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IDEAS, CONCEPTS, DOCTRINE: A HISTORY OF BASIC THINKING IN THE UNITED STATES AIR FORCE 1907-1964. VOLUME II

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This history seeks to discover and to record the main stream of thought within the United States Air Force (and its predecessors) concerning the role to be played by air and adrospace power in a deadly struggle for national survival. It seeks to develop a theme of institutional thought as well as to describe the organizational framework in which the thinking took place but also identifies individual thinkers and their ideas. In great measure it becomes the story of the dedicated professional men who were attempting to discover the

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A HISTORY OF BASIC THINKING IN THE UNITED STATES AIR FORCE

1907 - 1964

by

Robert Frank Futrell

Volume II

Aerospace Studies Institute
Air University
June 1971

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VOLUME I

CHAPTER 10

IMPACT OF MISSILES AND SPACE ON NATIONAL ORGANIZATION AND STRATEGY

1. The Defense Reorganization Act of 1958

In the aftermath of Sputnik many Americans were inclined to blame interservice rivalry and "service bickerings" within the Department of Defense for the lag in the development of American missile-space technology. In an address to the American people on 7 November 1957, President Eisenhower stated that "such things as alleged inter-service competition" would "not be allowed to create even the suspicion of harm to our scientific and development program." In his State of the Union message to Congress on 9 January 1958, Eisenhower noted that "[s]ome of the important new weapons which technology has produced do not fit into any existing service pattern" and that some of them "defy classification according to branch of service." As soon as studies were completed Eisenhower promised to send Congress a recommendation for a defense reorganization that would "achieve real unity" and "end inter-service disputes."[1]

At the conclusion of its exhaustive air power hearings, Senator Stuart Symington's special investigating subcommittee had already made recommendations regarding a need for defense organization in a report made public on 25 January 1957. This report charged that the Department of Defense had "permitted duplication, even triplification, among the three services in the development and production of missiles," had "permitted comparable waste in the allocation to the three services of responsibility in the missile field," and had "delayed in giving overriding priority to the ballistic missile program." The Symington subcommittee concluded: "The duplicating approach characteristic of many research and development programs in the Department of Defense, along with the dollar limitations established for such programs, has retarded needed modernization of weapon systems. These policies have retarded important scientific breakthroughs. They contrast with Soviet policies which have produced extraordinary Soviet progress in the research and development field."[2]

Many of the witnesses who appeared before the numerous Congressional committees that investigated missile and space problems in the winter of 1957-58 agreed at least by inference with President Eisenhower's apparent belief that interservice rivalry had contributed to a lag in technological development. Supporting such an idea when he appeared before Senator Lyndon B. Johnson's Preparedness Investigating Subcommittee in December 1957, Dr. Wernher von Braun suggested that a "National Space Agency" ought to be set up either under the Secretary of Defense or as an independent agency, with its

own budget and an in-house master planning organization "where competent people would plan a course of action, a stepwise course of action, on how to proceed to attain certain milestones. For example, to put a man into orbit on a returnable basis within the next 5 years, and to have a manned space station, say, in 10 years."[3] President Eisenhower's scientific adviser, Dr. James R. Killian, had written that "it is unreasonable to expect that ideas for radically new weapons will come from the military services." Elaborating this theme in an appearance before the Johnson subcommittee, Dr. J. Sterling Livingston, a Harvard University Professor of Business Administration, urged that radically new weapons had seldom been developed to fill military requirements. "I recommend," Livingston said, "that we bypass our existing decisionmaking process in weapons development and that responsibility for the development of radically new weapons and scientific equipment, such as earth satellites and space vehicles, be transferred to an independent scientific agency outside the Defense Establishment. This agency should have full authority to take advantage of scientific breakthroughs without approval or concurrence of the military services. . . . As soon as one of the military services establishes an approved requirement for any weapon under development, appropriate arrangements should be made to transfer responsibility for the production of that weapon to the service. Thus, the military services should be considered as customers of this agency."[4] Apparently giving some weight to recommendations such as these, the Senate Preparedness Investigating Subcommittee recommended on 23 January 1958 that decisive action should be taken to "reorganize the structure of the Defense Establishment" and to "accelerate and expand research and development programs, provide funding on a long-term basis, and improve control and administration within the Department of Defense or through the establishment of an independent agency."[5]

* * * *

Since the days of Mitchell and Patrick Air Force leaders had traditionally favored closer unification of the Armed Services, and, early in 1956 when the Soviet Union appeared to be making greater technological progress than the United States, the Air Force opened a campaign aiming toward a new reorganization of the Department of Defense. In a lecture delivered at the National War College, General Twining stated that the matter of organizing defenses and using new weapons most effectively was of equal importance with the technological race. "Even today," he pointed out, "our weapons are far ahead of our doctrines and concepts for using them. . . . The real race with the Soviets is to achieve the best doctrines, the best strategy and tactics with new weapons." Twining warned that each service was attempting to attain "service self-sufficiency," whereas most tasks were becoming the common objectives of all three services. From his point of view as Chief of Staff of the Air Force, Twining stated that he personally favored the idea of a single service, but he noted that

such ideas had been studied and rejected many times, and be doubted that they would be accepted except as a war-induced emergency measure. His main hope for increased service unification lay in the establishment of unified commands. "From unified commands," he said, "we get requirements for forces and weapons needed for clearly defined tasks. In this respect, they differ from requirements that develop when you try to plan for meeting all kinds of war, in all areas, with all kinds of weapons." Twining favored the creation of additional unified commands: a joint Strategic Air Command, for example, should be established along the lines of the Continental Air Defense Command. In unified commands, men of all services could become identified as members of a common mission--men of an "oriented force."[6]

In its report of Twining's address the Washington Daily News asserted that the Air Force had begun "blowing the bugles for closer unification and eventual merger of the Army, Navy, Marines and Air Force."[7] This assertion appeared to have some validity. In his testimony before the Symington subcommittee in April 1956, General Spaatz had already stated that the Department of Defense should be organized "with a single military chief of staff under the Secretary of Defense plus a general staff."[8] In a speech in San Francisco on 1 June 1956, General White had pointed out that new weapons were causing the roles and missions of the services to overlap more and more. In order to provide a military organization "that will help us all to be free of conflicting service loyalties and confusing influences," White favored further integration of forces into joint commands and a free transfer of officers between the services. In an appearance on a national television program on 3 June 1956, Mr. Finletter stated that it was "absolutely necessary that we coordinate all of these three services and put them into a single service." During 1956, Mr. Gill Robb Wilson, President of the Air Force Association, Professor Barton Leach, and retired Lieutenant General Quesada endorsed an integration of the military services.[9]

In an article published during the winter of 1956-57, Colonel Albert P. Sights, Jr., a member of the policy Division of the Air Force Directorate of Plans, provided a suggested blueprint to the way in which United States national defense forces could be organized to accomplish the "basic tasks" of defense deriving from the national objectives. Sights conceived that the basic national defense tasks were the maintenance of nuclear deterrence, continental defense, a strategic reserve, and peripheral defenses in the Atlantic and Pacific. He visualized that the various combat functions that were dispersed in seventeen unified, specified, and single-service-responsible organizations ought to be consolidated into five autonomous task-centered combat commands, which could be designated as the Strategic Atomic, Continental Defense, Pacific Defense, Atlantic Defense, and Strategic Reserve Commands. A Chief of Military Operations should be appointed to provide a centralized direction and control of these combat forces in peace and war. The three military services should be reduced to supporting elements of the

combat organization. The Secretary of Defense should be provided with an expanded civilian and military staff to assist him in directing the combat organization and the three support commands.[10]

While this discussion was progressing, Secretary Wilson manifest little concern for what he described as the "magic formula" of "complete unification." "The stifling of intelligent discussions for the sake of unanimity," Wilson thought, "will not guarantee the perfect answer. More importantly, it is foreign to our concept of a free society." He opposed a single Armed Forces chief of staff as "a dangerous thing" which would "risk military dictatorship in our country." Wilson freely admitted that he had encouraged service rivalry in the development of new weapons and he saw no reason why he could not at an appropriate time "simply interpret how the new weapons can fit into the previously agreed division of responsibility."[11] Speaking as Chairman of the Joint Chiefs of Staff, Admiral Radford suggested that Finletter's advocacy of a single service and a single uniform "would not solve anything . . . we would still have compartmentation within this single uniform." Radford also thought that a single Armed Forces chief of staff would have a very difficult life. "His lot probably would be an unhappy one because he really would not have the authority that his title would imply unless we changed our system of government."[12]

Representing long-standing Navy views, Admiral Arleigh Burke, Chief of Naval Operations, flatly opposed a single Armed Services Chief of staff. "If you have a single Chief of Staff," Burke maintained, "with the power of decision and with authority to develop his staff as he sees fit, sooner or later he can . . . develop an organization that is case hardened on the outside. . . . He can develop his own systems, and some time, some day somebody can misuse that." Touching on the suggestion that the Joint Chiefs of Staff might be separated from their services and made into a high-level strategic planning body, Burke argued: "The trouble with separating the chiefs from the chiefs of services is that when you don't have the responsibility for something it's awfully easy to tell people what to do. . . . Another thing is that for a Joint Chief to be effective he must know his answers. . . . He's got . . . to really know the basic things concerning his service pertaining to the problems which the chiefs are trying to solve."[13] Even though Twining officially favored a single service and a single Armed Forces chief of staff as a matter of policy, he was personally willing to admit that he had some reservations on both matters. "I think it would be less expensive than the present organization," he said. "However, I still feel," he added, "that the three services watching each other is a pretty healthy thing, because no one can get really off the beam. With a single service you might get a sort of military dynasty built up that could make a realy bad mistake for the United States."[14]

Acting as a public service in the national interest a study panel of the Rockefeller Brothers Fund had provided many of the recommendations that had been implemented in the Department of

