1960s the backbone of the SAC force, was organized in squadrons of 50 missiles, with five silos per squadron serving as Launch Control Centers (LCCs), any two of which could launch all 50 missiles. In order to provide a survivable backup to the underground LCCs in the event they were destroyed, SAC planned to develop an Airborne Launch Control System (ALCS) capability, utilizing PACCS aircraft, both ABNCPs and communications relay. (This became even more important in the mid-1960s, when it was determined that Minuteman LCCs were unexpectedly vulnerable to the ground-shock effects of nuclear bursts.) However, ALCS aircraft could address only one Minuteman squadron at a time and had to be within line-of-sight communications range, and they also required the cooperation of at least one surviving underground LCC in order to effect a launch. It would therefore require a number of ALCS aircraft to cover the entire Minuteman force. Even the ABNCP itself, with the CINC's full authority, would have to fly to each Minuteman wing location in turn in order to direct launches, a process that was likely to require several hours, perhaps in a risky nuclear environment, jeopardizing both the ABNCP and the coordinated effects of the SIOP. The first successful ALCS launch of a Minuteman test missile was effected in 1967, but SAC looked to the capabilities of the future AABNCP to make it more effective.[32]

(U) The AABNCP, with a Minuteman airborne launch capability, was also scheduled to exploit the Emergency Rocket Communications System (ERCS) that SAC had developed during the 1960s. The first ERCS utilized BLUE SCOUT rockets carrying small transmitters as a backup system for broadcasting the "go code" over long distances, primarily to airborne aircraft, but these rockets utilized soft above-ground sites and their coverage was limited. In 1963, a plan was approved to utilize regular Minuteman rocket boosters with a UHF communications payload, dispersed among regular Minuteman complexes, with launch trajectories covering most SAC bases. The system (designated 494L) went into operation in 1967, with six missiles, each with recorders and playback transmitter payloads, able to be launched in the same manner as regular missiles. If the underground Minuteman LCCs were destroyed, SAC counted upon the ABNCP to be able to insert execution orders into the ERCS missiles and launch them.[33]

(U) The central thrust of SAC, USAF, and JCS planning for the AABNCP during the late 1960s, including the SAC emphasis on ALCS and ERCS capabilities, underlined doubts that existing command and control systems from the national level down had both the survivability and the capability to assure that controlled flexible response could actually be implemented, in the words of the JCS, "beyond the initial laydown of early weapons." No doubt the criticisms of existing arrangements that were made in the context of arguing a case for the greater capabilities that might be achieved with an AABNCP stressed weaknesses rather than strengths. And no doubt the lists of general war functional tasks to be performed by the AABNCP grew longer and more demanding as new technologies brought new possibilities within reach. All the same, the basic conclusions of the AABNCP studies, concurred in by the JCS, does not seem exaggerated: "As a result of the inadequacy of present capabilities," the JCS said, "National Command Authorities will not have the capability for continuous, knowledgeable, and effective command and control immediately following execution."[34] This being the case, the feasibility of a strategy of controlled flexible response seemed highly problematical.

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XXVI

WARNING AND ATTACK ASSESSMENT

(U) The contribution of attack warning systems to the overall US strategic posture underwent important changes in nature and significance during the 1960s, primarily in response to the changing warning environment. The traditional priority function of attack warning--to alert, launch, and control active defense forces--went into decline as the primary threat shifted from manned aircraft to missiles and as anti-missile defenses remained at best a conjectural proposition. The forward bomber warning lines, primarily the elaborate DEW Line constructed at great expense during the 1950s, lost much of their original value when measured against the mixed threats of the 1960s and the likelihood of a shift in enemy bombers to a secondary follow-on attack role. In the absence of strategic defensive systems, the rationale for ballistic missile warning was recast mainly in terms of its contribution to the strategic offensive posture--the posture of deterrence through assured retaliation by strategic offensive forces. Even in this strategic offensive context, the role of warning was further modified by changes that reduced the dependence of retaliatory forces on warning for their survival and enabled them to make more effective use of shorter warning times. In the world of missile threats and missile responses, warning became far more critical for the decision time and flexibility that it might afford to the national command and control structure.[1]

A. THE DEW LINE

(U) The bulk of the DEW Line, developed primarily to detect aircraft in surprise attacks, was beginning to close down by

1963; many of its radars were counted as superfluous and the remainder were maintained as a "tactical holdback line" to deter enemy bomber penetrations until after missiles were detectable, i.e., to delay enemy bombers in a mixed missile-bomber attack for three or four hours. The early warning function itself was assumed by BMEWS, and the remnants of the DEW Line became more tactically oriented toward the antiaircraft surveillance and defense functions of the SAGE system, the Backup Interceptor Control (BUIC) stations, and the projected Airborne Warning and Control System (AWACS).[2]

B. BMEWS

U ([redacted]) The basic ICBM warning system throughout the 1960s was BMEWS (474L), the system of long-range, ground-based radars covering the northern approaches to the continental United States. Sensors were located in Greenland (Thule), Alaska (Clear), and the United Kingdom (Fylingdales Moor), with Thule first operational in September 1960, Clear in June 1961, and Fylingdales in January 1964. Capable of detecting ICBMs out to a range of some 3,000 miles, BMEWS could provide close to 15 minutes minimum warning, together with a rough count of the number of warheads and their approximate impact time and area, directly to NORAD headquarters and immediately thence to warning displays at the NMCC, ANMCC, and SAC as prime users.

U ([redacted]) Warning from BMEWS was critical to the survival of the bomber force, which depended on airborne escape (rather than concealment, mobility, hardening, or other forms of protection), and the 15-minute BMEWS warning time became the standard for ground alert aircraft at SAC. In the early 1960s, when SAC kept half the B-52 force on so-called 15-minute ground alert, it could launch as many as 14 percent of the alert aircraft within 8 minutes, from a "normal" (for SAC) DEFCON 4 posture, and as many as 43 percent from a higher DEFCON 2 posture. It could also launch the entire alert force in as little as 11 minutes, with a single minute in the peak phase allowing as many as 200 aircraft to become airborne.[3] During the years when manned aircraft were by far the predominant element in the retaliatory force, this potential warning contribution was invaluable: it could promise a second-strike capability even by this otherwise relatively soft and vulnerable weapons system.

(U) Warning from BMEWS also enabled SAC to exploit the unique capability of bombers to launch under positive control, even in ambiguous or equivocal circumstances, without precommitment to strike--a "launch-on-warning" and recall option that was not available in the case of missiles. Warning could provide useful time in which to count down missiles to minimum holds and shorten their reaction times, but it did not add the option of a contingent launch. Warning enhanced the capabilities of manned bombers, therefore, and the continued utility of bombers in the strategic force was directly linked to the continued effectiveness of warning support.[4]

(U) For a short period in the early 1960s, there was some inclination to judge the criticality of BMEWS and the worth of other early warning systems primarily in terms of bomber survival. The 15-minute ground alert posture for bombers was apparently considered at first as a stopgap measure until the retaliatory forces could be restructured around missiles (like Polaris and Minuteman) that did not depend so heavily on warning and quick reaction and could therefore "ride out" an attack.[5] In the same way and for the same reason, as the relative proportion of bombers in the strike force declined, it was expected that the relative value of warning systems might also decline.[6] Bombers remained a very substantial portion of the strike forces throughout the 1960s, however, as the JCS counseled from the beginning. (Although the JCS did not use the word "triad" at the time, they consistently defended the continued need for manned bombers in the strategic mix.[7]) In 1968, manned bombers, mostly B-52s except for a small number of B-58s, still constituted some 945 of the 2,650 major strategic offensive delivery systems in the operational forces, more than one-third of the strategic triad, for which even short warning times were of vital importance.[8]

U ([redacted]) Moreover, as the JCS also argued on many occasions, warning was a requirement not only for the protection of strike forces but also to provide maximum opportunity to formulate an appropriate "national reaction," that is, for decisions.[9] The utility of warning to support the command and control process was increasingly emphasized during the 1960s, even after its contributions to the protection of population and industry were virtually dismissed and those to retaliatory force survival were considerably downgraded.

U ([redacted]) As a comprehensive warning system against missile attack, BMEWS had serious shortcomings, primarily in geographic coverage and in the amount, quality, and timeliness of the information that it provided. It could be deliberately spoofed, blacked out, or attacked, of course, but such events could be treated as potential indicators of attack and could easily interfere with surprise. It could be bypassed, at less potential cost and risk, by extended-range or low-angle ICBMs, for example, by SLBMs, or even (as the Soviets showed when they began testing the capability in the late 1960s) by orbital systems.[10] Minor improvements in BMEWS coverage and effectiveness were made during the 1960s, naturally, but more was required. It proved necessary to augment BMEWS with additional warning systems and to adopt a multiple approach to the missile warning problem. None of the other systems became a full-fledged alternate or successor to BMEWS, and in fact none of them even came into operation until the late 1960s and early 1970s, but they were largely developed during the 1960s, together with BMEWS, into the interlinked warning network of the subsequent 1970s.

C. SLBM WARNING

(U) Clearly, BMEWS required augmentation against SLBMs, which could be launched from positions off US coasts and on trajectories that BMEWS was not designed to detect. Soviet SLBMs in the early 1960s were relatively short-range (350-mile) systems, three per submarine, that had to be fired from the surface, but the Soviets were actively developing newer classes of longer range submerged-launch systems, like Polaris, that could pose an even greater threat by the late 1960s and 1970s.[11] In a surprise attack context, the Navy's underwater sound surveillance (SOSUS) and other ASW systems could presumably deter a sudden large buildup of SLBM submarines in potential launch areas prior to attack, because of the risk of premature detection, but it would not be difficult for limited numbers of prudently operated enemy submarines to penetrate such defenses and to launch missiles without warning.[12] The SLBMs therefore constituted a dangerous threat of no-warning attack against such critical, early targets as fixed command and control centers, communications facilities, and SAC bases--much like the Cuba-based MRBM-IRBM weapons that also would have avoided the BMEWS system.

(U) The specialized system developed to counter the missile threat during the 1960s was the SLBM Detection and Warning System (474N), a complex of eight modified long-range SAGE radars deployed along the east and west coasts. Built as an interim system, it was capable of monitoring coastal approaches out to about 750 n.m. and providing three-to-seven minutes warning of SLBM strikes, depending on the location of launching submarines, together with limited trajectory measurements. As with other warning systems, data were analyzed by computer and forwarded to the NMCC, ANMCC, SAC, NORAD, and other direct users. The system was partially operational in the last half of the 1960s, but it did not achieve full operational status until 1971, at which time newer systems were under development to provide even more reliable warning against even longer range Soviet submarines.[13]

D. OVER-THE-HORIZON RADAR

U ([redacted]) Another ground-based missile detection system that remained under development during the 1960s, but emerged as a successful backup and extension of BMEWS in the late 1960s (until retired in 1974), was the Over-the-Horizon (Forward-Scatter) Radar (440-L). Not really a radar, the 440-L system consisted of a series of high frequency radio transmitters and receivers at various locations in the Far East and Europe, on either side of the Soviet-Chinese landmass. Continuous signals from the transmitters were bounced off the ionosphere and then repeatedly back and forth between the ionosphere and the surface of the earth until they reached the receiving stations. There the receivers detected perturbations or disturbances of the transmissions caused by missiles penetrating the ionosphere under active-boost propulsion. The system provided nearly real-time (five-to-seven minutes from launch) detection of missiles launched from the USSR and China (also satellite launches and nuclear detonations), with time-of-launch and rough estimates of the launch location and type and number of missiles. Data from the receivers were correlated in Europe, transmitted to NORAD for processing, and sent to the NMCC, ANMCC, and SAC.[14]

U ([redacted]) The 440-L system had the advantage over BMEWS of being an omnidirectional system that was able to detect missiles (such as FOBS) intended to end-run BMEWS. In 1966 and 1967, it demonstrated a high-order capability by successfully detecting and reporting 94 percent of all Soviet ICBM test launches (198 of 210), including all 10 FOBS tested in 1967, and plans were accelerated to introduce it as a working system. It became operational in 1968.[15]

E. DEFENSE SUPPORT PROGRAM

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

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

(U) One of the strong underlying themes in the arguments supporting the various precursors of the DSP, and one that illuminates an important strategic command and control issue of the 1960s, concerned its utility not merely for attack warning but also for attack assessment. The system was important, perhaps even more than other systems, for providing time for decisionmakers to take measures for survival, including possibly relocation to the NEACP or elsewhere; it could provide extra time for them to perform essential retaliatory command functions, including more opportunity to ascertain the situation and consider desirable alternatives. By providing usable warning time, the system was also important for enabling the strike forces to undertake precautionary or other actions that might be vital to the effectiveness of any response.

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

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

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

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

XXVII

OVERVIEW, 1961-67

(U) The early Kennedy-Johnson years were a period of concentrated attention and innovation in strategic command and control. The new leaders made a self-conscious break with the strategic concepts of the previous decade and attempted to make a better adjustment to the missile age and the new framework of mutual deterrence. At the strategic nuclear level, they acted with confidence to develop a credible structure of secure retaliatory forces that could survive an enemy missile attack and strike back, and they were equally determined to develop a survivable command and control system that could assure an adequate response. They accorded command and control a high priority, therefore, perhaps higher than it had ever received before.

(U) The familiar problems of survivability and continuity received a thorough going-over. It is not clear that any headway was made on the intractable problem of preserving the continuity of high command authority, but progress was readily made in establishing a National Military Command System of coupled command centers, continuously manned, with specialized communications and other facilities available to support command authorities on demand. If the NMCS was an incomplete solution to the strategic command and control problem, it was largely because its connection to surviving decision-making authority was itself weak.

(U) The principal command and control challenge of the period was the shift from a single-option strategy of all-out retaliation to a strategy of multiple options and selective, controlled responses. The latter required standards of survivability and functional performance that were much greater than the relatively simple transmission of a preplanned "go code." It called for a command and control system with more endurance and toughness in a nuclear environment, capable of sustained operation during and after an attack, adaptable to a wide range of circumstances, and responsive to discriminating policy direction at all times. It called for quick, accurate capabilities to ascertain the source, size, and pattern of attacks to aid in option decisions, and it called for extensive real-time monitoring capabilities to manage optional responses. Even with the sophisticated command and control technologies that were coming into being during the 1960s, it is not clear that such expectations were even remotely feasible--except possibly for very limited attacks in which command and communications targets were deliberately avoided. The prospects for the latter, however, did not become a major issue for strategic command and control until the 1970s.

(U) In spite of the continuing problem of devising suitable arrangements and systems for "flexible" or selective response in strategic nuclear warfare contexts, which remained largely unresolved throughout the period, the early high-level preoccupation with strategic command and control issues declined markedly in the later 1960s. The drop-off appeared to parallel the increased confidence in the strength of the US strategic nuclear posture and the balance of US-Soviet forces after Cuba and after the strategic buildup planned in the early 1960s was implemented. It had more to do with a reduced sense of urgency about the likelihood of strategic nuclear war than with the solution of command and control problems as such, which were left as unfinished business for the next administration. It was also undoubtedly affected by the growing preoccupation with the war in Southeast Asia.