Defense reorganization of 1953, and in November 1956 a grouping of seven panels assembled by the Rockefeller Fund began to consider national problem areas in terms of the future. Some nineteen distinguished citizens served on Panel II, "International Security--The Military Aspect," whose report was prepared under the direction of Henry A. Kissinger and was released late in 1957. This report forecasted four trends that would be of particular importance to national security: weapons technology would become increasingly complex, the rate of technological change would increasingly complicate the tasks of defense relative to offense, the Soviet Bloc would continue to gain in over-all military strength, and the concept of scarcity in nuclear weapons would disappear from the defense calculations of the United States, the Soveit Union, and to a lesser extent Great Britain. Based on this strategic estimate the panel described three major defects in the organization of the Department of Defense: (1) The roles and missions assigned to the individual military services had become competitive rather than complementary because they were out of accord with weapons technology and the principal military threats to national policy. (2) The organization and responsibilities of the Joint Chiefs of Staff precluded the development of a comprehensive and coherent national defense doctrine. (3) The Secretary of Defense was so burdened with the negative tasks of trying to arbitrate and control interservice disputes that he could not play his full positive part in the initiation and development of high military policy.[15]

In order to remedy the central weaknesses which it described as inherent in the existing organization of the Department of Defense, the Rockefeller panel recommended changes in service roles and missions, in the status of the Joint Chiefs of Staff, and in the authority of the Secretary of Defense. In the matter of roles and missions, the panel recommended that the military departments be removed from the channel of operational command and be charged to support the unified operational commands. It further recommended that all operational military forces of the United States should be organized into unified commands to perform missions dictated by strategic requirements. The units assigned to each unified commander should be organic to his command and not simply placed under his temporary operational control. Since the Chairman of the Joint Chiefs of Staff was believed to be the "only member who can give his full-time attention to problems of over-all strategic doctrine," the panel considered it logical that the Chairman should be designated as the principal military adviser to the Secretary of Defense and to the President. The Chiefs of the Services would continue to serve on the Joint Chiefs of Staff but only as advisers to the Chairman on logistics, training, and procurement. The Chairman should also control the staff of the Joint Chiefs of Staff, which would be organized on a joint basis. In order to develop a group of top officers who could "transcend the thinking of any one service," the panel recommended that all officers above the equivalent rank of brigadier general should receive their permanent promotions from the

Department of Defense and should become officers of the Armed Forces of the United States. Under the existing organization the panel conceived that the Secretary of Defense was a referee who could handle disputes only after they came to him in hardened form. In order to strengthen the Secretary's position, the panel recommended that the line of operational command should run from the President and the Secretary of Defense to the functional commanders through the Chairman of the Joint Chiefs of Staff. It recommended that the line of logistical command should be from the President through the Secretary of Defense to the Secretaries of the three military departments. The panel also recommended that the Secretary of Defense be given absolute powers over research and development and over procurement. Its report stated: "The Secretary of Defense should be given authority over all research, development and procurement. He should have the right of cancellation and transfer of service programs together with their appropriations. He should also be given a direct appropriation for the conduct of research and development programs at the Defense Department level."[16]

The Rockfeller panel report was especially critical of what it described as the "service bias" of the members of the Joint Chiefs of Staff. It asserted that "the Joint Chiefs of Staff functions too often as a committee of partisan adversaries engaged in advancing service strategic plans and compromising service differences. Too little in present arrangements permits the Chief of Staff time and opportunity to think spontaneously or comprehensively about over-all strategic problems. The result is that our military plans for meeting foreseeable threats tend to be a patchwork of compromise between conflicting strategic concepts or simply the uncoordinated war plans of the several services."[17] Other supposedly informed men supported this same criticism. Thus on 25 November 1957 Dr. Vannevar Bush asserted that the Joint Chiefs of Staff had never been able to prepare a "unitary" war plan. "The services themselves," he said, ". . . have prepared war plans, all different, each one of them the best they can produce. From there on, there has been no means by which those could be brought into a unitary plan." Bush's solution was to put the preparation of war plans into the hands of three senior officers (retired officers brought back to active duty if they were the right men) who would be detached from all further obligation to their individual services. "The essential thing," Bush said, "is that in one way or another we get the thing we are looking for, namely a unified war plan."[18]

Virtually no one in authority agreed with the assertions of the Rockefeller panel and of Dr. Bush that the Joint Chiefs of Staff had failed to agree on war plans.[19] While testifying before the Senate Preparedness Investigating Subcommittee early in 1958, the Joint Chiefs agreed that they seldom had specific difficulties in arriving at a joint approval of war plans and related operational matters. War plans were based on capabilities and military forces in being. Most disputes arose from a competition for funds and related resources needed to increase and improve the forces of the future.[20]

General White emphasized that split decisions were actually "rare" and were not unwholesome, since minority views were not hidden because a majority might oppose them. "I feel," White said, "that numbers do not necessarily make for correct decisions. There can be good results from JCS splits provided higher authority resolves the issue with unequivocal decision."[21] General Taylor estimated that out of 2,977 Joint Chiefs of Staff actions in the period between October 1955 and March 1959 only 23 split papers were forwarded to the Secretary of Defense.[22] These split papers dealt with important subjects upon which compromise was impossible. "There is always," White explained, "tremendous self-imposed pressure to do the best job possible because agreement among the Chiefs on military matters ought ordinarily to result in the best solution of the problem. Based upon past experience, I consider that a compromise solution of a military problem arrived at by the Joint Chiefs of Staff is usually better than a compromise decision made by civilian authority."[23] "If the Joint Chiefs of Staff sent nothing but unanimous recommendations forward to the Secretary of Defense," Admiral Burke observed, "then we should be apprehensive because it would mean either that the Joint Chiefs were losing their competence, their sincerity, or their expertness, or that the services themselves were becoming ineffective, unready, or insensitive to their duties in national security."[24]

Each of the members of the Joint Chiefs of Staff agreed that their "two-hat" workload as service chief and member of the Joint Chiefs was extremely burdensome, but they believed that the nation's chief military planners, as General Twining put it, had to be "intimately acquainted on a day-to-day basis with the operating capability and effectiveness of their own services."[25] "If you divorce the Chiefs of Staff from their services," General White thought, "then the man who gives the orders and lays the plans has no responsibility for carrying them out, and that makes it pretty difficult for the other fellow, whoever does have to carry them out."[26] Admiral Burke was even more positive: "The responsibility stemming from the importance of JCS military planning and advice," he said, "is so great that the information required is nothing short of the best. The best available information on the capabilities, readiness, and requirements of the armed services can be possessed only by the military chiefs of these services."[27] Twining's suggestion for a solution to the "terrific load" that was laid upon the individual chiefs was the one that he had employed while he was Chief of Staff of the Air Force, namely to delegate as much as possible of the service work to a vice chief of staff.[28] While General White thought that the Joint Chiefs must remain as the heads of their services, he was willing to foresee some change. Taking a "long look out into the future," White visualized that "we are going to have to go to something that is tantamount to a single service." In preparation for this he thought that officers who served on the joint staffs of the Joint Chiefs of Staff or of unified commands

might be divorced from their services and become Armed Forces officers. Such an Air Force officer could go back to his service, but in a "gray uniform rather than a blue uniform" and with the understanding that he was "eligible for broader service" and had "lost his status as a purely Air Force officer."[29]

The senior military officers who appeared before the Senate Preparedness Investigating Subcommittee displayed little agreement as to the status to be accorded to the Chairman of the Joint Chiefs of Staff and as to whether the nation required a single Armed Forces Chief of Staff. Asked about these matters, General LeMay observed that such questions would have to be settled by the government outside the military establishment. For the immediate future he recommended that one thing to be done "would be to change the present Chairman from one of a man who just conducts the meetings, to some responsibility, and require him to come out of a meeting with a military decision, and if he can get unanimous opinion from the Joint Chiefs, fine: if he cannot, then he forces the issue and makes the decision himself, if necessary."[30] General White pointed out that the Secretary of Defense already turned to the Chairman of the Joint Chiefs for advice in cases of split decisions. A single chief of staff would provide prompt decisions but less certainly wise decisions, since differing points of view would not be made known to civilian authorities.[31] As he had done before, Admiral Burke bitterly opposed a single chief of staff who might become a military dictator if he were a strong man or a "yes man" if he were weak.[32] In response to a request for their opinions, General Spaatz and Fleet Admiral Nimitz offered exactly opposite views. Spaatz urged that a "simple efficient system" of a single chief of staff and a competent joint staff was required to direct "a complex military organization." "The Supreme Commander in the Washington area," Nimitz thought, "is the President as Commander in Chief, and any proposal to set up somebody else as a single commander between him and the forces in the field is totally wrong."[33]

Still new to the responsibilities of the Office of Secretary of Defense, Secretary McElroy remarked that he could have used "just a little bit more time to get acquainted with all my surroundings" before undertaking a reorganization of the Department of Defense, but President Eisenhower's State of the Union address of 9 January 1958 indicated an immediate need for action. To head the reorganization project, McElroy secured the services of Mr. Charles S. Coolidge, whom he appointed Special Assistant for Reorganization. He also established a consultative group, including General Twining as incumbent Chairman of the Joint Chiefs of Staff, General Bradley and Admiral Radford as former Chairmen of the Joint Chiefs, Mr. William C. Foster as a former Deputy Secretary of Defense, Mr. Nelson A. Rockefeller as chairman of the President's Advisory Committee on Government Reorganization, and retired General Alfred M. Gruenther. These men spent some six weeks conducting interviews within and without the Department of Defense before preparing draft legislation which was incorporated in a report that McElroy submitted

to Eisenhower. Even before this McElroy had obtained the President's advice on key points on several occasions, and Eisenhower approved the suggested legislation with only a few changes.[34] McElroy later disclosed that he and Eisenhower had considered and rejected such proposals as a single Armed Forces chief of staff, a merger of the Armed Services, and the establishment of Assistant Secretaries of Defense for Army, Navy, and Air Force in place of existing service secretaries. They also rejected the Rockefeller panel's recommendations that the Chairman of the Joint Chiefs of Staff be made the principal military adviser to the President and the Defense Secretary; that the Joint Staff be organized on a unified basis and placed under the control of the Chairman who would then shape strategic planning; and that all military forces should be assigned organically to unified commands. "I would say," General Twining added, "that our concept of the Joint Chiefs of Staff organization as written in the administration bill is not along the same philosophy as the Rockefeller report."[35]