(U) Throughout the 1961-67 period (as well as before, and even since), US strategic command and control capabilities in the face of a determined nuclear attack were frequently seen as more apparent than real. Whether this mattered in the overall national defense posture, and how much, appeared to revolve around estimates of the likelihood of nuclear attack in the first place, and judgments as to whether discernible weaknesses in command and control might or might not influence that likelihood. Some no doubt believed that command and control capabilities had to be real in order to be confident of strategic deterrence; others no doubt argued that even the uncertain possibility of a capable system was a sufficient contribution to deterrence. In the end, the crux of the issue may have been philosophical, and not susceptible of objective resolution, but in any event the historical evidence of the period is that it was not resolved.

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FOOTNOTES

Chapter XIX

[1](U) Paul T. David, et al., eds., *The Presidential Election and Transition of 1960-1961* (Washington, D.C.: The Brookings Institution, 1961), especially Chapters 8 and 9.

[2](U) Theodore C. Sorenson, *Kennedy* (New York: Harper & Row Publishers, Inc., 1965), pp. 240-48.

[3](U) John F. Kennedy, "Annual Message to the Congress on the State of the Union," 30 January 1961, in *Public Papers of the Presidents of the United States: John F. Kennedy, 1961* (Washington, D.C.: Government Printing Office, 1962), pp. 19-28.

[4](U) Sorenson, *Kennedy*, pp. 602-3. For an account of the selection of McNamara and his takeover of the Pentagon under Kennedy, see ibid., pp. 229-40, 269-71 and 602 ff; Arthur M. Schlesinger, Jr., *A Thousand Days: John F. Kennedy in the White House* (Boston, Mass.: Houghton Mifflin, 1965), pp. 131-32 and 312-19; and David T. Stanley, *Changing Administrations: The 1961 and 1964 Transitions in Six Departments* (Washington, D.C.: The Brookings Institution, 1965), Chapter 3.

[5](U) Sorenson, *Kennedy*, p. 603.

[6](U) The questions were nicknamed McNamara's "Ninety-six Trombones" after the "Seventy-six Trombones" number in the Broadway musical comedy *The Music Man*. McNamara kept adding questions, however, and the notion of a single one-time list eventually disappeared (people stopped counting after about 150). See Stanley, *Changing Administrations*, pp. 39-40; Schlesinger, *A Thousand Days*, pp. 316 ff; and Sorenson, *Kennedy*, pp. 602 ff.

[7](U) John F. Kennedy, "Special Message to the Congress on the Defense Budget," 28 March 1961, in *Public Papers of the Presidents*, pp. 229-240.

[8](U) Ibid., pp. 233-36.

[9](U) See Alain C. Enthoven and K. Wayne Smith, *How Much is Enough: Shaping the Defense Program, 1961-1969* (New York: Harper & Row Publishers, Inc., 1971), Chapter 5, especially pp. 165-72.

[10](U) Kennedy, "Special Message to the Congress," pp. 230-32 and 235-36.

[11](U) See William W. Kaufmann, *The McNamara Strategy* (New York: Harper and Row Publishers, Inc., 1964), pp. 304-6.

[12](U) See Enthoven, *How Much is Enough*, pp. 172 ff.

[13](U) See "Statement of Secretary of Defense Robert S. McNamara Before the House Subcommittee on DoD Appropriations, FY 1969-1973 Defense Program and FY 1968 Defense Budget (U) (22 January 1968 draft), pp. 45-52, SECRET.

[14](U) See John Newhouse, *Cold Dawn: The Story of SALT* (New York: Holt, Rinehart and Winston, 1973), Chapter II.

Chapter XX

[1](U) Secretary of Defense, Draft Memorandum for the President, "Strategic Weapons and Continental Air Defense Proposals" (U), 18 February 1961, TOP SECRET.

[2](U) McNamara made the same points in almost the same language in his first Posture Statement on 4 April 1961. See Office of OSD Historian, *History of the Strategic Arms Competition, 1945-1972* (U), 3 vols., Vol. II, *Chronology-US, 1961-73* (U) (November 1974), p. 9, TOP SECRET/RESTRICTED DATA.

[3](U) For a detailed analysis of the strategic command and control system at the time, see Weapons Systems Evaluation Group, *Evolution of Strategic Offensive Weapons Systems* (U), Report 50 (21 September 1960), Enclosure C, "Command and Control of Strategic Offensive Weapons Systems in the Period 1964-1967" (U), TOP SECRET; and RAND Corporation, *The Effectiveness of Command and Control in Strategic Operations for the Mid-Sixties* (U), RM-3152-PR (October 1962), TOP SECRET.

[4](U) Time factors were analyzed in detail in WSEG, *Evolution of Strategic Offensive Weapons Systems*, Enclosure C; and Weapons Systems Evaluation Group, *Present and Planned Command and Control Systems for Strategic Offensive Weapons Systems and Estimated Response Times for the Period 1964-1967* (U), Staff Study No. 78 (19 August 1960), TOP SECRET.

[5](U) See Arthur K. Marmor, *USAF Command and Control Problems, 1958-1961* (U) (Historical Division Liaison Office, US Air Force, January 1963), SECRET.

[6](U) See ibid., and Thomas A. Sturm, *Command and Control for North American Air Defense, 1959-1963* (U) (Historical Division Liaison Office, US Air Force, January 1965), SECRET.

[7](U) Ibid., and Marmor, *USAF Command and Control Problems*. See also RAND, *The Effectiveness of Command and Control*, Appendix A, "Directory of the Big L. Systems" (U).

[8](U) Historical and Research Division, Headquarters, Strategic Air Command, *History of SAC, January-June 1961* (U), SAC Historical Study No. 86, undated, pp. 49-50, SECRET. See also discussion of BMEWS development in Part Two, Chapter XV.

[9](U) Carl Berger, *USAF Strategic Command and Control Systems, 1958-1963* (U) (Historical Division Liaison Office, US Air Force, November 1964), pp. 10-12, SECRET.

[10](U) Office of Civil and Defense Mobilization was redesignated the Office of Emergency Planning in September 1961, when most of its civil defense functions were transferred to the Department of Defense. OEP retained overall continuity-of-government responsibilities until it was dissolved in 1973.

[11](U) Estimated hardening factors from WSEG, *Present and Planned Command and Control Systems* (Staff Study No. 78). The study estimated that all five facilities mentioned could be destroyed in a single salvo of about 15 Soviet weapons of the mid-1960s, with 1-mile CEPs and 8-megaton warheads.

[12](U) See Chapter XXIII, below, pp. 311-12.

[13](U) See specifically Marmor, *USAF Command and Control Problems*, pp. 19-22 and 32-37; and Thomas A. Sturm, *The Air Force and the Worldwide Military Command and Control System, 1961-1965* (U) (Historical Division Liaison Office, US Air Force, August 1966), pp. 1-10, SECRET.

[14](U) See Part Two, Chapter XIV. The Defense Communications System and its relationship to service and unified and specified command communications systems were subsequently formalized in DoD Directive 5105.19, 14 November 1961.

(U) In 1960, there were actually five unified-specified commands besides SAC involved in the coordination of strategic strikes, at least in the target planning stage: CINCEUR, CINCLANT, CINCPAC, CINCAL, and CINCNELM. See Historical and Research Division, Headquarters, Strategic Air Command, *History of the Joint Strategic Target Planning Staff: Background and Preparation of SIOP-62* (U), 10 April 1962, TOP SECRET.

[15](U) WSEG, *Evolution of Strategic Offensive Weapons Systems*, Enclosure C; also Historical and Research Division, Headquarters, Strategic Air Command, *SAC Communications in an Age of Transition* (U), SAC Historical Study No. 78 (30 December 1959), SECRET; and Historical and Research Division, Headquarters, Strategic Air Command, *Strategic Command Control Communications, 1959-1964* (U), SAC Historical Study No. 98 (October 1965), SECRET.

[16](U) Quoted in Hq SAC, *History of the Joint Strategic Target Planning Staff*, p. 8.

[17](U) Ibid., pp. 24-29. For background and evolution of the SIOP, see Part Two, Chapter XIV of this study.

[18](U) WSEG, *Evolution of Strategic Offensive Weapons Systems*, Enclosure C.

[19](U) See William W. Kaufmann, *The McNamara Strategy* (New York: Harper and Row Publishers, Inc., 1964), Chapter 2, "The Search for Options"; also Secretary of Defense, Draft Memorandum for the President, "Strategic Weapons and Continental Air Defense Proposals" (U), 18 February 1961, TOP SECRET; and Secretary of Defense, "Recommended DoD FY 1963 Budget and 1963-1967 Program" (U), 6 October 1961, TOP SECRET.

[20](U) Assistant Secretary of Defense, International Security Affairs (John T. McNaughton), 19 December 1962, cited in Kaufmann, *McNamara Strategy*, pp. 142-43.

[21](U) For a detailed account, see Defense Nuclear Agency, "History of Custody and Development of Nuclear Weapons, 1945-1969" (draft), 1970; and Bernard C. Nalty, "USAF Ballistic Missile Programs, 1962-1964" (U), April 1966, TOP SECRET; and Historical Division Liaison Office, US Air Force, "USAF Ballistic Missile Programs, 1964-1967" (U), March 1967, TOP SECRET.

Chapter XXI

[1](U) See William W. Kaufmann, *The McNamara Strategy* (New York: Harper and Row Publishers, Inc., 1964); also Robert F. Futrell, *Ideas, Concepts, Doctrine: A History of Basic Thinking in the United States Air Force, 1907-1964* (U), 2 vols. (Aerospace Studies Institute, June 1971), II:595-676, UNCLASSIFIED.

[2](U) Deputy Secretary of Defense, Memorandum for CJCS, "Draft BNSP" (U), 16 April 1962, SECRET; Chairman JCS, CM-165-62, Memorandum for SecDef, "Review of BNSP" (U), 7 December 1962, SECRET; Assistant Secretary of Defense (ISA), I-35,098, Memorandum for SecDef, "BNSP" (U), 14 June 1963, TOP SECRET.

[3](U) ASD (ISA), I-35,098, Memorandum for SecDef.

[4](U) "Flexible response" could also be, and was, applied outside of the strategic nuclear war context, e.g., to limited war, nuclear or nonnuclear. In the late 1950s, in fact, during the widespread debates over "massive retaliation," it was familiar shorthand for the employment of general purpose rather than strategic forces. Here, however, following the McNamara usage in connection with strategic nuclear forces, it refers to multiple options within the SIOP framework.

[5](U) Kaufmann, *McNamara Strategy*, p. 51.

[6](U) Chairman JCS, CM-165-62.

[7](U) JCSM 252-61, Memorandum for SecDef, "Doctrine on Thermonuclear Attack" (U), 18 April 1961, TOP SECRET; Chairman JCS, CM-190-61, Memorandum for SecDef, "Doctrine on Thermonuclear Attack" (U), TOP SECRET.

[redacted]

[8] (U) SecDef, Draft Memorandum for the President, "Recommended FY 1964-FY 1968 Strategic Retaliatory Forces" (U), 21 November 1962, TOP SECRET. This later came to be called the "assured destruction" capability; see SecDef, Draft Memorandum for the President, "Recommended FY 1965-FY 1969 Strategic Retaliatory Forces" (U), 13 November 1963, TOP SECRET.

[9] (U) SecDef, Draft Memorandum for the President, "A Program for Strategic Defense" (U), 9 October 1963, TOP SECRET. See also Weapons Systems Evaluation Group, *Command and Control of Strategic Offensive Weapons Systems in the Period 1970-1975* (U), Report 129 (July 1968), TOP SECRET.

[10] (U) SecDef, Draft Memorandum for the President, "Recommended DoD FY 1963 Budget and FY 1963-1967 Program" (U), 6 October 1961, TOP SECRET.

[11] (U) History and Research Division, Headquarters, Strategic Air Command, *History of the Joint Strategic Target Planning Staff: The Preparation of SIOP-63* (U), TOP SECRET; and *History of the Joint Strategic Target Planning Staff: The Preparation of SIOP-64* (U), August 1964, TOP SECRET.

[12] (U) Ibid., especially *Preparation of SIOP-63*, pp. 4-15 and 21-29.

[13] (U) For an outline of specific options as they evolved during the next several years, see Hq SAC, *History of the JSTPS: The Preparation of SIOP-64* and *Preparation of SIOP-64 Revision A* (U), September 1967, and *Preparation of SIOP-64 Revisions B and C* (U), March 1969, both TOP SECRET. In later years, the SIOP options that were actually outlived in the 1960s were criticized as "five options for massive retaliation" that, in fact, offered decisionmakers insufficient choice.

[14] (U) This was the famous "Ann Arbor" speech of 16 June 1962. For this and other examples quoted, see Kaufmann, *McNamara Strategy*, pp. 92-95. Also SecDef, Draft Memorandum for the President, "Recommended FY 1965-FY 1969 Strategic Retaliatory Forces" (U), 13 November 1963, TOP SECRET.

[15] (U) Kaufmann, *McNamara Strategy*, p. 93.

[16] (U) For examples of some of the functional tasks that might be required, see JCSM 868-63, Memorandum to SecDef, "Analysis and Evaluation of the Military Worth of Satellite-Based Infrared Surveillance and the Warning Systems" (U), 8 November 1963, TOP SECRET; and JCSM 700-66, Memorandum for SecDef, "Follow-on ABNCP Requirements" (U), 3 November 1966, TOP SECRET.

[17] (U) See, for example, SAC letter to JCS, "Advanced Aircraft for PACCS" (U), 29 April 1966, SECRET.

[redacted]

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[18](U) See, for example, Bureau of the Budget, letter to SecDef, 26 August 1965, quoted in Thomas A. Sturm, *The Air Force and the Worldwide Military Command and Control System, 1961-1965* (U) (Historical Division Liaison Office, US Air Force, August 1966), p. 71, SECRET.

Chapter XXII

[1](U) For a discussion of presidential succession arrangements, see Laurence J. Legere and Judith C. Corson, *Presidential Succession and the Authority to Release Nuclear Weapons* (U), P-537 (Institute for Defense Analyses, Arlington, Va., August 1969), UNCLASSIFIED; and for the relationship to strategic command and control, see Weapons Systems Evaluation Group, *Evolution of Strategic Offensive Weapons Systems* (U), Report 50 (21 September 1960), Enclosure C, "Command and Control of Strategic Offensive Weapons Systems in the Period 1964-1967" (U), TOP SECRET.