As he had promised to do President Eisenhower transmitted a message to Congress on 3 April 1958 in which he discussed the administrative and legislative changes that he considered essential in the Department of Defense. In explanation of his reasoning, Eisenhower stated: "First, separate ground, sea and air warfare is gone forever. If ever again we should be involved in war, we will fight it in all elements, with all services, as one single concentrated effort. Peacetime preparatory and organizational activity must conform to this fact. Strategic and tactical planning must be completely unified, combat forces organized into unified commands, each equipped with the most efficient weapons systems that science can develop, singly led and prepared to fight as one, regardless of service. The accomplishment of this result is the basic function of the Secretary of Defense, advised and assisted by the Joint Chiefs of Staff and operating under the supervision of the Commander-in-Chief. . . . Additionally. Secretary of Defense authority, especially in respect to the development of new weapons, must be clear and direct, and flexible in the management of funds. Prompt decisions and elimination of wasteful activity must be primary goals."[36]

Most of Eisenhower's message dealt with legislative actions required of Congress, but he also revealed his own administrative orders for changes within the Department of Defense. Subject only to exceptions that he would personally approve, he intended that "all of our operational forces be organized into truly unified commands." "I expect," he said, "these truly unified commands to go far toward realigning our operational plans, weapon systems and force levels in such fashion as to provide maximum security at minimum cost." Eisenhower stated that the Joint Chiefs of Staff concept was "essentially sound," but he directed that the Joint Chiefs would serve collectively as a staff to assist the Secretary of Defense in his exercise of direction over unified commands. He directed the Secretary of Defense to discontinue the existing joint staff committee system and to organize the joint staff into integrated staff

directorates. Believing that "before officers are advanced beyond the two-star level, they must have demonstrated, among other qualities, the capacity for dealing objectively--without extreme service partisanship--with matters of the broadest significance to our national security," Esienhower announced that he would consider for promotion or nomination to these high ranks only those officers that were recommended to him by the Secretary of Defense.[37]

With a very few exceptions the Department of Defense Reorganization Act of 1958 passed by Congress and signed into law on 6 August 1958 represented President Eisenhower's recommendations. The act markedly increased the authority of the Secretary of Defense, particularly in the operational direction of the Armed Forces and in the research and development field. Where the old National Security Act's preamble had provided for "three military departments separately administered" the new law provided for "a Department of Defense, including three military departments" and provided only that the departments were to be "separately organized." The administration bill had proposed to delete all reference to the separate status of the departments, but Chairman Carl Vinson and the House Committee on Armed Services inserted the provision that the departments would be "separately organized." The act vested over-all direction and control of military research and development activities in the Secretary of Defense and created a position of Director of Defense Research and Engineering, who would be the principal adviser to the Secretary on scientific and technological matters, would supervise all research and engineering activities in the Department of Defense, and would direct and control (including assignment or reassignment) of those research and engineering activities that the Secretary of Defense deemed to require centralized management. The Secretary was also authorized to establish single agencies to conduct any service or supply activity common to two or more military departments.[38] The authority to establish single agencies was added to the bill by an amendment offered by Representative John McCormack and was accepted by Congress with very little debate.[39]

The Department of Defense Reorganization Act of 1958 also provided that the President, with the advice and assistance of the Joint Chiefs of Staff and acting through the Secretary of Defense, would establish unified or specified commands for the performance of military missions. Forces assigned to such commands were to be under the "full operational command" of a unified or specified commander, but the type forces assigned to such a command would be supported by their respective military departments. Under the 1953 reorganization, designated service secretaries had served as executive agents for designated unified or specified commands. Now the operational line of command for these commands ran from their commanders through the corporate Joint Chiefs of Staff to the Secretary of Defense and the President. The previous legislative authority of the Chief of Naval Operations and of the Chief of Staff of the Air Force to command their respective forces was repealed; the Chief of Staff of the Army had never possessed such authority. The act repealed the meaningless

old provision whereby the Chairman of the Joint Chiefs of Staff was not permitted to vote (the Joint Chiefs had never conducted business by vote), and the Chairman was authorized to manage the Joint Staff (which could not exceed 400 officers) and its Director, on behalf of the Joint Chiefs of Staff. The administration bill had omitted any limitation on the number of persons who might be assigned to the Joint Staff, but Chairman Vinson and the House Committee on Armed Services had insisted on setting a limit on the strength of the Joint Staff. On this matter Vinson observed: "And no one can now say that there is any danger or apprehension that we are drifting toward a Prussian system. Because we prohibit that, by putting in the roadblock of 400." In the approved law the vice chiefs of the Army, Navy, Marine Corps, and Air Force were authorized to perform such duties and exercise such powers as their chiefs and service secretaries might delegate or prescribe for them, thus by inference enabling the service chiefs to devote more time to the work of the Joint Chiefs of Staff.[40]

After a period of study Secretary McElroy began to effect the new organizational framework for the Department of Defense. In the reorganization McElroy attached the largest importance to the institution of the new and more direct lines of command to the unified and specified commands and the next degree of importance to the establishment of the new research and engineering organization.[41] "Emphasis on the unified command," he had said, "constitutes the heart and soul of the President's program of reorganization."[42] In September 1958 Eisenhower and McElroy reviewed and approved the missions of the two specified commands--the Eastern Atlantic and Mediterranean and the Strategic Air Commands--and the six unified commands--the Alaskan, Atlantic, Caribbean, Continental Air Defense, European, and Pacific Commands. That same month administrative and logistical support of the unified and specified command headquarters was assigned out among the military departments: the Air Force was made responsible for supporting the headquarters of the Alaskan, Continental Air Defense, and Strategic Air Commands.[43] All component forces assigned to the unified or specified commands, including the component force headquarters, were to be administered and supported by the military department that provided the forces. The unified and specified commanders were given no budgetary functions: they made plans and stated requirements for forces to the corporate Joint Chiefs of Staff, who correlated all force requirements with across-the-board requirements and capabilities.[44] In an additional directive issued on 31 December 1958, Secretary McElroy described additional portions of the new organization. This directive visualized three groups of agencies under the Secretary of Defense. Immediate staff assistance to the Secretary was provided by the Office of the Secretary of Defense, which now comprised seven assistant secretaries and the Director of Defense Research and Engineering. The Joint Chiefs acted as the Secretary's principal military advisers and his military staff in the chain of operational command. The three military departments constituted the second group of agencies.

Each department was responsible for the preparation of type forces. The unified and specified commands comprised the third group of agencies. Two command chains were established: the line of operational command ran from the President to the Secretary of Defense and through the corporate Joint Chiefs of Staff to the commanders of the unified and specified commands. The line of non-operational command ran from the President to the Secretary of Defense and to the secretaries of the military departments.[45]

As enacted into law the 1958 reorganization act went about as far as possible in centralizing authority and control in the Department of Defense as could be managed without abandoning the concept of the separate military services. The major statutory limitations on the powers of the Secretary of Defense that remained were that the military departments could not be merged, that statutory functions could not be substantially changed without careful Congressional review, that a single chief of staff over the Armed Forces or an over-all Armed Forces general staff should not be established, and that the Secretaries of the military departments and the individual members of the Joint Chiefs of Staff might present any recommendation they deemed proper to Congress. While the latter authority had not been used since 1949 President Eisenhower had described it as "legalized insubordination."[46]

* * * *

During hearings in Congress and in the months that followed the passage of the Department of Defense Reorganization Act of 1958, continued criticism of defense organization indicated a prevalent belief in some quarters that the act was only a partial, evolutionary step toward increased unification. As early as 17 April 1958 General White announced that the Air Force was "wholeheartedly" in accord with the President's proposals on defense reorganization. When he appeared before the House Committee on Armed Services on 2 May, White justified the oeorganization on the grounds that it would establish a peacetime organization that could meet wartime requirements, provide a system that would better enable the Joint Chiefs of Staff to act with corporate responsibilities and corporate views, assign clear-cut authority and responsibility to the Secretary of Defense, and provide better defense at a comparable cost. "I completely agree," White said, "with the President's concept that separate ground, sea, and air warfare are gone forever, and that peacetime preparation and organization must conform to this fact." In response to questions, White admitted that the reorganization measure might mean "that some of the things that we perhaps consider vested interests of the Air Force might go by the board," but he added: "I think and a great many of us in the Air Force think that even if that happened, it would be for the good of the over-all national defense."[47]

When White appeared before the Senate Committee on Armed Services on 19 June, he continued to support the reorganization bill

although he regretted that the House of Representatives had placed limitations on the authority of the Secretary of Defense to transfer, reassign, abolish, or consolidate combatant functions within the Department of Defense. "This could hold up action for many months," White explained, "on a change of major importance to the security of our country." While the law would thus contain limits on the Secretary's authority, White nevertheless considered that the "best possible organization" of the Defense Department was being effected. He thought that the reorganization would result "in greater uniformity . . . as far as doctrine and training are concerned" since the unified commands would be operating directly under the corporate Joint Chiefs of Staff and "anytime there is a conflict in doctrine . . . it can, and undoubtedly would, be straightened out."[48] In summary of his position General White would remark: "I vigorously supported the Reorganization Act of 1958. I think it is a step forward."[49] During hearings on the reorganization bill before the Senate Committee on Armed Services, General Spaatz described the measure as inadequate in that it failed to give the Secretary of Defense an administrative control over the services. "In my opinion," Spaatz said, "the Defense Department will never be properly organized until full administrative authority is vested in the Secretary of Defense; and that condition is so stated in the law in no uncertain terms."[50]

In a strong statement made to the Senate Committee on Aeronautical and Space Sciences on 22 April 1959, General LeMay described the Defense Reorganization Act of 1958 as a step in the right direction that ought to be pursued further. "Today more than ever before in our history," he stated, "there is need for centralized control and direction over our Armed Forces. . . . Modern weapons and improved delivery systems are changing the concepts of military operations and confusion or indecision can be fatal in this new era. As our weapon systems improve and become more versatile it is becoming more and more apparent that the functions and weapons of individual services are beginning to overlap. Forces are of necessity becoming functionally oriented. To meet this changing condition I firmly believe we will need a modification in our military structure. I believe that we must eventually progress toward a single service, with a single Chief of Staff, and one staff to operate the Armed Forces. . . . The DOD Reorganization Act of 1958 was a step in this direction. . . . I feel that sooner or later we must go beyond this. Semiautonomous combat organizations are not the complete answer. We need central command and control. To achieve this, the barriers that are created by service interest must be removed. Combat elements having the same function or mission must be integrated into functional areas under single control. . . . As I see it now, this can best be accomplished under a single chief; one who can make decisions on force structure, approve strategic plans and weapon systems and assign those systems for use by given elements of the Armed Forces."[51]