(U) The line of succession (in 1969) after the Vice President was: the Speaker of the House of Representatives, the President pro tempore of the Senate; the Secretaries of State, Treasury, and Defense; the Attorney General; the Postmaster General; the Secretaries of the Interior, Agriculture, Commerce, and Labor; the Secretary of Health, Education and Welfare; the Secretary of Housing and Urban Development; and the Secretary of Transportation.

([redacted]) Of the 14 presidential successors, only the Vice President and the Secretary of Defense were recipients of the SIOP Decision Handbook, prepared by the JCS as a guide to the major high-level decisions that might be called for in a strategic nuclear war.

[2](U) WSEG, *Evolution of Strategic Offensive Weapons Systems*, Enclosure C. This was one of the first comprehensive studies of the US strategic offensive weapons posture that highlighted command and control issues, and it was one of the studies brought to McNamara's attention during the 1961 transition and takeover. McNamara was briefed personally and reportedly spent nearly a whole day going over it with members of the study team from WSEG/IDA.

[3](U) See Part II, Chapter XVI, and also Arthur K. Marmor, *USAF Command and Control Problems, 1958-1961* (U) (Historical Division Liaison Office, US Air Force, January 1963), pp. 51-53, SECRET.

[4](U) Secretary of Defense, Memorandum to JCS, et al., 8 March 1961. This was Project No. 6 of the 96, assigned to both the JCS and DDR&E.

[5](U) JCSM 250-61, "A Study of the Command and Control System" (U), 18 April 1961, TOP SECRET.

[redacted] UNCLASSIFIED

[6](U) Strictly speaking, the JCS were only "in" the chain of command because by DoD Directive the Secretary of Defense chose to exercise operational direction of the unified and specified CINCs "through" them. DoD Directive 5100.1, "Functions of the Department of Defense and Its Major Components" (U), 31 December 1958, .

[7](U) Thomas A. Sturm, *The Air Force and the Worldwide Military Command and Control System, 1961-1965* (U) (Historical Division Liaison Office, US Air Force, August 1966), SECRET; National Command and Control Task Force, *Final Report* (U), 14 November 1961, TOP SECRET, in JCS 2308/64, 14 November 1961.

[8](U) Sturm, *The Air Force and the WWMCCS.*

[9](U) For internal government comments on the Partridge Report, see JCSM 881-61, Memorandum for the SecDef, "Report of the National Command and Control Task Force" (U), 22 December 1961, SECRET; and Deputy Special Assistant to the President for National Security Affairs (Carl Kaysen), Memorandum for the DepSecDef, "Command and Control Task Force Report" (U), 22 January 1962, TOP SECRET.

[10](U) WSEG, *Evolution of Strategic Offensive Weapons Systems,* Enclosure C, argued that in a "holocaust" situation, the central command structure was so vulnerable that predelegation "might have little effect."

[11](U) Ibid.

[12](U) JCSM 250-61.

[13](U) National Security Action Memorandum 127, "Emergency Planning for the Continuity of Government" (U), 14 February 1962, TOP SECRET.

[14](U) Deputy Special Assistant to the President for National Security Affairs, Memorandum to DepSecDef, 22 January 1962, SECRET.

[15](U) Director, Office of Emergency Planning, "On a Reexamination of Federal Policy with Respect to Emergency Plans and Continuity of Government in the Event of Nuclear Attack on the United States" (U), 11 June 1962, SECRET.

[16](U) For example, JCSM 337-63, Memorandum for the Secretary of Defense, "Planning Guidance of Implementation of the National Military Command System" (U), 25 April 1963, SECRET.

[17](U) JCSM 133-67, Memorandum for the Secretary of Defense, 14 March 1967, enclosing JCS Study, "Planning for Continuity of Operations and Alternate Command Facilities" (U), 10 March 1967, TOP SECRET.

[18](U) JCSM 250-61.

[19](U) WSEG, *Evolution of Strategic Offensive Weapons Systems,* Enclosure C, p. 21, footnote.

Chapter XXIII

[1](U) Quoted in Carl Berger, *USAF Strategic Command and Control Systems, 1958-1963* (U) (Historical Division Liaison Office, US Air Force, November 1964), p. 37, SECRET.

[2](U) The system, USAF Program 473L, was designated the USAF headquarters component of the Worldwide Military Command and Control System (WWMCCS) after the latter was established in October 1962. See Thomas A. Sturm, *The Air Force Command and Control System, 1950-1966* (U) (Historical Division Liaison Office, US Air Force, August 1967), pp. 12-35, SECRET.

[3](U) The SAGE (Semi-Automatic Ground Environment) system was Program 416L, and the NORAD combat operations center was 425L. See Thomas A. Sturm, *Command and Control for North American Air Defense, 1959-1963* (U) (Historical Division Liaison Office, US Air Force, January 1965, pp. 10-23, SECRET.

[4](U) See History and Research Division, Headquarters, Strategic Air Command, *History of SAC, January-June 1961* (U), SAC Historical Study No. 86, undated, SECRET, and *Strategic Command Control Communications, 1959-1964* (U), SAC Historical Study No. 98 (October 1965), SECRET; and Berger, *USAF Strategic Command and Control Systems.*

[5](U) Secretary of Defense, Memorandum for the President, "Recommended DoD FY 1963 Budget and 1963-1967 Program" (U), 6 October 1961, TOP SECRET.

[6](U) Secretary of Defense, Memorandum to Secretaries of Army, Navy, Air Force, and Chairman, JCS, 5 June 1961, CONFIDENTIAL; also Sturm, *Command and Control for North American Air Defense,* pp. 25-29.

[7](U) Berger, *USAF Strategic Command and Control Systems,* p. 14 ff.

[8](U) Hq SAC, *History of SAC, January-June 1961*, pp. 34-64; also Hq SAC, *Strategic Command Control Communications.*

[9](U) See Arthur K. Marmor, *USAF Command and Control Problems, 1958-1961* (U) (Historical Division Liaison Office, US Air Force, January 1963), pp. 34-37, SECRET; and Thomas A. Sturm, *The Air Force and the Worldwide Military Command and Control System, 1961-1965* (U) (Historical Division Liaison Office, US Air Force, August 1966), pp. 4-9, SECRET.

[10](U) Marmor, *USAF Command and Control Problems,* pp. 45-46.

[11](U) Weapons Systems Evaluation Group, *Evolution of Strategic Offensive Weapons Systems* (U), Report 50 (21 September 1960), Enclosure C, "Command and Control of Strategic Offensive Weapons Systems in the Period 1964-1967" (U), TOP SECRET; see Part Two, Chapter XVII.

[12](U) Marmor, *USAF Command and Control Problems*, pp. 47-50. The similarity of these acronyms may have been slightly bothersome at first. In colloquial pronunciation, the NECPA was straightforwardly referred to as the "neck-pah," but the NEACP came to be called the "knee cap."

[13](U) This was the key argument of WSEG 50, Enclosure C, and also of prestigious advisory groups like the Doolittle Committee. See Memorandum for the Secretary of Defense, "Report of a Scientific Advisory Board Strategic Concepts Ad Hoc Committee" (U), 2 April 1962, TOP SECRET.

[14](U) JCSM 250-61, "A Study of the Command and Control System" (U), 18 April 1961, TOP SECRET.

[15](U) Draft Memorandum for the President, "Strategic Weapons and Continental Air Defense Proposals," 18 February 1961; and J3M 470-62, Memorandum for Deputy Secretary of Defense, "Review of DoD Actions for Improving the NMCS" (U), 25 April 1962, TOP SECRET.

[16](U) "Special Message to the Congress on the Defense Budget," 28 March 1961, in *Public Papers of the Presidents of the United States: John F. Kennedy, 1961* (Washington, D.C.: Government Printing Office, 1962), pp. 229-40.

[17]U
([redacted]) The story of the missile gap controversy belongs elsewhere in the history of the strategic arms decisions of the period. McNamara, with some embarrassment to the administration, was quoted by newsmen shortly after taking office as denying the existence of a gap (William W. Kaufmann, *The McNamara Strategy* [New York: Harper and Row Publishers, Inc., 1964], pp. 49-50); Theodore C. Sorenson (*Kennedy* [New York: Harper & Row Publishers, Inc., 1965], p. 613) refers back to it as an honest "error"; and Arthur M. Schlesinger (*A Thousand Days: John F. Kennedy in the White House* [Boston, Mass.: Houghton Mifflin, 1965], pp. 317 and 499) suggests that it "withered away" under the weight of new intelligence. Be that as it may, by September 1961 the intelligence community had revised its estimates of Soviet ICBM strength downward, so that it represented "only a limited threat" to US nuclear strike forces at the time and a considerably smaller than anticipated threat for several years to come. See J2DM-320-61, Memorandum for the Secretary of Defense, "Estimates of Soviet ICBM Capabilities" (U), 11 September 1961, TOP SECRET; and J2DM-344-61, Memorandum for the Secretary of Defense, "Estimate of Soviet ICBM, IRBM, and MRBM Capabilities" (U), 11 September 1961, TOP SECRET.

[18](U) Secretary of Defense to JCS, et al., "Decisions on Elements of the National Military Command System" (U), 19 February 1962, SECRET.

[redacted]

[19](U) DoD Directive S-5100.30, "Concept of Operations of the World-Wide Military Command and Control System" (U), 16 October 1962, SECRET. (Superseded 2 December 1971.)

[20](U) See Chapter XXV, Section B, for a discussion of SAC experience during the crisis.

[21](U) Walt W. Rostow, "The Third Round," in *Foreign Affairs*, 42:1 (October 1963).

[22](U) See the discussion in Thomas W. Wolfe and Fritz Ermarth, *The Interaction Process and Its Influence on Major Soviet Arms Decisions* (U), R-1180-PR (The RAND Corporation, Santa Monica, Calif., August 1973), SECRET.

[23](U) James A. Nathan, "The Missile Crisis: His Finest Hour Now," in *World Politics*, January 1975. Nathan takes the quote from Coral Bell, *The Conventions of Crisis: A Study in Diplomatic Management* (London: Oxford University Press, 1971), p. 2.

[24](U) See the account and discussion of alternative hypotheses in Graham T. Allison, *Essence of Decision: Explaining the Cuban Missile Crisis* (Boston, Mass.: Little, Brown & Co., 1971).

[25](U) This point is admittedly impressionistic and is not well documented, but it is nonetheless important.

[26](U) JCSM 337-63, Memorandum for the Secretary of Defense, "Planning Guidance of Implementation of the National Military Command System" (U), 25 April 1963, SECRET.

Chapter XXIV

[1](U) JCSM 337-63, Memorandum for the Secretary of Defense, "Planning Guidance of Implementation of the National Military Command System" (U) (including Master Plan for the NMCS), 25 April 1963, SECRET.

[2](U) Ibid.; JCSM 641-63, Memorandum for Secretary of Defense, "Functional Requirements for the NMCS" (U), 17 August 1963, SECRET; and JCSM 483-68, Memorandum for Secretary of Defense, "Functional Requirements for the NMCS" (U), 5 August 1968, SECRET.

[3](U) JCSM 337-63; and DoD Directive S-5100.44, "Master Plan for the National Military Command System" (U), 9 June 1964, SECRET.

[4](U) Thomas A. Sturm, *The Air Force and the Worldwide Military Command and Control System, 1961-1965* (U) (Historical Division Liaison Office, US Air Force, August 1966), pp. 32-48, SECRET.

[5](U) JCSM 337-63; also JCSM 130-63, Memorandum for Secretary of Defense, "Functional Requirements for the NMCS" (U), 14 February 1963, TOP SECRET; and Secretary of Defense Memorandum for Chairman JCS, et al., "Functional Requirements for the NMCS" (U), 26 April 1963, TOP SECRET.

[6](U) Ibid.; also Sturm, *The Air Force and the WWMCCS*, pp. 52-58.

U
[7]([redacted]) A 1963 time-and-motion calculation by the JCS, based on exercise experience and "operations analysis," was as follows: beginning with receipt of warning, the attack environment could be reviewed, the President contacted, and an emergency telephone conference convened in 2 1/2 minutes; the President could be briefed, hear the indications, consider initial response actions, and issue directives, including evacuation of key officials, in another 3 1/2 minutes; he could then proceed to Andrews AFB by helicopter for evacuation by the NEACP in another 7 minutes--all for a total of 13 of the 15 minutes warning hoped for from BMEWS. This, said the JCS, would leave insufficient time for the NEACP to become airborne and get beyond the effective range of a weapon detonated over Andrews. JCSM 865-63, Memorandum for the Secretary of Defense, "Analysis and Evaluation of the Military Worth of a Satellite-Based Infrared Surveillance and Warning System" (U), 8 November 1963, TOP SECRET. See also DDR&E, Memorandum for the Secretary of Defense, "Brief Review of the National Command System Program" (U), 15 October 1963, SECRET.

[8](U) Assistant Secretary of Defense (Comptroller), Memorandum for the Secretary of Defense, "Deep Underground National Command Center" (U), 31 January 1962, SECRET. No attempt has been made to track the origins and development of the idea, but a cover sheet on the copy of the memorandum in OSD files indicates that it was prepared by R. Shorey and A. Enthoven, then of the OASD(C) Programming Office. Internal evidence suggests that it was closely patterned on the SAC proposal for a Deep Underground Support Center (DUSC). See Chapter 25.

[9](U) Ibid.

[10](U) JCSM 914-63, Memorandum for Secretary of Defense, "Alternate Facilities and Supporting Communications Required for the NMCS" (U), 2 December 1963, TOP SECRET.

[11](U) Compare this, for example, with the approximately 100 psi hardening for the presidential retreat at Camp David and the 80-100 psi hardening programmed for the AJCC at Fort Ritchie. The planned underground COC complex for NORAD was scheduled for 600 psi. (Rand Corporation, *The Effectiveness of Command and Control in Strategic Operations for the Mid-Sixties* [U], RM-3152-PR [October 1962], TOP SECRET). In 1962, SAC proposed a hardened command post 3,500 feet underground to withstand a 100-megaton weapon with a 0.5 n.m. CEP (a proposal later

withdrawn). (Historical and Research Division, Headquarters, Strategic Air Command, *History of the Strategic Air Command, 1962* (U), TOP SECRET.)

[12](U) Deputy Secretary of Defense, Memorandum for DDR&E, "Deep Underground National Command Center" (U), 5 February 1962, TOP SECRET; Secretary of Defense, Draft Memorandum for the President, "National Deep Underground Command Post" (U), 7 November 1963, TOP SECRET.

[13](U) JCSM 914-63, Memorandum for the Secretary of Defense, "Alternate Facilities and Supporting Communications Required for the NMCS" (U), 2 December 1963, TOP SECRET; and JCSM 957-63, Memorandum for the Secretary of Defense, "Reclama to Subject/Issue Consideration No. 496, NMCS" (U), 7 December 1963, TOP SECRET.

[14](U) There is undoubtedly more to the DUCC story, and it may be worth further research into the issues and decisions involved. As late as mid-1965, the Bureau of the Budget was still interested in the DUCC "as a protected vital communications center for national command and control, not merely as a measure for the personal safety of the president." See Sturm, *The Air Force and the WWMCCS*, pp. 70-71.

[15](U) JCMS 483-68. The first change in the overall NMCS structure was to be the elimination of the NECPA in 1970, for budgetary reasons.

[16](U) See "Statement of Secretary of Defense Robert S. McNamara Before the House Subcommittee on DoD Appropriations, FY 1969-1973 Defense Program and FY 1968 Defense Budget (U) (22 January 1968 draft), pp. 47 ff. Also Alain C. Enthoven and K. Wayne Smith, *How Much is Enough: Shaping the Defense Program, 1961-1969* (New York: Harper and Row Publishers, Inc., 1961), pp. 184-96.

Chapter XXV

[1](U) SAC uses the term "command control" rather than "command and control." See Headquarters, Strategic Air Command, "CINCPAC Master Plan for Command Control" (U), January 1968, SECRET.

[2](U) See Chapters XIII.A and XXIII.A. The revised SACCS (465L) achieved initial operational capability in December 1963.

[3](U) Headquarters, Strategic Air Command, *The Development of the Strategic Air Command, 1946-1971* (U), 25 July 1972, pp. 146-47, UNCLASSIFIED.

[4](U) Ibid., pp. 98-99, 114, and 133.

[5](U) See the accounts of the controversial B-70 and Skybolt decisions in Alain C. Enthoven and K. Wayne Smith, *How Much is Enough: Shaping the Defense Program, 1961-1969* (New York: Harper and Row Publishers, Inc., 1961), pp. 243-62.

[6](U) Secretary of Defense Posture Statement, February 1964, cited in Office of the OSD Historian, *History of Strategic Arms Competition, 1945-1972* (U), 3 vols., Vol. II, *Chronology-US, 1961-73* (U), November 1974, p. 63, TOP SECRET/RESTRICTED DATA.

[7](U) Ibid.

[8](U) Secretary of Defense Posture Statement, 14 February 1962, in ibid., p. 23.

[9](U) Carl Berger, *USAF Strategic Command and Control Systems, 1958-1963* (U) (Historical Division Liaison Office, US Air Force, November 1964), pp. 44 ff, SECRET.

[10](U) Ibid. See also OSD Historian, *History of Strategic Arms Competition,* II:85; and JCSM 319-66, Memorandum for Secretary of Defense, "Operational Requirement for Additional PACCS Aircraft" (U), 10 May 1966, UNCLASSIFIED.

[11](U) Historical and Research Division, Headquarters, Strategic Air Command, *History of the Strategic Air Command, July-December 1961* (U), Historical Study No. 88, TOP SECRET; and Historical and Research Division, Headquarters, Strategic Air Command, *History of the Strategic Air Command, July 1962-July 1963* (U), Historical Study No. 82, TOP SECRET.

[12](U) Berger, *USAF Strategic Command and Control Systems;* and OSD Historian, *History of Strategic Arms Competition,* II:65.

[13](U) Secretary of the Air Force, Memorandum for Secretary of Defense, "Reclama on PACCS" (U), 17 November 1962, TOP SECRET.

[14](U) SAC letter to JCS, "Advanced Aircraft for PACCS" (U) (Qualitative Operational Requirement), 13 March 1964, SECRET; OSD Historian, *History of Strategic Arms Competition,* II:71.

[15](U) Historical and Research Division, Headquarters, Strategic Air Command, *History of the Strategic Air Command, July-December 1964* (U), Historical Study No. 96, TOP SECRET.

[16](U) The embryonic NMCS had a much more central role, of course, in overall national management of the crisis. See Chapter XXIII, Section C.

[17](U) Theodore C. Sorenson, *Kennedy* (New York: Harper and Row Publishers, Inc., 1965), p. 700.

[18](U) Both cited in William W. Kaufmann, *The McNamara Strategy* (New York: Harper and Row Publishers, Inc., 1964), p. 273. For recent postmortems concerning the escalation potential of the crisis, see James A. Nathan, "The Missile Crisis: His Finest Hour Now," in *World Politics,* January 1975; Graham T. Allison, *Essence of Decision: Explaining the Cuban Missile Crisis* (Boston, Mass.: Little, Brown & Co., 1971); and Alexander L. George, "The Cuban Missile Crisis, 1962" in A. L. George, D. K. Hall, and W. E. Simons, *The Limits of Coercive Diplomacy* (Boston, Mass.: Little, Brown & Co., 1971).

[19](U) See, for example, Allison, *Essence of Decision*, pp. 217-18, and Arnold L. Horelick and Myron Rush, *Strategic Power and Soviet Foreign Policy* (Illinois: University of Chicago Press, 1965), Chapter 12.

[20](U) Historical and Research Division, Headquarters, Strategic Air Command, *SAC Operations in the Cuban Crisis of 1962* (U), Historical Study No. 90, TOP SECRET; also Hq SAC, *Development of SAC, 1946-1971*; and OSD Historian, *History of Strategic Arms Competition,* II:37-38.

[21](U) Formal JCS emergency procedures related to the SIOP were outlined in SM-1200-62, "JCS Emergency Action Procedures" (U), 29 October 1962, TOP SECRET.

[22](U) Hq SAC, *Development of SAC, 1946-1973,* p. 64.

[23](U) All operational Polaris SSBNs at CINCLANT also put to sea to their preassigned patrol stations.

[24](U) Hq SAC, *SAC Operations in the Cuban Crisis.*

[25](U) Hq SAC, *Development of SAC, 1946-1971.*

[26](U) See Chapter XXIII, Section C, and the discussion of Cuba and other crises in Weapons Systems Evaluation Group, *Decisions at the Tactical Nuclear Threshold* (U), Report 108 (February 1967), TOP SECRET.

[27](U) JCSM 700-66, Memorandum for Secretary of Defense, "Follow-on ABNCP Requirements" (U), 3 November 1966, TOP SECRET; Secretary of Defense Memorandum for Chairman JCS, et al., "Follow-on ABNCP Requirements" (U), 8 December 1966, TOP SECRET.

[28](U) See OJCS, WWMCCS Council Support Office, "WWMCCS and the JCS FY 1963-1974" (U) (draft, 30 August 1974), SECRET.

[29](U) SAC letter to JCS, "Advanced Aircraft for PACCS" (U), 29 April 1966, TOP SECRET.

[30](U) Ibid.

[31](U) Ibid.

[32](U) OSD Historian, *History of Strategic Arms Competition,* II:149; SAC letter to JCS, "Operational Requirement for Five Additional PACCS Aircraft" (U), 9 March 1965, SECRET.

[33](U) Berger, *USAF Strategic Command and Control Systems,* pp. 37-39; SAC letter to JCS, "Advanced Aircraft for PACCS" (U), 29 April 1966. The ERCS was subsequently incorporated as one of the systems in the national Minimum Essential Emergency Communications Network (MEECN).

[34](U) JCSM 700-66.

Chapter XXVI

[1](U) For an authoritative expression of these perspectives in the early 1960s, see Secretary of Defense, Draft Memorandum for the President, "Continental Air Defense" (U), 12 November 1962, TOP SECRET; and Draft Memorandum for the President, "A Program for Strategic Defense" (U), 9 October 1963, TOP SECRET.

[2](U) Thomas A. Sturm, *Command and Control for North American Air Defense, 1959-1963* (U) (Historical Division Liaison Office, US Air Force, January 1965), SECRET. The latter functions are addressed in a separate study of air and ballistic missile defense in Office of OSD Historian, *History of Strategic Arms Competition, 1945-1972* (U), 3 vols. (1974), TOP SECRET/RESTRICTED DATA.

[3](U) JCSM 232-62, Memorandum for Secretary of Defense, "Early Warning Requirements" (U), 29 March 1962, TOP SECRET; JCSM 755-62, Memorandum for Secretary of Defense, "Warning Against Ballistic Missiles" (U), 29 September 1962, TOP SECRET; and Transcript, Presentation Made Before the Secretary of Defense at Headquarters, NORAD, 14 August 1962, TOP SECRET. This kind of performance was not necessarily representative of realistic "no-notice" conditions.

[4](U) This was one of the major points made by OSD analysts in connection with the B-70 issue. See Alain C. Enthoven and K. Wayne Smith, *How Much is Enough: Shaping the Defense Program, 1961-1969* (New York: Harper and Row Publishers, Inc., 1961), p. 244; and Secretary of Defense, Draft Memorandum for the President, "B-70 Program" (U), 20 November 1962, TOP SECRET.

[5](U) Enthoven and Smith (p. 168) are explicit on this point.

[6](U) See, for example, DDR&E Ad Hoc Group on MIDAS, "Evaluation of MIDAS R&D Program" (U), 30 November 1961, TOP SECRET.

[7](U) See especially JCSM 755-62, Memorandum for Secretary of Defense, "Warning Against Ballistic Missiles" (U), 29 September 1962, TOP SECRET.

(U) Insofar as can be readily ascertained from a review of McNamara's annual posture statements, pertinent portions of the JSOP, and other basic documents, the term "triad," referring to the planned structure of three different complementary strategic systems, basically the Minuteman, Polaris submarine, and B-52, was not in general use during the period. In fact, as indicated above, the long-term future of the manned bomber as a permanent member of the triad was far from universally accepted at the time. There may be considerable truth in Newhouse's comment that, although Washington has come to admire the triad, it "came about more by accident than design." See John Newhouse, *Cold Dawn: The Story of SALT* (New York: Holt, Rinehart and Winston, 1973), p. 19.

[8](U) *Statement of Secretary of Defense R. S. McNamara Before the House Subcommittee on DoD Appropriations of FY 1969-1973 Defense Program and 1968 Defense Budget* (U), 22 January 1968, pp. 45-47, SECRET.

[9](U) JCSM 865-62, Memorandum for Secretary of Defense, "Warning Against Ballistic Missiles" (U), 29 September 1962, TOP SECRET.

[10](U) JCSM 342-67, Memorandum for Secretary of Defense, "Fractional Orbital Bombardment System" (U), 16 June 1967, TOP SECRET; and Secretary of Defense Memorandum for Chairman, JCS, et al., "FOBS Threat" (U), 29 August 1967, TOP SECRET.

[11](U) Secretary of Defense, Draft Memorandum for the President, "Recommended FY 1965-1969 Strategic Retaliatory Forces" (U), 13 November 1963, TOP SECRET; JCSM 550-62, Memorandum for Secretary of Defense, "Proposed Program Changes for the Department of the Navy" (U), 24 July 1962, TOP SECRET.

[12](U) Ibid., citing Weapons Systems Evaluation Group, *Defense Against Sea-Launched Missile Attack* (U), Report 35, Third Annual Review (15 February 1962), TOP SECRET.

[13](U) See R. A. Finkler, et al., *Technical Characteristics of Selected Components of the WWMCCS in 1982* (U), S-420 (Institute for Defense Analyses, Arlington, Va., July 1973), Vol. VIII, *Appendix H: Capabilities and Vulnerabilities of Tactical Warning/Attack Assessment Systems of the WWMCCS, 1973-1982* (U), TOP SECRET/RESTRICTED DATA/NOFORN.

[14](U) Ibid.

[15](U) Secretary of Defense, "FOBS Threat"; *Statement of Secretary of Defense R. S. McNamara Before the House Subcommittee on DoD Appropriations of FY 1969-1973 Defense Program*, pp. 88-89.

[16](U) Finkler, *Technical Characteristics of Selected Components of the WWMCCS*; and *Statement of Secretary of Defense R. S. McNamara Before the House Subcommittee on DoD Appropriations of FY 1969-1973 Defense Program.*

[17](U) See, for example, JSCM 865-63, Memorandum for Secretary of Defense, "Analysis and Evaluation of Military Worth of a Satellite-Based Infrared Surveillance and Warning System" (U), 8 November 1963, TOP SECRET; and DDR&E, Memorandum for Secretary of Defense, "Program 461" (U), 14 November 1963, TOP SECRET.

[18](U) Ibid.

[19](U) Ibid.

[20](U) Weapons Systems Evaluation Group, *An Analysis of Operational Procedures During Exercise HIGH HEELS 67* (U), Report 123 (December 1967), TOP SECRET.

[21](U) *SIOP Decision Handbook,* excerpted in Weapons Systems Evaluation Group, *Command, Control, and Communications Problems* (U), Report 159 (February 1971), Annex 3 of Appendix K of Part II of Vol. IX, TOP SECRET.

PART FOUR

1968-1972

XXVIII

INTRODUCTION

(U) In the 1968-72 time period, the field of command, control, communications, and warning was marked by continuity in the development of concepts and practice and by the changing strategic relationship between the United States and the Soviet Union. Operationally, the period did not see any dramatic improvements in the national command and control system, but rather an emphasis on improved planning as a basis for decisions on how to move ahead in the future. It was generally more a period of developing and refining ideas rather than creating new elements in the command and control structure.

(U) Toward the end of his second administration, President Johnson called for contributions from the Department of Defense and other agencies of the government for a speech to be called "National Defense, Eight Years of Remarkable Progress, the Democratic Administration's Record of Achievement, 1961-68." The final document emphasized the ways in which US security had been strengthened. It reported that much attention had been paid to the improvement of command and control, particularly to command centers, including continuously airborne centers. No doubts about the adequacy of such centers or the efficacy of the entire command and control system were voiced.

(U) The period 1961-68, however, left a legacy of doubts and uncertainties, along with some new ideas in the strategic field. Some of the new ideas that had emerged during the Kennedy-Johnson administrations became the issues that gave shape to the discussion of nuclear strategy and of the narrower issues of command and control under President Nixon. The most significant of these issues concerned the concepts of sufficiency and flexible response. These concepts focused attention on the critical importance of command and control in a limited nuclear exchange. At the same time, they suggested that the National Command Authorities would not be the targets of attack by an adversary who hoped for a measured response and ultimate negotiation from the other side.

(U) Along with these basic strategic issues, serious and important questions persisted with regard to the maintenance and development of systems for the support of command and control, many of them raised by technological change in the fields of automated data processing and communications. Other important and continuing questions were raised about the centralization of the command and control system and the character and function of the command centers. All of these questions had been important in previous years, particularly so in the last months of the Johnson administration. They dominated the command and control problem in the years 1968-72. What was done about them--or not done--determined the significance of the period for command and control as a system and as an important part of the overall strategic relationship between the United States and the Soviet Union.

U
([redacted]) That the complexities of command and control were not easily grasped, even for those most deeply involved and in the most powerful and influential positions, became apparent. In the period under consideration, documents reveal instances of the Secretary of Defense expressing his doubts as to the Joint Chiefs' understanding of the capabilities of the system, of the Chairman of the Joint Chiefs doubting the DDR&E's grasp of the problem, and of various high officials in the defense establishment giving vent to their feelings that almost no one seemed to understand how the system was really likely to work in a nuclear environment.*[1]

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*Footnotes for Part Four begin on p. 439.