The Air Force position was favorably regarded in some Congressional committees. In its report on the Department of Defense

appropriation bill in the summer of 1959, the House Appropriations Committee stated: "The President, the Secretary of Defense, the Congress, and the American people have a right to expect a better job from the JCS in the way of military guidance. As a corporate body, the Joint Chiefs of Staff must set up plans for the guidance of the various commands and the respective services. Hard decisions are required, and the President, the Secretary of Defense and the Joint Chiefs must assume the major responsibility for tailoring military forces to requirements. Each year the question which confronts us of 'who gets what' is becoming more difficult to cope with."[52] In September 1959 the Committee on Government Operations of the House of Representatives recommended an Army-Air Force merger as a beginning step to "end waste and confusion" in the Pentagon. "While each service tries to accommodate and adapt its mission concept to the space medium," the committee reported, "the logic of new weapons technology has virtually destroyed the traditional basis for services organized around strategic land, sea, and air missions. . . . There is historical irony in the fact that the Air Force achieved its organic separation from the Army at the threshold of the decline of airpower and the rise of missile power."[53]

In a study of "Service Roles and Missions in the Future" completed in May 1958, the Air War College Evaluation Staff had noted that media of operations had originally determined the strategic functions of land, sea, and air forces. The emergence of new weapon systems, however, had reduced the effect of media on operations. The Evaluation Staff had therefore recommended: "we must begin to relate task or mission to weapon system and to arrange weapon systems into appropriate groupings for management purposes."[54] In a high priority project assigned on 14 May 1959, the Evaluation Staff prepared a detailed study looking toward the implementation of a single service concept. The study was completed in basic form on 31 July 1959 and was transmitted to the Air Force Plans Directorate, which bound extracts from it with other "think papers" in standard black binders and circulated the package for comment. The study was also published in the Air University Quarterly Review during the summer of 1960. This "Study on Single Service" proposed that the Department of Defense could move toward a single service in five evolutionary steps and that the beginning of the evolutionary changes could be made under authority permitted by the Defense Reorganization Act of 1958. In a preliminary step, a joint reorganization task force should be established to prepare basic planning. In an activation step, the Joint Chiefs of Staff should be divorced from service affiliations and used as the nucleus for a national military council that would advise a single Armed Forces chief of staff, who would be supported by a national military staff. In an operational step, new unified commands would be organized to include a Strategic, a Mobile Strike, a Continental U.S. Defense, an Atlantic, a Pacific, a Research and Development, and a Logistics Command. In a clean-up step, the Departments of Army, Navy, and Air Force would be discontinued and activated as commands, with support and training

functions. In the final step, the Army, Navy, and Air Force commands would be integrated into a unified Personnel and Training Command.[55] Navy officers soon began to refer to the single service study as the "Air University Black Book of Reorganization Papers."[56] For his own part General White defended the so-called "Air University Black Book" as a necessary study which was apparently more familiar to Army and Navy officers than to Air Force officers. He saw no reason why Air Force officers should not be studying the concept of a single service, but he added: "I can tell you right now the Air Force does not advocate a single service."[57]

* * * *

The apparent Air Force enthusiasm for increased unification of the military services was not shared by the Department of Defense or by the Army and Navy. In April 1959, Deputy Secretary of Defense Quarles expressed confidence that the 1958 reorganization would "discourage improper use of the research and development program as means of carrying on a kind of warfare between the Departments in an attempt on the part of each to enlarge its area of roles and missions." Quarles also believed that "some degree of this rivalry between departments is wholesome and productive."[58] In his report of the first full year of operations under the 1958 reorganization act, Secretary McElroy stated that the new defense organization "adequately meets current management needs." Additional adjustments would likely be necessary as technology continued to advance, but McElroy cautioned: "It is important . . . that such adjustments are evolutionary rather than revolutionary in character, for radical changes upset the operational effectiveness of any organization for a considerable time."[59] McElroy's successor as Secretary of Defense, Thomas S. Gates, Jr., stated on 13 June 1960, that it was his judgment that the defense organization was essentially sound. "I would suggest no further statutory changes," he recommended, "until we have more thoroughly digested this 1958 reorganization and learned, by living with it, of any further changes in the law which might be indicated."[60] Following retirement as Army Chief of Staff, General Taylor advocated the establishment of a single defense chief of staff who would receive requests for forces from unified commanders, make budget allocations in functional fields, and provide centralized control of operations, but he saw a continuing need for the separate departments in order to "create and maintain the forces as directed by the Secretary of Defense."[61] The new Army Chief of Staff, General Lyman L. Lemnitzer, specifically considered that the suggested merger of the Army and the Air Force would be "undesirable," and he also believed that "the division among the services is a perfectly natural one--one service to fight on land, the Army; one to fight on the surface of the sea, over it and underneath it, the Navy; and one in the air, the Air Force."[62] The Navy and the Marine Corps strongly opposed a single service. "We have very little duplication now left in the services," Admiral Burke testified. "What could happen is the

elimination of one whole element, so you don't have that element at all, and thereby leave yourself wide open, betting that just one thing is going to happen."[63]

In its support for the Department of Defense Reorganization Act of 1958 the Air Force had assumed that the new organization would increase the importance of unified commands and that by vesting primary responsibility for stating force requirements in the unified commanders would permit a "more realistic" allocation of available defense dollars. The Department of Defense budgetary allocation of funds by military services remained unchanged, however, and in the summer of 1958 the Secretary of Defense accepted $41.25 billion as an initial planning objective for the fiscal year 1960 defense budget and determined that allocations to each service would continue to be approximately the same percentage of the whole as had been the case in fiscal year 1959.[64] While they were theoretically reduced in stature by the defense reorganization, the military departments thus continued to exercise the power of the budget. In explaining the problem, General White observed that: "As a service chief, I am always trying to get the best I can for my service." But within the Air Force White also had to resolve the competing requests for funds submitted by the Strategic Air Command, the Air Defense Command, and the Tactical Air Command. Each of these commanders were men who were charged with, as White said, "a specific responsbilility and they are exceedingly dedicated to their job."[65] As has been seen, General White and the Air Staff initiated a reduction in the forces to be available to the Continental Air Defense Command in the spring of 1960 over the strong opposition of the unified commander, who considered that his mission as a unified commander was being jeopardized.

In view of the strong emphasis upon unified commands in Eisenhower's defense reorganization proposals, Air Force leaders assumed that the reorganization act would result in the establishment of unified commands to replace the single-service specified commands. General White thus saw a good possibility that the Tactical Air Command and the Continental Army Forces might well be placed in a single unified command.[66] At the helm of the Strategic Air Command, General Power pointed out in April 1958 that he was charged as the specified commander to coordinate attacks against many strategic targets nominated in separate target lists by other specified and unified commanders. With the advent of missiles such existing methods of coordinating strategic attacks would be adequate only in the unlikely circumstance that the United States would exercise the initiative and could carefully determine and prepare every facet of the operation in advance.[67] In context with the defense reorganization of 1958 the Air Force also assumed that a unified Strategic Command might well be organized to control both the Air Force's strategic air and missile forces and the Navy's Polaris-equipped submarine forces.[68]

As early as April 1959 the Joint Chiefs of Staff began lengthy studies as to the manner in which command and control would be

exercised over the Polaris weapon system.[69] When early discussions failed to reach a positive decision, General White formally requested the establishment of a unified U.S. Strategic Command. He urged that both the Strategic Air Command and a Polaris submarine command would be subordinated to the unified Strategic Command. General Power supported this proposal. "I think," he said early in 1960, "that all strategic weapon systems should be under one central command, whether it is commanded by an Air Force officer, naval officer, or Army officer is a moot question."[70] Admiral Burke, on the other hand, described the Air Force proposal as "unsound and impractical." He argued that it would not be practical to take operational command of Polaris vessels away from fleet commanders since the movements of these submarines would have to be coordinated with those of many other naval vessels that would be operating in the same waters at the same time. Once a Polaris submarine had fired its strategic missiles, moreover, it would be expected to operate on missions similar to those of other submarines. "The Navy," Burke emphasized, "has behind it generations of experience in the operation of seabased weapons systems. To depart from the principle of the integrated, balanced fleet at this critical time in history by assigning Polaris submarines to a command charged with operating land-based strategic bombers and missiles would weaken our Nation's ability to strike back."[71]

The unified U.S. Strategic Command would not be established. Instead, the question of operational control of Polaris submarine forces was decided on 17 August 1960 when Secretary Gates established a Joint Strategic Target Planning Agency and designated General Power as Director, Strategic Target Planning. A Navy admiral was designated as Deputy Director, Strategic Target Planning, and the agency comprised officers from each of the services, representatives from the unified commands, and a liaison group from the Joint Staff of the Joint Chiefs of Staff. The activity was physically located at Headquarters, Strategic Air Command, because of the availability of programing equipment and experienced personnel there and because SAC had the majority of assigned targets, but the Joint Strategic Target Planning Agency was directly responsible to the Joint Chiefs of Staff and was charged with the preparation of integrated target plans that would take into consideration all of the strategic warfare capabilities of the United States. The staff was divided into two sections: one section was charged to draw up the target list, and the other determined which commander would hit a particular target and how he would do it. The target list was called the national strategic target list, and the operating plan was described as the single integrated operational plan. Both of these documents were submitted to the Joint Chiefs for review, modification, and approval. The Secretary of Defense reviewed them and gave final approval. The first assignment of nuclear weapons to strategic targets by the new agency was to be completed in December 1960. As desired by the Navy, the establishment of the Joint Strategic Target Planning Agency permitted the assignment of Polaris submarines to

naval components in unified commands rather than to a unified U.S. Strategic Command.[72]

2. Organization of Military and National Space Programs

In the hectic months after October 1957 a welter of conflicting ideas and concepts regarding the utility of space for military operations provided a background to the efforts to organize military and national space programs. "One of the major provocations of . . . interservice rivalry . . .," Secretary McElroy stated, "arises from the fact that there are certain types of weapons that come into the picture which do not have any obvious and specific connection with one or more of the services." A little later McElroy specifically observed that in his opinion missiles were "weapon systems which do not naturally fall within the responsibilities of individual services." Deputy Secretary Quarles justified the assignment of long range surface-to-surface missiles to the Air Force not because of the Air Force mission but because it possessed targeting and reconnaissance capabilities needed to employ them.[73] On 15 November 1957 McElroy named Mr. William M. Holaday as Defense Director of Guided Missiles and charged him to "direct all activities in the Department of Defense relating to research, development, engineering, production, and procurement of guided missiles."[74] McElroy conceived that Holaday's job had two different aspects: one was to monitor and supervise all research and engineering work in the field of guided missiles and the other was to assure appropriate priority handling of all guided missile problems in connection with their transition from research and development into production and procurement.[75] Both to alleviate service rivalry and to handle "will-of-the-wisp" research and development projects in the fields of satellites and space, McElroy announced on 20 November 1957 that he intended to establish a special projects agency within the Department of Defense. The agency would handle research and development on advanced weapons, which if operationally feasible would be assigned to one of the services for production and employment. McElroy announced that responsibility for the development of an antimissile missile would be assigned to the agency, and he implied that responsibility for other missiles might also have been assigned to the special agency except for the fact that these programs were too far along.[76]

These sweeping decisions by the Secretary of Defense were not entirely agreeable to some highly-placed defense officials, who recognized a need for a defense office with authority to make policy decisions but objected to the establishment of a defense agency which would have development and contractual powers. Believing that there was need for a staff organization to handle research and development in space flight, the Air Force Deputy Chief of Staff for Development established a Directorate of Astronautics on 10 December 1957. At about this time, however, McElroy rejected recommendations opposing the special defense agency, and the Air Force order establishing a Directorate of Astronautics was revoked on 13 December, reportedly

because of pressure from Holaday and Quarles.[77] When he appeared before the Senate Armed Services Subcommittee on 9 January 1958, however, Major General Schriever emphasized that the Air Force already possessed capabilities to initiate an astronautics development program with no dilution or diversion of its ballistic missiles programs. Schriever saw a need for a defense authority that would formulate policy and approve programs, but he warned that "any program to establish a separate astronautics management agency would result in duplication of capabilities already existing in the Air Force ballistic missile programs at a cost in funds and time similar to that already expended on these programs."[78]

Overruling service objections, Secretary McElroy proceeded with his plans for the organization of the Advanced Research Projects Agency (ARPA). With Eisenhower's approval funds for ARPA research and development were included in the fiscal year 1959 defense budget submitted to Congress in January 1958. Without awaiting the new fiscal year, McElroy established ARPA effective on 7 February 1958, and Congress soon authorized him to transfer $10 million from the military budget to the new agency. Under its charter ARPA was authorized to direct such research and development projects as the Secretary assigned to it, to arrange for the performance of work by other governmental agencies including the military services, to enter contracts with individuals or institutions, and to acquire test facilities and equipment as approved by the Secretary of Defense.[79] Appointed Director of ARPA, Mr. Roy W. Johnson secured personnel from the Institute of Defense Analysis, including Dr. Herbert F. York, who became ARPA's chief scientist on 18 March. As a matter of policy Johnson sought to keep the ARPA staff small (not more than 100 people including clerks), to avoid acquiring an in-house research and development capability, and determined not to pursue any system beyond research and development. His main object objective was to provide "a small management staff designed to work with and through the military departments in developing forward-looking programs." He viewed ARPA as an agency that could make for "painless" unification in the field of space technology.[80]

At its establishment in February 1958 the Advanced Research Projects Agency was given a unique position of great potential power in the Department of Defense, and it appeared for a time that ARPA might become a fourth military service. McElroy sturdily justified ARPA's continuation as "an operating element paralleling the research and engineering organizations of the military departments," but Mr. Johnson's self-limiting policies did not permit this. Johnson personally believed that the three services ought to be combined into a single service, and he had no desire to make ARPA into a fourth service thus making things four times as bad as before.[81] Johnson also stated: "To ARPA, space is . . . a place to discover new and better ways to do old military jobs; new ways to warn of impending attack, to communicate the alert to our forces, to actively defend our Nation."[82] If space was thus to be a place where old missions could be performed more effectively, no new concept of

space power would supersede the old roles and missions of the military forces. At the completion of ARPA research and development, moreover, operational space weapon systems were to be turned over to a military service for production and employment. As a method of procedure ARPA allocated most of its research and development projects to the military services. In the disposition of funds so allocated to the military services in the first year of its existence, ARPA placed 80 percent with the Air Force (including original Air Force funds in the Discoverer, Sentry (Samos), and Midas projects that were transferred to ARPA and then reallocated back to the Air Force), 14 percent with the Army, and 6 percent with the Navy.[83]

As enacted in August 1958 the Defense Reorganization Act created the Director of Defense Research and Engineering, with authority direct and control, assign or reassign, and to manage research and engineering activities within the Department of Defense with the approval of the Secretary of Defense. President Eisenhower appointed Dr. York to this position on 24 December 1958, and shortly thereafter York assumed responsibilities for the research and engineering responsibilities in the guided missile field that had been exercised by the Director of Guided Missiles. Secretary McElroy nevertheless desired to retain Holaday as Director of Guided Missiles in order that he might "push forward" the high-priority missile projection programs. McElroy was also determined to perserve ARPA as "a fourth operating agency for research and engineering projects."[84] Up until this time ARPA had gotten most of its ideas from the military departments, but McElroy served notice that he wanted it to become "a think factory" and to plan a 10-to 20-year program for the military use of the space environment.[85]

During the spring of 1959 Congressional investigators wanted to know whether ARPA should be continued. In an appearance before the Senate Subcommittee on Governmental Organization for Space Activities, Under Secretary of the Air Force Malcolm A. McIntyre and Major General Schriever praised the work of Mr. Johnson, but they stated their strong conviction that research and development management for space systems ought to be returned to the services which would operationally employ the space weapon systems. Without claiming any exclusive Air Force jurisdiction over the realm of aerospace, McIntyre and Schriever demonstrated that the Air Force's defensive and offensive missions were so affected by potential developments in space as to demand that it be recognized as the nation's primary aerospace force. "The Air Force," Schriever said, "has two combat mission responsibilities: one is strategic air and the other is air defense. . . . I feel that by 1970, and perhaps long before that, in certain cases, that these combat missions of the Air Force will be taken over, to a large extent, by what you would call space weapons systems--ballistic missiles, satellites, and space craft." Schriever also argued that a separation of research and development from operations prevented an employment of the principle of concurrent development that had so greatly compressed the time required

to establish an initial operational capability with ballistic missiles. Responding to a pointed question, Schriever recommended that ARPA should be liquidated as of 30 June 1959, that policy guidance and program approval be centered in the Office of Director of Defense Research and Engineering, and that space research and development projects be returned to the management of the military services.[86]

In an appearance before the House Committee on Science and Astronautics, Army spokesmen posited: "Space is a newly entered, largely unknown medium which transcends the exclusive interest of any service or even of the Department of Defense." Secretary of the Army Brucker emphasized the Army position that space exploration was a national effort, and he believed that ARPA had served to prevent "cutthroat" competition in the field.[87] Before the Subcommittee of the Senate Committee on Aeronautical and Space Sciences, Lieutenant General Arthur G. Trudeau, Chief of Army Research and Development, argued that since no single service had been assigned sole responsibility for military space activities ARPA filled "a very great need, and should not be eliminated."[88] Dr. York also foresaw a continuing requirement for ARPA. "Since it is evisioned that military space activities will cut across all military operations," he reasoned, "it would be difficult to attempt to assign all military space operations to any one military service."[89]

The position of the Navy in regard to ARPA appeared to be somewhat between those of the Army and the Air Force. Secretary of the Navy Thomas S. Gates, Jr., stated: "The Navy's aim in relation to space can be simply stated: To use space to accomplish naval objectives and to prevent space from being used to the detriment of those objectives."[90] Vice Admiral John T. Hayward, Assistant Chief of Naval Operations (Research and Development) acknowledged that ARPA had "done an excellent job" in the absence of legislation. He also thought that the agency was a worthwhile Department of Defense "interface" with the National Aeronautics and Space Agency. But he did not believe that ARPA should be an operating agency, and he thought that as a policy agency ARPA probably ought to be phased into the Office of the Director of Defense Research and Engineering.[91]

As early as February 1959 the Air Force officially requested that in view of the impending completion of research and development it should be assigned responsibility for the production and operation of the Sentry (Samos) reconnaissance satellite system and of the Midas infrared missile defense alarm system. When he appeared before the Subcommittee of the Senate Committee on Aeronautical and Space Sciences on 14 April, however, Lieutenant General Trudeau suggested that a unified space command should be established under the Joint Chiefs of Staff to take over operational employment of vehicles or satellites that were under development by ARPA. Major General Schriever, on the other hand, urged that "it would be well to make a decision as to which service should do what and then give the responsibilities to that service to develop and bring into being, operationally, the particular system required to provide the

service." When developed, the operational military space systems would be turned over to existing unified or specified commanders.[92] Mr. Holaday, who had now been named Chairman of the NASA-DOD Civilian-Military Liaison Committee, also recommended that "military operations in space must come under a unified or specified command."[93]

In a formal memorandum for the Chairman of the Joint Chiefs of Staff on 18 September 1959, Secretary McElroy ruled that a joint military organization with control over operational space systems did not appear to be desirable at that time. In this memorandum, McElroy further expressed his opinion that the number of military satellite vehicles that would be launched in the next several years would not be very large and that the utilization of the existing organization of the military departments appeared preferable to the establishment of a joint military organization to control operational space systems. McElroy therefore assigned to the Department of the Air Force the responsibility for the development, production, and launching of space boosters and the necessary system integration of payloads incident to this activity. He announced impending transfers of developed systems from ARPA to the military departments: the Air Force would be assigned responsibility for Samos (Sentry) and Midas; the Transit navigational satellite would be assigned to the Navy; and the Army would receive operational charge of the Notus communications satellites, including Courier--a delayed repeater communications system--and Advent--an active instantaneous relay system. These systems would remain under ARPA until development was completed, and even after the systems were transferred McElroy indicated that ARPA would continue in being as the Defense Department's agency for advanced military research.[94]