(U) One reason for the problems involved in understanding command and control was the institutional complexity of the command and control structure that had evolved. Another reason for the difficulties was the impossibility of testing the system in a realistic environment. No one could say that he knew what would happen in an actual strategic exchange. Thus, it was always possible to hope that systems were better than the studies showed, a course that was particularly tempting to those most closely associated with the various command and control subsystems. The obverse of this was the temptation to find the system totally inadequate--a conclusion that seemed to be supported by numerous studies and exercises. The apparent vulnerability of every system to natural phenomena or to enemy action, of course, made it impossible to dismiss the arguments of the pessimists.

(U) Another factor that made assessment of command and control difficult was the lack of comparability between the US and the Soviet command and control systems. With bombers, missile submarines, land-based missiles, missile defenses, and so on, it was possible to compare Soviet and US equipment and its relative capabilities, limitations, and vulnerabilities. In the command and control field, however, our limited knowledge of the Soviet side made it difficult to draw useful analogies.

XXIX

THE BALANCE OF STRATEGIC FORCES

(U) A dominant feature of the 1968-72 period was the US recognition of the changed strategic relationship between the United States and the Soviet Union. The enormous US superiority of the early 1960s steadily disappeared under the Soviet drive for parity. In January 1968, Secretary McNamara, on the eve of his departure, reviewed his seven years in office and stressed the significance of the new strategic relationship:

> Finally, we undertook an extensive program to improve and make more secure the command and control of our strategic offensive forces. Among the measures taken was the establishment of a number of alternate national command centers, including some which would be maintained continuously in the air so that the direction of all our forces would not have to depend upon the survival of a single center. Steps were also taken to enhance the survivability, reliability and effectiveness of the various command and communications systems, including, for example, provision for the airborne control of bomber, MINUTEMAN and POLARIS launchings. These were all forged into a new integrated National Military Command System. To guard against accidental or unauthorized firings, new procedures, equipment and command arrangements were introduced to ensure that all nuclear weapons could be released only on the positive command of the national authorities.
>
> Many of the tasks we set out for ourselves seven years ago have been successfully accomplished. But, the situation which we foresaw then is now well upon us. The Soviets have, in fact, acquired a large force of ICBMs installed in hardened underground silos. To put it bluntly, neither the Soviet Union nor the United States can now attack the other, even by complete surprise, without suffering massive damage in retaliation. This is so because each side has achieved, and will most

likely maintain over the foreseeable future, an actual and credible second strike capability against the other. It is precisely this mutual capability to destroy one another, and, conversely, our respective inability to prevent such destruction, that provides us both with the strongest possible motive to avoid a strategic nuclear war.

That we would eventually reach such a stage had been clearly foreseen for many years. Five years ago I pointed out to this Committee that: "We are approaching an era when it will become increasingly improbable that either side could destroy a sufficiently large portion of the other's strategic nuclear force, either by surprise or otherwise, to preclude a devastating retaliatory blow."

In January 1956, Secretary of Defense Wilson noted that "... independent of what year it might happen, within a reasonable number of years we are almost bound to get into a condition sometimes described as 'atomic plenty' or a condition where the two parties could, as a practical matter, destroy each other." In the following month, Secretary of the Air Force Quarles was even more explicit. He said, "I believe it will mean that each side will possess an offensive capability that is so great and so devastating that neither side will have a knockout capability, and, therefore, a situation in which neither side could profitably initiate a war of this kind.... This has been frequently referred to as a position of mutual deterrence, and I believe we are moving into that kind of a situation."

Indeed, as far back as February 1955, a distinguished group of scientists and engineers, frequently referred to as the Killian Committee, had concluded on the basis of a comprehensive study of our continental air defense that within probably less than a decade a nuclear attack by either the United States or the Soviet Union would result in mutual destruction. "This is the period," the Committee's report stated, "when both the U.S. and Russia will be in a position from which neither country can derive a winning advantage, because each country will possess enough multimegaton weapons and adequate means of delivering them, either by conventional or more sophisticated methods, through the defenses then existing. The ability to achieve surprise will not affect the outcome because each country will have the residual offensive power to break

> through the defenses of the other country and destroy it regardless of whether the other country strikes first."
>
> Clearly, nothing short of a massive preemptive first strike on the Soviet Union in the 1950s could have precluded the development of the situation in which we now find ourselves. This point, too, was noted by Secretary McElroy in 1958. Indeed, the hearings of the Congressional Committees concerned with national defense during that period are replete with references to this crucial issue.
>
> Be that as it may, the problem now confronting the Nation is how best to ensure our safety and survival in the years ahead, in an era when both we and the Soviet Union will continue to have large and effective second strike strategic offensive forces and when the Red Chinese may also acquire a strategic nuclear capability.[1]

The arrival of this long-anticipated situation was probably the chief cause of the conceptual and doctrinal turmoil of these years, and it led to the growing sense of frustration that marked efforts to improve strategic command and control.

A. THE PERCEIVED SOVIET THREAT

U ([redacted]) 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.

U ([redacted]) 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.[2]

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.

U ([redacted]) The Joint Chiefs stated in the Joint Strategic Objectives Plan for 1972-79 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 consideration in the formulation of military strategy, including the development of force levels.[3]

It was this steep climb in Soviet numerical capability, made all the more striking by the relatively static nature of US strategic offensive forces, that underlay the revived attention given to strategic war in this period and to the means to control such operations. Contributing to the revived attention, too, was the wind-down of the US involvement in Southeast Asia, which had, after 1965, absorbed a large share of the interest and attention of the top policymakers.

B. US STRATEGIC FORCE POSTURE

U ([redacted]) The US strategic offensive forces remained quite stable in this period. Force levels at the beginning and end of the period were as follows:

	1 October 1967[4]	Mid 1972[5]
ICBM launchers	1,054	1,054
SLBM launchers	656	656
Heavy bombers	697	521

During these years, however, the United States achieved a technological breakthrough with the development of the multiple independently targetable reentry vehicle (MIRV). While force levels remained constant, the United States in 1970 began to replace its Minuteman I missiles with Minuteman III, each of which carried three MIRVs. This, in effect, would ultimately double the number of targets at which the Minuteman force could strike. Similarly, the first Poseidon-equipped SSBN became operational in early 1971, each missile of which carried some 10 MIRVs.

(U) The continuing Soviet strategic offensive buildup convinced the Defense Department that a major new strategic initiative was needed to signal to both the Soviets and US allies the US will to maintain a sufficient strategic force and to avoid allowing the Soviets to achieve an overwhelming numerical superiority in land-based and sea-based missiles. There was always the increasing military risk that future technological advances, in conjunction with much larger numbers of Soviet strategic missiles, could offset the qualitative improvements planned for US land-based strategic forces. After review of the several alternatives, Secretary Laird in early 1972 decided that an acceleration of the Undersea Long-Range Missile System (ULMS) was the most appropriate initiative, since the at-sea element of the sea-based strategic forces seemed to have the best long-term prospect for high pre-launch survivability. A second element of the "triad"--the bomber force--was to be strengthened by development of the B-1 bomber, intended as a replacement for the B-52, which was started in this period.

XXX

COMMAND AND CONTROL SYSTEMS, 1968-72

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

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

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

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

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

A. THE NATIONAL MILITARY COMMAND SYSTEM

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

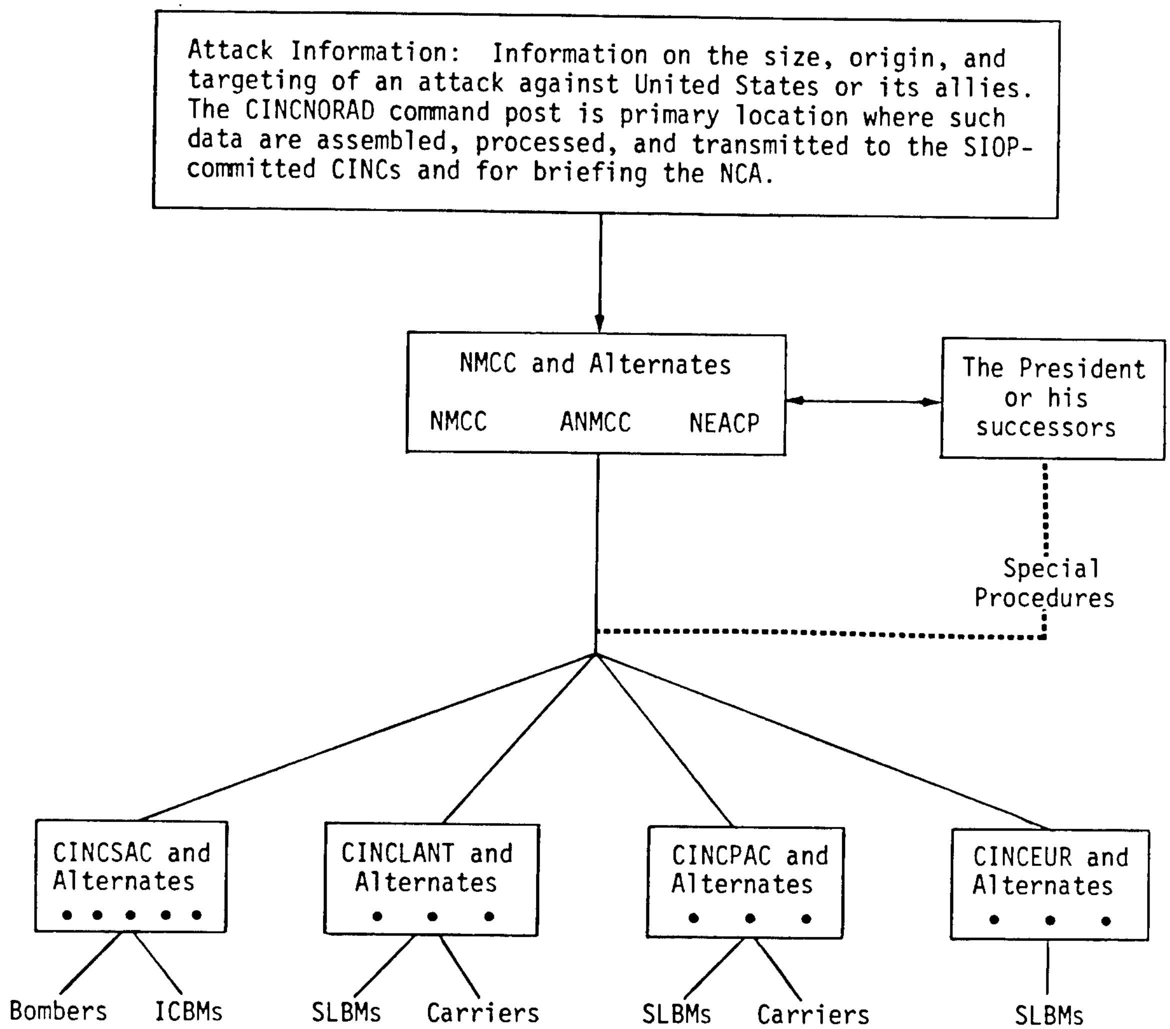

Figure 1 U ([redacted]). TRANSFER OF INFORMATION AND AUTHORITY FOR EXECUTION OF US STRATEGIC FORCES (U)

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

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

(U) The need for such a minimum essential communications backup to primary and alternate facilities supporting the command and control structure was first acknowledged in February 1963, when the Secretary of Defense directed a study on how to use the LF-VLF spectrum to meet such a requirement. The painfully slow process of planning for and developing the MEECN was typical of much in the command and control area. It was not until 1968 that a procedural plan was promulgated, and centralized direction was established under the JCS only in May 1969. The MEECN System Engineer was not designated until May 1970, more than seven years after the Secretary's study request.[1]

B. CINC SYSTEMS: SAC

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

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

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

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

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

(U) The Emergency Rocket Communications System (494L) became operational in December 1967. Designed to disseminate the "go code" to bombers subsequent to their launch, it consisted of communications-transmitting equipment substituted as warheads on six Minuteman missiles. The ERCS recorders would accept a 30 to 90 second voice message for broadcast over two UHF transmitters, a message that would be repeated during the ballistic trajectory of the missiles. The ERCS had been developed to provide a reliable and survivable means of trans- and post-attack communication from CINCSAC to SAC forces. The coverage included SAC control elements; SAC aircraft launched under positive control; SAC forces operating along airborne alert routes in the Pacific, Atlantic, North Polar, and Mediterranean areas; SAC ground command elements and alert forces in Europe, the Pacific, and North America; and SAC missile forces in the United States.

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

C. SACEUR-CINCEUR STRATEGIC COMMAND AND CONTROL ARRANGEMENTS

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

(U) The boats operated out of Rota, Spain, or Holy Loch, Scotland, and normally patrolled the Mediterranean. The SACEUR-assigned boats actually did half of their patrol in the Atlantic, while en route from Holy Loch to the Mediterranean, and went on alert from the time they left Scotland. The boats were controlled by CINCLANT for administrative, safety, and navigational purposes while passing through Atlantic waters, but this arrangement did not change their release procedures.