In accordance with McElroy's decision the Air Force was assigned responsibility in November 1959 for the production of Samos and Midas and also for Discoverer, the latter being a project to test components, propulsion, and guidance systems to be used in other satellite projects and to develop techniques for the recovery of space capsules. Secretary of Defense Gates was subsequently asked to reconsider the McElroy decision on space systems, but on 16 June 1960 he, too, determined that the establishment of a joint military organization for the control of operational space systems did not appear necessary or immediately desirable. He further directed that the services would make provisions looking toward an orderly transfer of space systems to using unified or specified commands, thereby accepting by inference the Air Force position that the systems should be so assigned.[95] With the passing of time virtually all defense space projects were taken out of the hands of ARPA and transferred to the individual military services. ARPA continued to conduct projects of very broad interest such as research on materials, solid propellant chemistry, detection of nuclear tests, long range studies on antimissile defense, and research in the field of toxics and energy conversion.[96]

In the period of crisis in the autumn of 1957 the Department of Defense had made decisions on the subject of space organization on the basis of a belief that space was a vast unknown that lay outside existing roles and missions of the armed services. From this position the Department of Defense gradually moved toward acceptance of the proposition expressed by Major General Schriever: "Space . . . is a medium in which many military missions can be accomplished more effectively. Actually, it can be better understood when it is viewed as just what it is, an extension of a medium--aerospace."[97] The tacit acceptance of the concept that space was a continum beyond the atmosphere was practical, but it was not without limitations. So called "space systems" for example would not be developed as a means for exploiting a medium but rather in terms of existing military requirements. "The major criterion for the choice of a particular system to satisfy a particular military requirement," explained Lieutenant General Roscoe C. Wilson, Air Force Deputy Chief of Staff for Development, in February 1960, "must be the relative effectiveness of that system compared with other methods of doing the same job." Thus orbital or space systems could be developed only if they would" (1) perform an essential military mission which could be performed in no other way; (2) perform an essential military mission more effectively at a justifiable increase in cost; or (3) perform an essential military mission in an acceptable manner at a reduced cost.[98]

* * * *

"I think you ought to realize," stated Dr. T. Keith Glennan, who assumed duty as the first Administrator of the National Aeronautics and Space Administration (NASA) at its establishment on 1 October 1958, "that NASA was born out of a state of hysteria."[99] In the same months that national leaders were attempting to provide a military organization for aerospace, they were also confronting the even more complex problem of establishing a national space program. In order to get guidance in this unknown field, President Eisenhower announced on 7 November 1957 the appointment of Dr. James R. Killian, Jr., President of the Massachusetts Institute of Technology, as Presidential Scientific Adviser. One of Killian's first tasks was to visualize a national space program, and the later noted that he approached the task with already firm ideas. "From the beginning," he stated, "it has been my view that the Federal Government had . . . only two acceptable alternatives in creating its organization for space research, development, and operation. One was to concentrate the entire responsibility, military and non-military, in a single civilian agency. The other was to have dual programs--a program of space exploration and peaceful space activity under the management of a civilian agency and the military space program under the management of the Department of Defense. . . . A possible third alternative, that of putting our entire space program under the management of the Department of Defense always seemed to

me to have so many defects as to be practically excluded as a solution. This is true because space exploration involves numerous activities and objectives that are outside the defense domain."[100] As has been seen, President Eisenhower's report to the American people made less than a week after Killian took office stated distinctive criteria for space projects that were undertaken for scientific and defense purposes.[101]

At the same time that President Eisenhower distinguished between scientific and military space technology, the United States was already committed to a line of diplomatic action that sought to secure an international arms control agreement limiting developments in space to peaceful and scientific purposes. In the U.S. State Department this proposal for ab initio arms control in space related back to a belief that international control of the military use of atomic energy, as a State Department spokesman said, "could have been attained with relative ease" in 1946. As has been seen, the United States pursued this line of diplomacy throughout 1957 and President Eisenhower continued to advocate it during the spring of 1958. On 12 January 1958 Eisenhower wrote Soviet Premier Nikolai Bulganin saying: "I proposed that we agree that outer space should be used only for peaceful purposes. We face a decisive moment in history in relation to this matter. Both the Soviet Union and the United States are now using outer space for the testing of missiles designed for military purposes. The time to stop is now." Speaking in the Soviet Union, Party Secretary Nikita Kruschev belittled the Eisenhower offer with the remark: "This means they want to prohibit that which they do not possess." In another letter to Bulganin on 15 February 1958, however, Eisenhower renewed his plea: "A terrible new menace can be seen to be in the making. That menace is to be found in the use of outer space for war purposes. The time to deal with that menace is now. It would be tragic if the Soviet leaders were blind or indifferent toward this menace as they were apparently blind or indifferent to the atomic and nuclear menace at its inception a decade ago." While the Soviets were not immediately responsive to these proposals, the U.S. State Department accepted them as a sincere objective. "The most immediate problem in the field of space foreign policy," a State Department official said on 14 May 1958, "is how to ensure that outer space is used for peaceful purposes only."[102]

In connection with a study of space science and technology that it was making at Eisenhower's request, the President's Science Advisory Committee headed by Dr. Killian prepared a brief "Introdution to Outer Space" which was released on 26 March 1958. The panel of scientists distinguished four factors that gave "importance, urgency, and inevitability" to the advancement of space technology. These factors were said to be "the compelling urge of man to explore and discover," "the defensive objective for the development of space technology," "the factor of national prestige," and the fact that "space technology affords new opportunities for scientific observation and experiment which will add to our knowledge and understanding

of the Earth, the solar system, and the universe." The scientists noted that the development of military rockets had provided the technological base for space exploration, but they believed that the important and foreseeable military uses for military space vehicles lay in the fields of communication and reconnaissance. Visualizations of satellite bombers or military bases on the moon did not "hold up well on close examination or appear to be achievable at an early date." Such military developments would become technologically possible in time, but they would be "clumsy and ineffective ways of doing a job." "In short," the report concluded, "the Earth would appear to be, after all, the best weapons carrier." This report apparently reinforced President Eisenhower's conviction that the world bore a great responsibility to promote the peaceful use of space. "I recommend," Eisenhower informed Congress on 2 April 1958, "that aeronautical and space science activities sponsored by the United States be conducted under the direction of a civilian agency, except for those projects primarily associated with military requirements."[103]

During the early months of 1958 proposals were made looking toward the establishment of an international space agency or an American civil space organization. Senator Lyndon B. Johnson called for joint exploration of outer space by the United Nations. Former disarmament assistant Stassen advocated a United Nations space development agency which would send the first man into space and the first photographic inspection satellite around the earth. Senator Hubert Humphrey proposed that the United States "take the lead in marshaling the talents and resources of the world to unlock the mysteries of outer space in joint research and exploration under the auspices of the United Nations."[104] Meeting in Washington the National Council of the Federation of American Scientists approved on 3 May 1958 a statement noting the precedent of the Atomic Energy Commission, where under civilian control "both military and civilian uses of atomic energy have prospered in an atmosphere more conducive to scientific progress than that typically available under military direction." Critical "of the failure of the Pentagon leadership to foresee the impact of the first satellites in the popular imagination," the Federation of American Scientists resolved in favor, first, of the establishment of a civilian space agency in the United States, and, second, that a united and coordinated international space effort should be attempted under the authority of the United Nations. "It would be tragic," these scientists said, "if the challenging task of space exploration were carried on in the competitive nationalistic pattern under which it has begun."[105] The persons who believed that the Atomic Energy Commission could serve as a model for a national space agency variously recommended that the Atomic Energy Act of 1954 could be amended so as to add a division of outer space development to the Atomic Energy Commission, or that an entirely new commission on outer space could be established following the Atomic Energy Commission precedent.[106]

In a speech in Washington on 14 January 1958 General Orval R. Cook (USAF Retired), President of the Aircraft Industries Association, apparently first proposed the seemingly simple solution that the National Advisory Committee for Aeronautics (NACA) already provided an existing organization capable of accelerating space exploration.[107] Two days later a meeting of the National Advisory Committee for Aeronautics resolved that the NACA statutory authority to "supervise and direct the scientific study of the problems of flight, with a view to their practical solution" was broad enough to cover space flight as well as atmospheric flight and that NACA had "an important responsibility for coordinating and for conducting research in space technology either in its own laboratories or by contract, and, therefore, should expand its existing program and add supplementary facilities to those now available as necessary."[108] Following these suggestions in his message to Congress on 2 April 1958, President Eisenhower recommended the establishment of a new National Aeronautics and Space Administration into which NACA would be absorbed. When he signed the Space Act into law, Eisenhower remarked: "The present National Advisory Committee for Aeronautics, with its large and competent staff and well-equipped laboratories, will provide the nucleus for NASA. The NASA has an established record of research performance and of cooperation with the Armed Services. The coordination of space exploration responsibilities with the NACA's traditional aeronautical research function is a natural evolution."[109]

The Eisenhower proposal for the legislation which would be known as the National Aeronautics and Space Act of 1958 was drafted in the Bureau of the Budget in close cooperation with representatives of NACA and with Dr. Killian. Since the President was said to be anxious to have the legislation go to Congress prior to its Easter recess, the draft bill was sent to the Department of Defense for review and comment on 26 March, and the deadline for receipt of replies was set at noon on 31 March. Inside the Pentagon the Department of the Air Force and other military agencies were given twenty four hours to study and comment on the proposed law, identical copies of which were introduced into the Senate and House on 2 April.[110] Even though Eisenhower considered that NASA would be an evolution from NACA, the proposed law--with three exceptions--followed the model of the Atomic Energy Act. The exceptions were that the management of NASA would be vested in a single director, there was no provision for a military liaison committee, and there was no legislative oversight committee as was the case with the Atomic Energy Commission.[111] In the NACA control had been exercised by a 17-member committee (including 2 members from the Navy, 2 from the Air Force, and 6 from other specified Federal Agencies) which elected a Director. In the proposal for NASA, the President would appoint the Administrator and an advisory National Aeronautics and Space Board with a maximum of 17 members, of whom not more than 8, including not less than one from the Department of Defense, would be from government departments or agencies. NASA was to be given wide authority for the development, testing, launching, and

operation of aeronautical and space vehicles. The proposed legislation also provided that NASA would exercise "control over aeronautical and space research sponsored by the United States, except insofar as such activities may be peculiar to or primarily associated with weapons systems or military operations, in which case the agency may act in cooperation with, or on behalf of, the Department of Defense."[112]