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

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

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

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

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

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

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

D. CINCPAC STRATEGIC COMMAND AND CONTROL ARRANGEMENTS

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

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

E. COORDINATION OF NUCLEAR OPERATIONS

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

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

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

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

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

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

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

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

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

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

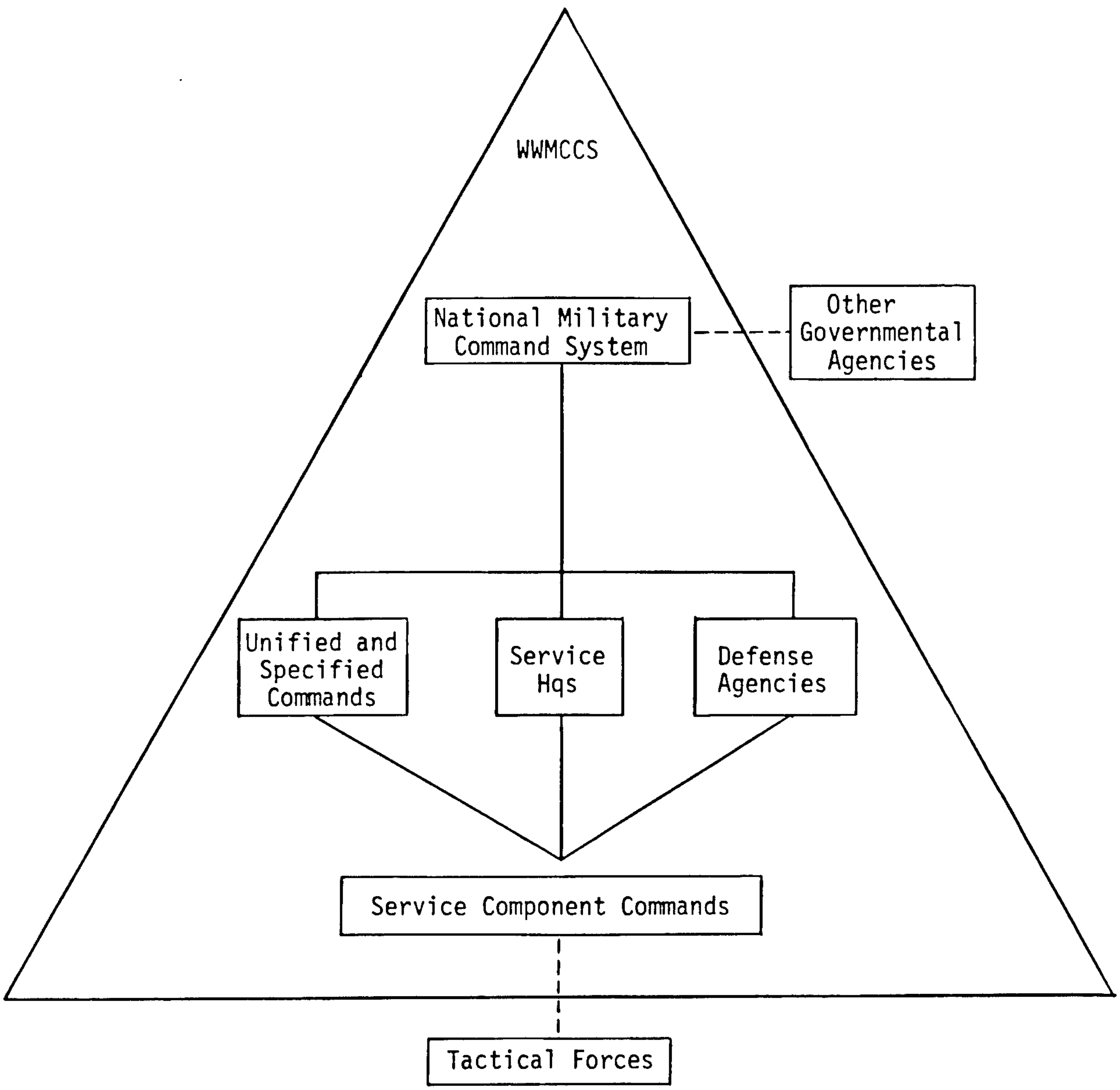

Figure 2 (U). COMMAND AND CONTROL SYSTEM RELATIONSHIPS, WWMCCS (U)

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

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

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

(U) Movement toward a systematic effort to improve the WWMCCS was given impetus when the JCS received the WSEG/IDA Staff Study 153, which suggested an overall study plan for command and control problems.[7] Then in July 1970 came the Blue Ribbon Defense Panel Report (see Chapter XXXII) which criticized the loose decentralized management of the WWMCCS. The report provided some additional impetus to change the WWMCCS, although it does not cause any specific major change by itself. Then, in February 1971, WSEG/IDA Report 159 was submitted, and in the words of an OJCS historian, "it caused consternation in the OJCS because of the bleak but largely accurate picture it painted of the WWMCCS."[8]

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

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

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

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

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

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

XXXI

SURVEILLANCE AND WARNING, 1968-72

(U) There was a steady decrease in the late 1960s in that portion of the air defense and warning structure that dealt with an aerodynamic threat. Ballistic missile warning systems continued, however, and were improved.

A. BALLISTIC MISSILE WARNING

(U) In 1968, there were two systems in operation to detect silo-launched missiles, the BMEWS and the Forward-Scatter, Over-the-Horizon (OTH) Radar system (440-L). Both were owned and operated by the Air Defense Command. In addition, there was the Defense Support Program (DSP), which used synchronous-altitude satellites for Eastern and Western Hemisphere ballistic-missile-launch detection and nuclear-burst location.

(U) With stations at Clear (Alaska), Thule (Greenland), and Fylingdales (England), BMEWS was capable of detecting and reporting in real time ballistic missiles in trajectory over the North Polar region. BMEWS had become operational as a complete system in January 1964. The second system, the 440-L, was capable of detecting solo-launched missiles within minutes after launch. It was aimed at the threat from the Soviet fractional orbital bombardment system (FOBS), a low-altitude missile that would cut the BMEWS fan at low altitude and thus reduce the time from cutting the fan to impact to as little as five-to-seven minutes.[1]

(U) The 440-L system consisted of four transmitting stations in the Pacific and five receiving stations in Europe. By covering the Soviet ICBM and satellite-launch sites, as well as launch sites that might be developed in China, the system could detect a mass ICBM attack regardless of which direction or on what trajectory the missiles might be launched. It could thus provide warning of Soviet missiles launched over the South as well as the North Polar regions.

(U) The 440-L system, operating in the HF band, was subject to the same widespread and long-lasting blackout effects as HF point-to-point radio. These blackout effects could be increased if weapons were used specifically for that purpose (e.g., exo-atmospheric or high-altitude bursts). The propagation outages could begin at the initiation of the nuclear exchange and continue for periods of up to 24-36 hours. Under massive nuclear exchange conditions, little or no useful data could be expected from the 440-L system.[2]

(U) The 474N system for detecting SLBMs came into full operation in mid-1972. This system covered both the Soviet 300-n.m. and 650-n.m. range missiles, but the introduction of the Soviet 1,300-n.m. missile required modifications to the system. The SLBM radar, however, was limited to line-of-sight ranges and suffered also from other coverage limitations. Generally, BMEWS was considered to be a more effective system than the OTH radar and the OTH more effective than the 474N. The purpose of all the ballistic missile warning systems was to provide warning to get the SAC bomber force off the ground.

(U) There were also two nuclear weapon detonation reporting systems operational in January 1968. The Bomb Alarm System, operational since 1962, was designed to detect ground level bursts. There was also a High-Altitude Radiation Detection System (HARDS) for the reporting of exo-atmospheric detonations. The Bomb Alarm System was eventually deactivated in 1970.

B. AIRCRAFT WARNING

(U) In the aircraft warning field, the reduction of the system was continuous. Secretary McNamara in early 1968 reminded Congress that three years earlier he had stated that one of the major issues to be faced in the strategic defensive area concerned the proper level of the anti-bomber defense program. The existing system had been designed in the mid-1950s, he said, when it was estimated that the Soviets would build a large fleet of aircraft capable of attacking the United States. That threat did not develop as estimated. In the late 1960s, however, with no defense against the ICBM and only very limited defense against the SLBM, the US anti-bomber defenses could operate only against a small portion of the Soviet offensive threat. Moreover, the anti-bomber defense was also vulnerable to missile attack. What was needed, McNamara said, was a balanced strategic defense posture, which would involve a major reorientation of efforts both within the anti-bomber defense program and between anti-bomber and anti-missile defenses.[3]

(U) In all the various alternative command and control structures examined at this time, an indispensable element seemed to be the new Airborne Warning and Control System (AWACS). The AWACS promised much because of its ability to track aircraft at low altitudes and to detect them at great distances from the United States, and because its vulnerability to missile attack was low compared with the ground-based surveillance, warning, and control network. The feasibility of the AWACS would depend upon the successful development of a "downward looking" airborne radar that could detect aircraft flying over land at any altitude.

U
([redacted]) It had been planned that the AWACS and the over-the-horizon radar would permit the phasing out of much of the old surveillance system, since these elements would be effectively replaced by the two new systems. Although the AWACS was not

developed in its air defense role, because of the reduction in air defense generally, extensive revisions were nevertheless made throughout the period in the surveillance, warning, and control systems, including the organization of the command structure. The objective was to retain a system that, though reduced from year to year, still provided coverage of the main threat corridors. Between 1969 and 1971, for example, the number of search radars was reduced from 118 to 102. By mid-1971, there were to be 57 search radars in the continental United States, 30 in Canada and Labrador, 13 in Alaska, and 2 in Iceland. There were also two Air National Guard search radars in Hawaii and one in Puerto Rico. The 17 remaining gap filler radars, which had limited effectiveness, were phased out in 1971, too. The DEW Line radars were reduced in 1970 from 39 to 33. The EC-121 airborne early warning force, which was very costly to operate, was also reduced in 1970 from 80 to 51 aircraft.[4]

U ([redacted]) In summary, it became clear that the tactical warning requirements set by the JCS could not be met by the systems then existing or programmed. Sensor capability, even in a non-degraded operating mode, was inadequate, and the information collection and warning systems were easily destroyed or degraded. The existing warning systems, NSSM 64 concluded, did not offer significant potential for improvement; the most serious weakness was that all were soft and could be destroyed by Soviet attack. However, softness in a warning system was not so serious as in a command and control system. There was probably no avoiding such softness.

U ([redacted]) Although numerous tactical warning systems existed, the inherent detection-surveillance and vulnerability limitations of these systems, coupled with the fact that output data available from independent warning systems were not effectively correlated, made it unlikely that the US tactical warning apparatus could be depended upon as a source of reliable data for providing decisionmakers with an integrated overview of what was occurring in the early stages of a nuclear attack. It appeared, too, that the US tactical warning apparatus was designed and operated primarily to provide warning alert and not attack assessment, the principal objective being to utilize warning information to preserve the integrity of the US retaliatory capability rather than to provide a basis for retaliatory-action decisions.[5]

C. WARNING AND AIR DEFENSE INTEGRATION EFFORT

(U) In early 1968, Secretary McNamara pointed out that the time had come for the United States to examine systematically all the various warning systems in relation to one another with a view to eliminating redundancy and to ensuring that the remaining systems were truly integrated into a workable whole. He requested that the JCS establish a Joint Continental Defense System Integration Planning Staff (JCDSIPS) to study the problem, including the functioning of all defense systems in a wartime environment.[6]

(U) The new organization worked to resolve differing interpretations of warning and warning needs and developed a set of warning plans, costed them, and suggested priorities. Among the projects undertaken was the development of a master plan for the evolution of SPASUR (Space Surveillance) and SPACETRACK, the satellite tracking and identification systems in the NORAD Space Detection and Tracking System (SPADAT). The SPASUR system was designed to give warning when a new space object passed through its field, while SPACETRACK detected, tracked, and computed the orbits of objects in space.

U ([redacted]) One of the key problems that occupied the organization was that of the impact of the Sentinel ABM on efforts to coordinate the offense and defense. The Sentinel ABM was the system designed to defend the entire nation, although it would be weighted more heavily in certain key areas. As planning for the ABM system advanced, it was recognized that the problem of fratricide, the killing of outgoing Minuteman missiles by Sentinel missiles, would become very serious. The new JCDSIPS, working under a charter carefully phrased by the JCS, began to function in 1969 and was to advise the JCS on this problem. Command and control arrangements for the Sentinel program clearly demanded a greater centralization of control than any previous air defense system.

(U) A special committee of JCDSIPS was set up to handle the Minuteman-Sentinel coordination issue. Plans to coordinate firing procedures and a doctrine to avoid fratricide were drawn up. The Strategic Air Command, speaking for the Air Force in this planning, had to agree to the firing regulations.

(U) It should be added that in this period there was a certain degree of interservice rivalry between the Air Force and the Army over the question of air defense. The Air Force saw its prime air defense role threatened by the Army's control of anti-ballistic missile systems. The specific issue of controversy came over the battle management of a ballistic missile defense (BMD), with the Army not wishing to put BMD systems under Air Force control centers.

(U) The Sentinel planning continued until early 1970, when the Sentinel was discarded and the United States turned to the Safeguard system. The new system made the problem of offense-defense coordination even more difficult, since the Safeguard missiles would be sited right in the midst of the Minuteman fields. If the Safeguard system were to become a heavy defense instead of a token one, the coordination problem would become intolerable. Plans were made, however, on the basis of a token defense. Agreements were made by CINCSAC and CINCNORAD and forwarded to the JCS for approval.

(U) With the signing of the SALT agreement in 1972 and the downgrading of the ABM issue, the need for JCDSIPS faded and the organization was disbanded that year. In retrospect, the warning-systems planning conducted by JCDSIPS was probably more significant than its work on the Safeguard system.

D. MINUTEMAN-SAFEGUARD COORDINATION

(U) The ABM issue requires some further discussion, since it seemed at the time likely to add a whole new set of command and control problems to the already strained command and control structure.

U ([redacted]) The problem of offense-defense coordination was examined definitively by the JCS in a study early in 1970, from which emerged a general policy governing coordination. That policy essentially required only a minimum degree of coordination and communications between the Minuteman and the Safeguard systems, the objective being to achieve an "acceptable" level of Safeguard-induced weapon fratricide. Specifically, the JCS policy called for:

(1) Preplanning for the operational employment of the offensive and defensive forces to enable:

- The full Safeguard system to operate without restriction at any time the offensive missile force was not being launched.
- Flyout corridors to be established for the offensive missile force.
- Unrestricted use of Sprint missiles throughout all phases of the engagement without regard to offensive missile corridors or offensive missile launch.
- Restricting Spartan missiles from engagements in the flyout corridors during launch of the offensive missiles, except for self-defense and if directed otherwise by the NCA on a preplanned basis.
- Bomber flyout corridors to be established through preplanned coordination by the offense and defense to achieve the best defense siting and corridor locations.

(2) Communications between CINCSAC and CINCONAD to pass the necessary information, i.e., launch times and holds, so that preplanned actions could be carried out.

(3) Incorporating within the Safeguard firing doctrine elements that would permit the selective hold or release of Spartan to match the conditions set forth in the coordination plan.[7]

[redacted] U
([redacted]) The principal coordination component was to be the flyout corridors in time and space for the Minuteman. Coordination was to be achieved by planning, with a minimum reliance on trans-attack communications. The primary functional need for trans-attack communications was to permit adjustment of the time windows on the flyout corridors should the Minuteman force be required to delay launch (due, for example, to pin down) from the E-hour specified in the Emergency War Plan. Should communications be lost during trans-attack, the Safeguard system would proceed according to the planned option contained in the Emergency War Plan (or presumably on the last received information from SAC). Under this situation, the JCS study postulated that the level of "Spartan fratricide" would be no worse than that resulting from no coordination.

U
([redacted]) The JCS study projected that possibly 9 percent of the Minuteman launches would be lost to fratricide, but an IDA-WSEG study predicted a loss of 20 percent if the Spartan's lethal radius were set at 200 n.m. instead of 80 n.m. The IDA-WSEG study suggested that, in this event, some survivable communication between appropriate Minuteman-Safeguard control centers might become necessary to minimize fratricide to special Minuteman missions, such as the ERCS or defense suppression packages. Nevertheless, the projected Minuteman attrition due to a total loss of trans-attack Safeguard-Minuteman coordination, although not desirable, was judged acceptable by DoD management and became a cornerstone rationale for the adoption by the JCS of their policy.[8]

(U) The intended solution to the problem was thus really not a solution at all. It merely accepted the inevitability of the problem of fratricide and settled on what might be an acceptable loss rate.