As the legislation was originally drafted the Department of Defense was not given a clear mandate for space activities. Speaking of this later on, Dr. Edward C. Welsh, Executive Secretary of the National Aeronautics and Space Council, observed: "It is possible that this omission was a result of careless drafting or evidence of disinterest in military application to space or just optimism regarding our military position relative to that of the Communists."[113] During April and May 1958 a progression of distinguished witnesses appeared before the House Select Committee on Astronautics and Space Exploration and the Senate Special Committee on Space and Astronautics as they held hearings on the Space Act. Many of the scientists who came before the committees argued that a civilian scientific program was essential because the non-military aspects of space exploration were too important to be entrusted to a purely military program. Professor James A. Van Allen of the State University of Iowa spoke very strongly of the need for civilian supremacy in space. "I feel," he said, "the language of this bill should be strengthened substantially to make it clear that the NASA will have primary and dominant cognizance of space matters among all Government agencies, and that only in case it is clearly demonstrated that an endeavor has a direct importance to our military preparedness . . . should the primary cognizance reside in the Defense Department."[114]

Believing that the favorable relations previously enjoyed with NACA would continue, Department of Defense witnesses initially supported the administration's space agency bill. Navy representatives, however, suggested the desirability of adding a military liaison committee to NASA similar to the committee that functioned with the AEC.[115] Air Force Under Secretary MacIntyre stated his understanding that the measure intended that military activities in space would be the province of the Department of Defense, that civil space activities would be handled by NASA, and that "in the broad twlight zone of dual usefulness, the two agencies should operate in close mutual cooperation with each other, under overall executive direction, without domination of either over the other."[116] When queried about this, however, the Bureau of the Budget did not agree with MacIntyre's understanding. The Bureau understood that "the space responsibility of the Department of Defense would include only those programs peculiar to or 'primarily associated with weapons systems or military operations.' All other space programs would be the responsibility of the civil space agency. . . . We recognize that there will probably be programs of military interest which are not, however, peculiarly or primarily military. The new agency

would be responsible for those programs, but we expect that the Department of Defense would participate in their planning and implementation."[117]

Because of this new interpretation ARPA Director Johnson returned to the hearings of the House committee on 12 May to protest the restrictive language of the administration measure toward defense research and development in space.[118] Both the House and Senate committees and then Congress noted and objected to the narrow field evidently intended for the military in space and to the permissive rather than mandatory authority accorded for even this narrow field.[119] Congress also objected to the lack of formal liaison specified between the NASA and the Department of Defense. As a result of this dissatisfaction a Senate-House conference committee made substantial changes in the administration bill.[120] "We carefully wrote into the basic law," stated Congressman Gerald R. Ford, "that the military should have certain responsibilities in the area and by no means should the executive branch of the Government permit NASA to preempt certain areas which the military believes will be important in space."[121] In the preamble to the National Aeronautics and Space Act of 1958, which was signed by President Eisenhower on 29 July, Congress declared that the general welfare and security of the United States required that adequate provision be made for aeronautical and space activities. The Congress further declared "that such activities shall be the responsibility of, and shall be directed by, a civilian agency exercising control over aeronautical and space activities sponsored by the United States, except that activities peculiar to or primarily associated with the development of weapons systems, military operations, or the defense of the United States (including the research and development necessary to make effective provision for the defense of the United States) shall be the responsibility of, and shall be directed by the Department of Defense." To Lieutenant General Schriever, who viewed the matter in context with his duties as Commander, Air Research and Development Command, this section of the Space Act clearly indicated the intent of Congress that "the military must continue to conduct a vigorous research and development program of components and subsystems, as well as basic research, if the full potential of military space systems is to be realized on a timely basis."[122]

The Space Act established the National Aeronautics and Space Administration (NASA) headed by a Presidentially-appointed Administrator who was vested with authority to plan, direct, and conduct aeronautical and space activities. The NACA ceased to exist, and its personnel and facilities were transferred to NASA. Other departments and agencies were to cooperate as required by NASA "in making their services, equipment, personnel and facilities available." NASA was charged to arrange for the participation of the scientific community of the nation in space activities and was permitted, under guidance from the President, to engage in programs of international cooperation. Recognizing that there was "a grey

area between civilian and military interests," the Space Act authorized the President to determine which agency, civilian or military, should have responsibility for specific projects. Instead of the originally recommended National Aeronautics and Space Board, the Space Act provided for the National Aeronautics and Space Council, to consist of the President, the Secretary of State, the Secretary of Defense, the NASA Administrator, and four additional members to be appointed by the President. The Council was charged to assist the President in surveying aeronautical and space activities and to provide for effective cooperation between NASA and the Department of Defense. Congress also added a provision for the establishment of the Civilian-Military Liaison Committee, which was to consist of a Chairman appointed by the President, and a membership of an unspecified number of military and civilian representatives from the Department of Defense and NASA. Through the Liaison Committee, Congress intended that NASA and the Department of Defense should advise and consult together with respect to their activities. In case of unresolved disagreements the NASA Administrator and the Secretary of Defense would refer the matters to the President.[123]

Getting about the implementation of the National Aeronautics and Space Act of 1958 President Eisenhower on 8 August appointed Dr. T. Keith Glennan, President of the Case Institute of Technology, and Dr. Hugh L. Dryden, Director of NACA, as the Administrator and Deputy Administrator of the National Aeronautics and Space Administration. NASA began to operate on 1 October 1958, and in a series of executive orders it received projects and facilities from the Department of Defense. The projects included the responsibility for launching Vanguard earth satellites, three scientific satellite projects, four Pioneer probes, and a number of basic research undertakings looking toward the development of nuclear rocket engines, fluorine engines, and a million-pound-thrust single-chamber rocket engine. NASA took over the Army's Jet Propulsion Laboratory in California on 3 December 1958, the Project Tiros meteorological research satellite on 13 April 1959, and the Centaur launch vehicle, comprising an Atlas booster with a second stage liquid hydrogen engine, on 30 June 1959. In a transfer requested in 1958 and announced as impending in 1959, NASA assumed control over the Army Ballistic Missile Agency's Development Operations Division under von Braun at Redstone Arsenal effective on 1 July 1960.[124] Authorized a broad authority to request the transfer of space projects and facilities from the Department of Defense, Administrator Glennan observed that only a "fuzzy line" seemed to separate military and civil space projects. " I tend to regard the military elements under the law," he said, "as those matters that relate primarily to weapon systems and military operations in the defense of the Nation, those items which are moving toward operational systems, such as a satellite early warning system or a missile warning system, or some such thing."[125]

The organization of the National Aeronautics and Space Council was completed when President Eisenhower appointed the additional members from civilian status. Chaired by the President, the Space Council held its organizational meeting on 24 September 1958 and met thereafter as required to provide broad policy advice to the President on such matters as transfers of projects and facilities to NASA, international cooperation in space, assignment of national priorities for space development, and the organization and operation of the nation's ground support facilities. Critics of the Council pointed out that this body was only one source of advice to the President, who also got guidance from his scientific adviser and from the executive departmental heads.[126] According to Dr. Welsh the Space Council really was "left dormant" under Eisenhower and did not exercise its broad and comprehensive advisory authority.[127] The Civilian-Military Liaison Committee was not set up until after 31 October 1958, when Eisenhower named Mr. Holaday as its chairman. The Defense Department and NASA agreed that the Liaison Committee's membership would include its chairman, four representatives from NASA, and single representatives from ARPA and the Army, Navy, and Air Force. The Liaison Committee held its first meeting on 25 November and thereafter assembled about once a month. The Committee dealt successfully with some matters, but neither Glennan nor McElroy was said to be "willing to delegate to junior people settlement of major issues." Holaday soon reported: "The committee, because of its composition, that is, membership made up of representatives who are subject to a higher internal authority, is incapable of making firm decisions."[128] When it was unable to secure a single point of contact with the Department of Defense through the mechanism of the Liaison Committee for handling the tracking and recovery of planned Mercury astronaut flights, NASA finally appealed directly to McElroy for action. On 10 August 1959 McElroy designated Major General Donald N. Yates, Commander of the USAF Atlantic Missile Range, as the Department of Defense representative under the Joint Chiefs of Staff for the support of Project Mercury. Yates was provided an assistant from the Navy for command of recovery forces.[129]

Speaking in March 1959 before the full impact of the National Aeronautics and Space Act became apparent, Secretary McElroy observed that it was the "responsibility of the military in this overall programming of outer space to make certain that those things which are specifically military objectives are taken care of one way or the other either by NASA or by ARPA . . . that division seems to me to be less important than the assurance that the job is being done by competent people in one or the other."[130] Rear Admiral Hayward, on the other hand, suggested that "NASA should have been set up similarly to the Atomic Energy Commission, with a division of military applications in this agency; that we should have one space program."[131] Lieutenant General Schriever differed with both of these opinions. "I feel," he said, "that the world in which we live--being what it is--our national security must have first

priority. In other words, our ability to maintain the peace has to have first priority. Therefore, I can only conclude that the important military programs should have first priority." The most important equation in research and development was management as a function of time: the best means of beating the clock was the concept of concurrency that had permitted rapid acceleration of the intercontinental ballistic missile capability. Already, Schriever said, NASA was placing competitive orders with contractors working for the Air Force. Schriever considered that the most serious threat to concurrency, however, was the idea being suggested that NASA "could become a ministry of supply type of organization which develops complete systems and turns them over to the military." Believing firmly in the concurrency concept whereby weapon systems were developed by the operating service, Schriever firmly opposed any idea that NASA should be designed to become a National Space Commission and allowed to develop space weapon systems for operation by the military services.[132] While Schriever apparently feared the effect of NASA's competition on military space programs, the official Air Force policy sought to get an acceleration of aerospace hardware even if it had to divert key officers from its own programs. In March 1959 General LeMay stated that the Air Force would make its personnel freely available for service in agencies of the Department of Defense concerned with space activities and in NASA.[133]