XXXII

CONTINUING PROBLEMS IN THE COMMAND AND CONTROL STRUCTURE

A. THE BLUE RIBBON DEFENSE PANEL REPORT

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

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

> It is stated U.S. policy to retaliate only in the event of unmistakable attack, only by decision of the President or his constitutional successor, and with discrimination according to the source, magnitude and type of attack.... [But] in evaluating the capability of the NMCS to perform as desired, it is well to emphasize that its continued functioning in the uncertain ... environment of nuclear war would be extremely difficult at best. Yet, the possibility of a disruption of command which would either immobilize retaliatory forces, subject them to piecemeal destruction, or bring about a weak or uncoordinated response which an enemy might feel he could cope with, might offer an aggressor too tempting an objective and thereby dangerously weaken deterrence.[1]

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

> *On the importance of warning and the difficulty of providing it*: Short of confirmation of nuclear detonations, "it is possible that no President could be sure, with the present warning system configuration, that an attack was in progress or that retaliation was justified...."
>
> *On survival of presidential authority*: One of the most uncertain conditions, if not the most uncertain."
>
> *On command centers*: The NMCC and its alternates are vulnerable to attack. The NEACP would be survivable if airborne, but the size of the existing NEACP limits its usefulness.
>
> *On communications*: "All media are vulnerable to electromagnetic pulse (EMP) and transient radiation effects on electronics systems (TREES)...."[2]

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

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

U ([redacted]) The recommendations of the Blue Ribbon Panel were that the Secretary of Defense "should direct, as a matter of urgency, a comprehensive and objective analysis of the requirements for the National Military Command System in the next decade," and that the analysis should address the "continuity of political authority, as well as the facilities, equipment and concept of operations needed to provide maximum support to the National Command Authorities...." It also recommended that a Strategic Command be created, joining the existing Strategic Air Command, the Joint Strategic Target Planning Staff, the Continental Air Defense Command, and the fleet ballistic missile submarines.

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

B. COST AND PERFORMANCE PROBLEMS

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

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

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

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

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

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

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

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

(U) Other and more practical, though still highly complex, problems persisted through the period in question. There had always been concern about the functioning of electronic systems in a nuclear environment, but in the 1968-72 period increased attention was turned to the question of Electro-Magnetic Pulse (EMP) and Transient Radiation Effects on Electronic Systems (TREES), both the consequence of nuclear explosions. Most of the exploration of these effects, of course, had to be theoretical, but the best informed students of these phenomena were convinced that there was something there to worry about. Some felt that a few well-timed nuclear bursts could be used to pin down launch vehicles. The problem was a persistent one, and no solution appeared or seemed likely to appear.

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

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

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

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

> (1) HIGH HEELS repeatedly demonstrated that the masses of communications and reports, which are designed for crisis management or for idealized operating conditions, will quickly overwhelm the actual Command and Control structure.
>
> (2) The National Command Authorities today have a limited capability for ascertaining the type of attack which the U.S. is experiencing and, therefore, probably would have insufficient information to determine with confidence the proper type of response.
>
> (3) Capabilities did not exist to obtain accurate reconnaissance of targets struck by U.S. strategic weapons within any reasonable and useful time span (i.e., within a week at the most).
>
> (4) The current capability for *ad hoc* planning and for retargeting of strategic weapons is limited and time consuming. Capabilities are greater where strikes are small and retargeting is not required.
>
> (5) The programmed U.S. command and control structure will degrade significantly following any heavy nuclear attack, even if command and control itself is not targeted.
>
> (6) Replanning capability will be reduced significantly even if command and control is not attacked.
>
> (7) Following a heavy nuclear exchange, effective war termination capabilities are marginal.[8]

U ([redacted]) The same message was contained in a memorandum for the Deputy Secretary of Defense from DDR&E entitled "Improvement of C^3 for Strategic Forces." The current system is critically deficient, the memorandum said, in these respects:

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

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

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

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

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

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

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

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

C. IMPROVING THE SYSTEM

(U) The "Response to NSSM 64," the Blue Ribbon Panel report, and other developments in 1970 stimulated the interest of Deputy Secretary of Defense Packard in command and control. They were also having their influence on the military. The Director of the Joint Staff, Lt. Gen. John Vogt, and the Chairman of the Joint Chiefs, Admiral Moorer, became more and more aware of the importance and timeliness of the subject and of the interest of the Deputy Secretary of Defense.[12] And so a subject that had received major attention in the early 1960s and then had been pushed into the background by the war in Southeast Asia again became the preoccupation of key figures in Washington. As noted earlier, Mr. Packard and Admiral Moorer became deeply involved in the development of new policies and new procedures in command and control and rewrote the Department of Defense directive on WWMCCS, the fundamental US government document on the subject.

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

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

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

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

(1) Survivability and availability of presidential authority.

(2) Availability of adequate survivable command centers for the NCA and SIOP-committed CINCs.

(3) Availability of reliable communications from the NCA to the commands.

(4) Communications to fleet ballistic missile submarines for SIOP execution.

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

(1) Establishing a dedicated, survivable SIOP communications satellite system.

(2) Acquisition of an advanced airborne command post (AABNCP) and improvements to the EC-135 ABNCPs of CINCEUR and CINCPAC.

(3) Improved LF-VLF systems on TACAMO and ABNCP aircraft.

In addition, the Chairman reported that he had:

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

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

(3) Reevaluated HF propagation in a nuclear environment.

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

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

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

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

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

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

XXXIII

THE COMMAND POST PROBLEM

(U) The idea of hardening command posts, including those from which the National Command Authorities would operate in wartime, had been greatly stimulated by the advent of nuclear warfare. In time, the capabilities of the new weapons made the hardening process only marginally effective, but it proved difficult for those responsible for the command centers to acknowledge this. Despite what was known about the power of nuclear weapons, it continued to seem prudent to provide a certain amount of protective hardening for national command posts.

(U) For a time at least, the high CEPs of nuclear weapons did make a hardened command post seem sensible. It became increasingly controversial, however, as to whether a hardened command post at the seat of government could possibly be large enough to accommodate the men, records, machines, and so on that made the capital a desirable place from which to conduct business in the first place. The use of alternate sites was devised to give the National Command Authorities options and to introduce uncertainty into the calculations of an enemy. Alternate command posts inherently provided a certain element of redundancy, and this advantage was extended by the conscious development of different communications systems, not only so that there would be alternates in the event one or more were destroyed but also to take advantage of the prospect that one might function under circumstances in which others would not.

(U) The ANMCC at Fort Ritchie had the advantage of a degree of hardness and a great deal more space and more extensive facilities than the command posts in the air and on the water. Still, it could not have anything like the facilities available in Washington. Much more important, its existence and location could not be concealed, and its hardness was insignificant in the face of the nuclear weapons available to the Soviet Union. For a time, it was accepted doctrine that the President would operate from the White House and the NMCC in the Pentagon in a crisis until danger of nuclear war threatened, at which time he would move to Fort Ritchie. Regular exercises were carried out to ensure that the President could be moved with maximum speed from the White House to Fort Ritchie, but, while the people responsible for maintaining the ANMCC were prefecting their routines, it became more and more widely agreed that in a real crisis it was highly unlikely that the President would relinquish control of the situation for half an hour in order to go to a place targeted by the enemy and vulnerable to attack by a very few warheads.

([redacted]) U At one point, the Assistant to the Secretary of Defense (Telecommunications) warned against the dangers involved in making the ANMCC much more attractive than the AABNCPs. "These two alternatives must be equivalent, if not identical, in capability for command and control of the forces," he said. Fort Ritchie could not survive an SS-9 attack, and its external communications were vulnerable to an SLBM, but the AABNCP was supposed to be more survivable. "Survivability is more difficult for the ANMCC than for the AABNCP since the former absorbs and the latter avoids nuclear blast and near-field EMP effects. Hence, the ANMCC must be no less survivable (at least to SLBMs) in its communications than an AABNCP." The Assistant Secretary warned against the temptation to make the ANMCC so comfortable and desirable that the NCA would have to use it rather than the AABNCP. "This choice would guarantee suicide for the NCA that chose it."[1]

([redacted]) U The Assistant Secretary did not recommend that the ANMCC be abandoned, simply that it not be made more tempting than the AABNCPs. No one could bring himself to abandon the facility, though in 1969 the Deputy Secretary of Defense ordered that it go on standby--for reasons of economy.[2] The Chairman of the Joint Chiefs found this recommendation difficult to accept and argued against it.[3] Fort Ritchie remained, however, only an alternate--and not a very likely one.

[redacted]U Another choice offered the NCA as an alternate command post in the sixties was the NECPA. The command post afloat had the advantage of space--less than that of the ANMCC but greater than the ABNCP--and of endurance--again less than the ANMCC but much greater than that of the ABNCP. Even in the Navy, however, it was generally felt that the location of the ships in Chesapeake Bay so as to be easily available from Washington, and their slow speed, made it very unlikely that they could avoid surveillance and destruction by a vigilant opponent. One of the two ships was taken out of commission in 1969 and the other shortly after.

(U) The airborne command post offered the most appealing alternative to the NMCC in the view of the majority. Because of its maneuverability, it had a relatively high chance of survival while airborne, and it could be brought to a place quite near the NCA in time of emergency, even follow the President on journeys away from Washington. Its capabilities were, of course, limited by its relatively small size, but with technological improvements, its capabilities increased.

(U) In the late sixties, a proposal had been made for substantially expanding the capabilities of the airborne command post by using one of the large airframes that were then coming into commercial and military use. The Boeing 747 soon became the most likely candidate and there followed long discussions of the arrangement and of the facilities to be provided for what was to be designated the AABNCP. Differences of view were not quickly resolved for they centered on questions as to cost, mission, what facilities should be included, and the familiar question raised about every command post other than the normal seat of government--whether limitations on its capabilities, endurance, and survivability made it a reasonable choice for the NCA over their normal place of business.

([redacted]) U An example of basic differences that persisted, or were thought to persist, was a charge made by the Chairman of the Joint Chiefs against the DDR&E in a memorandum for the Secretary of Defense. The Chairman said:

> There is some indication that the lack of progress [by DDR&E] may be attributable, in part, to confusion over the role of the ABNCP. The issue is whether the current ABNCP system should be maintained simply to provide a capability for inflexible execution of a single SIOP task, or whether an AABNCP should be created to provide a capability for assessing the attack situation and for flexible execution of SIOP tasks.

The Chairman said that the former capability was already provided by the current system of EC-135s, and that the latter capability could only be provided by the AABNCP. In fact, it turned out that there was no difference between the JCS and DDR&E on this matter, despite suspicions.[4] It was, however, indeed this new and complex idea of a completely new function for the command post that made the decision on the AABNCP so difficult. Many people continued to wonder if even the AABNCP was big enough, survivable enough, and had enough endurance--after all, it could stay in the air only for a matter of hours and depended on supporting bases to get into the air again. On 17 December 1971, the new WWMCCS Council chose the faster of two options which would put seven 747 AABNCPs in the air in 1975.[5]

([redacted]) U Throughout consideration of this issue, it was Deputy Secretary Packard's position that there should be a strong and well-equipped NEACP operating out of Washington. He felt that the NCA should have a capability comparable to that of SAC and should not have to depend on the SAC airborne command post, LOOKING GLASS.

(U) The question of the survivability of AABNCPs had not been resolved, however. On 26 April 1972, WSEG Report 179 appeared. It identified the following vulnerabilities in the ABNCPs:

> (1) Under current conditions, ABNCPs are vulnerable to SLBM attack. They are under 15-minute ground alert, but all bases are within 13.8 minutes flight time of potential SS-N-6 launch locations.
>
> (2) The unique electromagnetic transmission of ABNCPs could be used for terminal homing of enemy aircraft.
>
> (3) Lack of air defense coverage in south-central CONUS could permit an enemy aircraft to get through undetected.
>
> (4) The relatively small emergency wartime orbit of LOOKING GLASS might appear attractive for a barrage missile attack.
>
> (5) Present procedures for LANTCOM's TACAMO aircraft make them highly vulnerable to tracking.
>
> (6) Current HF-LF-VLF radio communications linking ABNCPs within CONUS to overseas WWABNCPs are not reliable in a nuclear environment.[6]

The AABNCPs on order were expected to correct some but by no means all of the vulnerabilities listed in the WSEG report.

(U) Even if the provision of alternate command posts and of redundant communications had provided a more hopeful outlook for survivability, there would have remained the more basic problem of getting the President to one of them and getting his decisions to the strategic forces after he was there. The communications problem is highlighted by the conclusion reached by DDR&E about the value of a Deep Underground Command Center (DUCC), one so deep underground that it could survive hits by the USSR's largest weapons. The conclusion was: "the utility of a DUCC is limited by the possibilities for equally survivable communications" and these are simply not realistically available.[7] The problem had been authoritatively discussed in 1968 in WSEG Report 129, *Command and Control of Offensive Nuclear Weapons in the 1970 to 1075 Time Period*. "In the 1970 to 1975 period," it said, "obtaining a decision from the President or his successor will remain the most uncertain of events that must occur in the NMCS to ensure that the nuclear force could be executed after an enemy-initiated attack." The Soviet Union could, "with a high degree of confidence," kill the President and Vice President and 14 remaining presidential successors within five-to-six minutes after launch of the first missile. "High assurance that the US nuclear force could be executed can be obtained only by establishing some form of predelegated authority."[8] In other words, WSEG was recommending a redundant NCA, something that no President had been willing to do, at least not publicly, for political and psychological reasons of a compelling nature.

U
([redacted]) The question of what to do in this dilemma had not been resolved in mid-1972 when the first SALT agreement was signed. The NMCC in the Pentagon was undergoing expansion and improvement but was being left relatively soft and dependent on extensive systems and manpower outside the command post itself. Progress was being made with the AABNCPs, which were due to become operational in 1975. The decision not to try for the survivable fixed command post that the JCS had repeatedly set down as a goal was the consequence of, first, the realization that it was probably not attainable, and, second, the widening consensus to the effect that a massive surprise attack in which command posts were targeted was highly unlikely. The emphasis in the new command post systems was on providing facilities for the exercise of limited strategic options with emphasis on flexibility and management.

(U) Soviet influence on all these developments was real. The increasing size and capability of the USSR's strategic forces--particularly the enormous throw weight of its ICBMs, along with its growing SLBM force--focused attention on the problem of the vulnerability of the command and control system, particularly the capability of the system to function in the trans- and post-attack periods.

XXXIV

DOCTRINAL DEBATE: COMMAND AND CONTROL FOR FLEXIBLE RESPONSE

(U) It will be noted that there were comparatively few major changes in the structure and the systems just described during the four years under review. What was different in this period was the effort to take this structure--with its systems and their associated problems--and accommodate it to a "new" strategic doctrine.

(U) The environment in which the Nixon administration reviewed and shaped its strategic doctrines was, of course, dominated by the fact that the late sixties had seen the Soviet Union build up its strategic arsenal. Yet, despite the dangers and uncertainties inherent in the overall situation and the general concern within the United States about the buildup of Soviet strategic strength, the Nixon administration chose to follow its predecessor's lead in pursuing a policy of restraint. That policy, President Nixon said in his 1970 *Report to the Congress*, was based on two judgments:

> First, it was believed that there was relatively little we could do to keep the Soviets from developing over a period of time a strategic posture comparable in capability to our own. Second, it was thought that nuclear superiority of the kind we had previously enjoyed would have little military or political significance because our retaliatory capability was not seriously jeopardized by larger Soviet forces and because their goal was in all likelihood a retaliatory capability similar to ours.[1]

Later in the same Report the President declared, "We sought, in short, a strategic goal that can best be termed 'sufficiency'."[2] This goal provided the foundation for strategic doctrine and policy during succeeding years.

(U) Associated with the concept of "sufficiency" was another concept with even greater meaning for command and control, that of avoiding the inevitability of a mutually destructive all-out response by limited or measured use of nuclear weapons, the concept of flexible response. This concept, of course, was new only in the renewed attention given to it, inasmuch as flexible response had been a major doctrinal concern at the outset of the Kennedy administration.

(U) In his 1971 Foreign Policy report, President Nixon reiterated his view of the importance of this option:

> I must not be--and my successors must not be--limited to the indiscriminate mass destruction of enemy civilians as the sole possible response to challenges.... We must insure that we have the forces and procedures that provide us with alternatives appropriate to the nature and level of the provocation.[3]

(U) Obviously critical elements in such a capability would be improved command and control, communications, and targeting capability. However, the concept was challenged on the grounds that a limited response might very well be indistinguishable from a full response and that measures taken to improve missile accuracy and control could well be interpreted by the Soviets as moves toward a first-strike capability. Such measures would thus run counter to the objective of mutual stability and, in the end, prove self-defeating.

(U) Still another subject in the President's 1970 *Report to the Congress* had command and control implications, the issue of strategic arms limitations. The rationale for what eventually became the Strategic Arms Limitation Talks was suggested by Secretary McNamara in January 1968 when, in reference to a possible all-embracing ABM system, he stated:

> I do not see how we would have really improved our security or freedom of action. And neither can I see how the Soviets will have improved their security and freedom of action if, after

> all their additional expenditures for offensive and defensive systems, we can still inflict unacceptable damage on them, even after absorbing their first strike. For this reason we have come to the conclusion that both sides would be far better off if we can reach an agreement on the limitation of all strategic nuclear forces, including ABMs.[4]

(U) Although President Johnson had announced in July 1968 that the United States and the Soviet Union had agreed to open talks for the purpose of limiting both offensive nuclear and ABM systems, the actual negotiations did not get under way until November 1969. The SALT negotiations continued throughout the period covered by this paper and the agreement concluded in May 1972 marks the end of this study. While the talks carried implications for command and control, it is not clear to what extent command and control, *per se*, was involved in the negotiations.

(U) Woven into both the controlled response and sufficiency concepts was the ABM issue, which at the outset of this period was the subject of such bitter debate. That debate is not part of the command and control story, as such, but the ABM did have significance for command and control in that it initially seemed to offer a way to resolve the problem of survivability by providing a means to protect the NCA.

(U) Together, these concepts and issues had a major impact on strategic doctrine and planning and recommended a general review of defense policy. To this end, the President directed the formation of the Defense Program Review Committee (DPRC)--consisting of the Assistant to the President for National Security Affairs (Chairman), the Under Secretary of State, the Deputy Secretary of Defense, the Chairman of the Joint Chiefs, the Director of the Bureau of the Budget, the Director of Central Intelligence, and the Chairman of the Council of Economic Advisors.[5] To support the DPRC's deliberations, National Security Study Memorandums (NSSMs) 64 and 65, calling for thorough reviews of US strategic capabilities, generally and in the NATO alliance, were promulgated.

(U) The 1967 general exercise to test the whole spectrum of command in a strategic crisis (HIGH HEELS 67) had revealed serious weaknesses and deficiencies in command and control. Numerous assessments of our strategic command and control system were also made in the period under review here. In early 1969, for example, a Draft Presidential Memorandum stated that the strategic retaliatory forces had some weaknesses, but these were not so significant as the weaknesses in our control for flexible responses to less than all-out attacks. The major problems were considered to be maintaining our capability to respond to full-scale attacks and ensuring the survival of the National Command Authorities. "We have enough numbers and types of weapons to respond selectively to limited nuclear attacks," the DPM stated, "but we lack the planning and command and control capability needed to use our weapons in this manner."[6]

(U) Extensive discussions were held within the defense community about the command and control requirements for the emerging strategic environment. There was general agreement on a basic requirement for a planning and command and control capability that would provide a credible deterrent to limited strategic attack and enable the United States to launch such an attack. The Deputy Secretary of Defense appraised the situation in mid-1969 this way: "We need to place greater emphasis on improving our command, control, decision making, and other war-fighting capabilities so that our options in time of crisis or war are not restricted to large, preplanned responses."[7]

(U) An assumption that was gaining increasing currency was the idea that in a limited nuclear exchange the command centers on both sides would be spared.[8] This assumption implied a survivable NCA and command and control center that would enable the NCA to (1) launch selective and flexible attacks, (2) know which US targets had been attacked and the extent of the damage, (3) negotiate termination of war, (4) compensate for planning uncertainties, (5) continue to control residual and reconstituted forces, (6) deal with third countries, (7) employ more forces with greater discrimination and efficiency, and (8) diminish risks of escalation.

([redacted]U) Various JCS-WSEG analyses at this time also pointed up the need for specific capabilities:

> (1) More flexibility than is available in the SIOP today.
>
> (2) Inclusion at NMCC levels of capabilities currently associated with JSTPS (Joint Strategic Targets Planning Staff) activities.
>
> (3) Concept for JCS to send all SIOP execution orders directly to SIOP forces.

WSEG Report 129 also talked of a "nuclear exchange management capability," of "option selection," "strike monitoring," and "replanning," command and control functions outside the traditional pattern.[9]

([redacted]U) The "Response to NSSM 64," delivered in late 1969, reflected the knowledge and the expertise of all the relevant parts of the defense community. The report's gloomy tone on the subject of the US capability to maintain command and control of its forces in a limited strategic war posed basic doctrinal questions for US command and control. (The focus on command and control reflected the charge given to the reporting departments and agencies and the importance they assigned to the matter.) The burden of the report was that the United States possessed a good capability to execute a preplanned attack, but "Command Centers do not possess the combination of survivability and capability which is required for the conduct of limited strategic nuclear war. Those which are survivable have limited capability; those with the required capability are not survivable."[10] (The point, in short, was that the NMCC and ANMCC lacked survivability and the NEACP had limited capability.)

([redacted] U) The conclusion was the same in other assessments of the command and control system. The "Response to NSSM 65," which was concerned with strategic capabilities within the NATO alliance, was even less reassuring than the report produced for NSSM 64.[11] The "Response to NSSM 65" quoted WSEG Reports 108 and 110 to the effect that our command and control systems could not support command decisions.[12]

([redacted] U) In February 1971, WSEG-IDA Report 159 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 attrit our forces if we do not respond rapidly.[13]

([redacted] U) The Assistant Secretary (Systems Analysis) suggested that the lead time involved in acquiring new equipment and systems to provide a strategic flexible response capability would not result in any improvement in our capability to respond with strategic nuclear weapons at less than SIOP levels until 1975-76. In view of the lead time involved in making planning and procedural changes, he believed immediate steps should be taken to take advantage of whatever flexibility was inherent in the strategic forces and command and control structure as they existed at the time. In short, he was asking if reorganization of the command and control system could not do something to provide a flexible response capability without waiting for new hardware.[14]

([redacted] U) In mid-1971, the Defense Program Review Committee directed a comprehensive review of the US strategic force posture and objectives. A particularly pertinent response came from the Assistant Secretary (Systems Analysis).[15] Unlike many more specialized papers, this one gave careful consideration to the position of the Soviet Union and the interaction of the Soviet position with that of the United States. The report listed three factors that suggested the need for flexibility in the employment of nuclear weapons--the current state of nuclear parity between the United States and the Soviet Union in strategic weapons, increased interest among US planners in the war engagement capabilities of US strategic forces, and the unpredictability of the evolution of crises. On this latter point, the report noted that during past crises the President had favored *ad hoc* organizations and plans that evolved with the crisis and "clearly indicated his desire for flexibility in our nuclear weapon employment capabilities."

([redacted] U) With respect to command and control systems and their survivability, the report reiterated the conclusions of earlier studies as to (1) the vulnerability of fixed national decision centers; (2) the fact that the NEACP provided the only means of ensuring the President's survival, but it could not carry the staff and facilities the President would need to manage a crisis; and (3) the probability that in a crisis that could involve limited strategic options, the President would want to remain in Washington.

U ([redacted]) Three broad approaches to the problem were outlined in the report:

(1) No improvements beyond those currently programmed. We could declare that an attack on Command and Control systems would result in general war. The disadvantage would be that small attacks on Command and Control could force us to execute SIOP or back down.

(2) Moderate survivability measures. These measures would provide security against accidental attacks but not deliberate attacks in strength.

(3) Concerted survivability program. This would provide Command and Control survivability against attacks short of all-out, but would cost twice as much as the current program. (In any event, post-strike damage assessment would be essential for flexible response strategy to be carried out.)

U ([redacted]) One of the most interesting features of the report was a summary of Soviet views on, and capabilities for, limited nuclear warfare as perceived by the various DPRC agencies. According to the summary, the Soviets recognized that there was substantial uncertainty about the circumstances that could lead to nuclear war between the United States and the USSR and they seemed to have included various preemptive and retaliatory strike options in their war plans. The United States had no idea how flexible Soviet war plans might be, although the Soviets had apparently given serious consideration to the need for *ad hoc* decisions to meet such contingencies as accidental or unauthorized missile launches and provocative attacks by third countries. Their force application concept and their command and control structure provided for integration of conventional, tactical nuclear, and strategic nuclear force into war plans for each theater of operation under direct operational control of the general staff.

U ([redacted]) Soviet sensor systems were judged adequate to distinguish between large and limited nuclear attacks, but evidence was said to be lacking as to likely Soviet reactions to a limited attack by US forces. In short, there was fundamental uncertainty concerning Soviet responses to limited US nuclear strikes on the USSR. Furthermore, the report said, there may be no high-confidence way to make such a prediction during a crisis.

U ([redacted]) The report made clear that its authors were well aware of the problems raised by fundamental uncertainties about the feasibility of the whole concept of flexible response.

> If the Soviets adopt a launch-on-warning doctrine, we would be very uncertain about the nature of their response--it could be all out, even in response to a very selective US first strike. Such considerations present a real asymmetry between flexible response as a first strike or second strike proposition.... [But] the uncertainties about a selective first strike go beyond the launch-on-warning doctrine. If the Soviets had no options or doctrine for this kind of war, an all-out exchange could be triggered.

U ([redacted]) While flexible strategic nuclear response was an attractive concept, there were numerous crucial questions that had not been solved or even, to some extent, considered in depth. Some of these questions had emerged in the DPRC's review of the US strategic posture. They included the following:

(1) Does US national policy include flexible response (LSO)?

(2) What survivability goals should be established for our SIOP command and control?

(3) What procedures should be adopted to assure that authority to execute the SIOP is not decapitated?

(4) Should our command and control system be improved to extract maximum effectiveness from our forces?

(5) What mechanism should be established for crisis situations to assure integration of political and military planning for LSO?

(6) What level of system survivability should be chosen for the LSO decision-command center complex and its associated sensors and communications?

(7) What percentage of our strategic nuclear forces will be designated for LSO purposes?

(8) What are the requirements, in terms of quality and timeliness, for attack assessment, strike assessment, and damage assessment information?[16]

(U) None of these questions had been resolved by May 1972, and the flexible response strategy seemed to have raised more command and control problems than it solved. Flexible response depended upon a certain unspoken agreement with the enemy, and it was apparent that, in the absence of any real understanding of this sort, one still had to be prepared to accept a full strike on the command and control system. Thus, the period ended with just as much, if not more, concern over the fundamental issue of survivability. In hindsight, the issue of flexible response seems to have been a less significant theme than it appeared to be at the time.

XXXV

OVERVIEW

(U) Probably the outstanding feature of the years 1968-72 was the final ending of the US nuclear superiority, which had conditioned US relations with the Soviet Union for the previous two decades. In overall numbers of vehicles, at least, the Soviets achieved parity in this period. Yet the impact of the development on US command and control was probably less than at first anticipated, simply because it had earlier been realized that even without parity the Soviets could have crippled the US strategic command and control structure. Thus, the problems of command and control did not change in kind during the decade after 1962. They only became more intractable.

(U) From recognition and acceptance of Soviet strategic parity came a revived interest in command and control at the top level of government that eventuated in a deeper awareness of strategic command and control problems and, too, of their intractability. It was apparent that every part of the strategic command and control structure was vulnerable and that a carefully concerted Soviet effort to confuse or destroy the US warning and attack assessment systems before a first-strike might make it impossible for the United States to retaliate. The list of vulnerabilities in the overall structure was virtually a list of all the elements of that structure. These weaknesses were identified again and again in reports and studies, but there was little advance toward their correction.

(U) There was continued controversy over the feasibility of doing much of what was thought to be necessary. This was especially so in regard to the issue of survivability of the NCA. The very revival of interest in the concept of limited strategic nuclear war almost seemed to be a reflection of the sense of frustration in trying to ensure survivability, since one attractive element of the concept was that it eased the problem of NCA survivability by assuming that each side would not wish to destroy the other's top command and control structure. The concept, of course, added to the problems of command and control by requiring a command, control, and communications capability that could permit the NCA to assess an attack and to select an appropriate response, a capability that was more complex than one geared primarily to launching a retaliatory strike.

(U) Despite the persistence of seemingly insoluble problems, some steps were taken to rationalize the command and control system as it existed, primarily through a reordering of the WWMCCS. Other improvements, primarily in communications, were possible and feasible but were hampered by primarily organizational problems. In the absence of a specific service responsibility and motivation, OSD often found itself able to enforce only limited progress.

U
([redacted]) This was a period of much debate and few concrete, long-lasting changes in the overall structure. There was a refinement and elaboration of concepts and systems initiated in the early 1960s, but the focus was on doctrine and reorganization, rather than on the creation of new systems or structures.

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