Only midly apparent in the spring of 1959, discontent with the National Aeronautics and Space Act among certain elements within the Department of Defense burst into full flame in the autumn of 1959 and centered around the transfer of the Army's Saturn rocket to NASA. Up until this time the Saturn program had been replete with starts and stops, allegedly because of a feeling within Defense scientific circles that there was no military requirement for ballistic missiles larger than those programmed and that there would be no necessity for a military space platform. As a part of the continuing evaluation of the large multithrust booster problem Dr. York convened a review committee in September to study the three planned boosters--Titan C, Saturn, and Nova. As a result of this study Dr. York was said to have agreed that the Saturn should be continued under development but that the project would have to be transferred to NASA since the Department of Defense could not finance it within its budgetary limitations. On 21 October President Eisenhower announced that he would transfer the Army's rocket development team and the Saturn booster to NASA.[134] The Commander of the Army Ordnance Missile Command, Major General John B. Medaris, described the Army's agreement to the transfer of the Saturn and the von Braun missile team to NASA as a Solomon's choice. "First," he said, "by the assignment of the space vehicle development, production, and launching mission to the Air Force, and secondly, the Army's total inability to secure from the Department of Defense sufficient money or responsibility to do the Saturn job properly, we found ourselves . . . in the position of either agreeing with the transfer of the team, or watching it be destroyed

by starvation and frustration."[135] In the middle of this winter of Army discontent, President Eisenhower sent Congress a message on 14 January 1960 proposing amendments to the National Aeronautics and Space Act. "In actual practice," Eisenhower explained, "a single civil-military program does not exist and is, in fact, unattainable; and the statutory concept of such a program has caused confusion." Eisenhower considered that the Department of Defense had ample authority outside the Space Act to conduct research and development work on space-related weapon systems. He therefore proposed to eliminate the statutory requirement for the National Aeronautics and Space Council and for the Civilian-Military Liaison Committee and to allow NASA to become responsible for the formulation and execution of its own program in its own right, subject to the authority and direction of the President.[136]

In the early months of 1960 related hearings held by the House Committee on Science and Astronautics in review of the space program and on the proposed amendment to the Space Act served as a forum for the presentation of the divergent views on space organization. In a valedictory interview given as he was retiring from the Army during the last week of January, Major General Medaris raked the civil-military separation of national space programs as "fundamentally unrealistic" and called for the creation of a single missile-space agency as a unified command within the Department of Defense.[137] Testifying in Washington on 18 February, Medaris charged that the national space program was "splintered into four agencies, NASA and the three branches of our armed services." He criticized the Department of Defense directive that compelled the Army and Navy to "buy" their space boosters from the Air Force, since under this directive the "problem of wedding the payload and the vehicle must be settled by such anemic devices as committees, coordination officers, and other such inadequate administrative devices." He again proposed that responsibility for a national space program ought to be unified within the Department of Defense. Continued division of efforts in missile-space technology, he said, "cannot but result in delay, duplication, and waste of both money and manpower."[138] When asked how much support he had for his proposal to establish a unified missile-space command, Medaris replied: "I can only comment that within the evening councils of the renegades of our business, I have a great deal of support."[139] This support, however, failed to appear during the Congressional hearings. Retired Lieutenant General Gavin observed that he would be "very worried to see major portions of our space program in DOD; however well intentioned they were, they couldn't get money, whereas I know that NASA can and very likely will for several years."[140] Rear Admiral Hayward reiterated his familiar proposal that the United States should follow the "Atomic Energy Commission approach to the whole space program." The Army now apparently subscribed to this same approach to the problem, for Lieutenant General Trudeau also came out for "the creation of a Military Liaison Committee patterned after the committee provided by law to function between

the Department of Defense and the Atomic Energy Commission." Trudeau thought that this committee could well replace the ineffective Civilian-Military Liaison Committee.[141]

When he appeared before the House Committee on Science and Astronautics, Dr. William H. Pickering, Director of NASA's Jet Propulsion Laboratory, agreed that the nation required a single space program but he asserted that the program should be attained by strengthening NASA "to the point where it effectively controls a complete national space program." Pickering charged that the divided authority in the space field was powerless to "prevent military space systems of only peripheral value from demanding such a large share of research support in both the Department of Defense and perhaps the NASA that these efforts dominate the space program to the detriment of our real objectives." His concluding remarks summarized his position: "I feel that at the present time it is more important that the primary effort in space be civilian oriented rather than military oriented. In other words, my feeling is that the military applications of space are not clearly defined at this time, that this may very well develop; in fact, past experience would say almost surely that it will develop, but I would regard this as being a natural development out of a program which is oriented in the direction of a civilian space program."[142]

In their testimony Under Secretary of the Air Force Joseph V. Charyk, General White, and Lieutenant General Schriever opposed all of the proposals to establish "a single monolithic space agency." "From a national standpoint," Schriever stated, "progress in space research is essential for both security and prestige. Civilian and military space operations complement each other, and both should be pursued vigorously." Asked to explain the thoughts behind his assertion that NASA and Defense objectives in space were divergent, Schriever explained that this divergence had been obscured by the fact that NASA was compelled to use military rockets as boosters. Looking toward the future, he pointed out that NASA would develop unique experimental equipment that might be used for only a few scientific probes under controlled circumstances. Most NASA probes would be handled by temporary task force organizations, and NASA would not require a large and permanent field organization. Military space systems, on the other hand, would be required in quantity, would have to be simple and reliable, and would need to be standardized and made capable of fairly long employment life. The Defense systems would have to strive to reduce the cost per launch, while NASA could afford to pay larger prices for the lesser numbers of scientific probes that it would mount.[143] Based upon this line of reasoning as well as the fact that the Air Force was enjoying harmonious relations with NASA--"I would s y," Schriever interjected, "that we are fast approaching the old, very good relationship that we had with the old NACA."--the Air Force was not only anxious to continue the existing space organization but it was entirely willing to support Eisenhower's proposed amendments to the Space Act.[144]

The statements of Charyk, White, and Schriever in support of the existing NASA-Defense relationship apparently indicated that the Air Force policy of cooperation had borne positive results. Schriever's earlier fears that NASA and the Department of Defense might compete for the services of scarce space technologists had apparently not materialized. In reference to this widely expressed belief that the nation's technological resources could not support two space programs, Dr. Simon Ramo, now Vice President of the Thompson-Ramo-Wooldridge Corporation, pointed out that there was no shortage of national technical resources to support a vastly increased and even duplicative missile and space program. Ramo said: "If we chose to do so--and this is only a slight exaggeration--we could almost have space probes or ICBM's coming out of our ears."[145] By the spring of 1960 Brigadier General Don R. Ostrander and a number of other Air Force officers had been assigned to NASA, and, in the same period that the Congressional hearings were underway on the proposed reorganization of the national space effort, NASA requested the assignment to it of still more key project officers from the Ballistic Missiles Division--men whom Schriever considered to be greatly needed for his own developmental programs. Learning of Schriever's reluctance to assign the men to NASA and concerned about the proposals to reorganize NASA along the lines of the Atomic Energy Commission, General White believed that the time was right for "a sermon from the Chief of Staff to his staff." On 14 April 1960, White issued a memorandum saying: "I am convinced that one of the major long range elements of the Air Force future lies in space. It is also obvious that NASA will play a large part in the national effort in this direction and, moreover, inevitably will be closely associated, if not eventually combined with the military. It is perfectly clear to me that particularly in these formative years the Air Force must, for its own good as well as for national interest, cooperate to the maximum extent with NASA, to include the furnishing of key personnel even at the expense of some Air Force dilution of technical talent." White later explained why he had issued the memorandum. "The sole purpose," he said, "of this memorandum--and I think I stated it very clearly--is that I want to make it crystal clear that the policy is we will cooperate with NASA--and to the very limit of our ability and even beyond, to the extent of some risk in our own programs."[146]

In the early stages of the hearings of the House Committee on Science and Astronautics, Deputy Secretary of Defense James H. Douglas expressed support for Eisenhower's proposed amendments of the Space Act. He agreed that the Civilian-Military Liaison Committee had been ineffective and ought to be eliminated, but he still wished to see effective liaison established between the Department of Defense and NASA. On 14 March 1960 Douglas accordingly proposed that cooperation between Defense and NASA should be attained by the establishment of an Aeronautics and Astronautics Coordinating Board, with the Deputy Administrator of NASA and the

Director of Defense Research and Engineering to serve as co-chairmen of the board, with supervision over subordinate board panels that would be established from NASA and Defense managerial personnel to handle matters of mutual interest. Under Secretary Charyk warmly supported this proposal, which he described as a broader projection of the Air Force-NASA discussions looking toward the establishment of a committee of responsible people to handle launch vehicle matters.[147] Dr. Glennan also agreed that much of the improvised coordination that already existed between Defense and NASA could well be formalized and announced his support for the establishment of the Aeronautics and Astronautics Coordinating Board.[148] When it reported out the space reorganization bill in the first week of May 1960, the House Committee on Science and Astronautics added a provision for the establishment of the Aeronautics and Astronautics Coordinating Board.[149]

After the matter had been further discussed Glennan and Douglas signed an administrative agreement on 1 July 1960 which established the Aeronautics and Astronautics Coordinating Board (AACB). As officially promulgated on 13 September, the agreement specified that the Deputy Administrator of NASA and the Director of Defense Research and Engineering would serve as co-chairmen of the board, whose membership would comprise the chairmen of the board's panels plus enough additional members to insure that each military department was represented and that NASA had equal representation with the Department of Defense. Six panels were established: manned space flight, unmanned spacecraft, launch vehicles, space flight ground environment, supporting space research and technology, and aeronautics. The joint directive charged the AACB to facilitate the planning of activities in a manner calculated to avoid undesirable duplications and to achieve efficient utilization of available resources, to coordinate activities in areas of common interest, to identify problems requiring solutions, and to exchange information between NASA and the Department of Defense. The board was to meet at least bimonthly, or more frequently on the call of its co-chairmen, and it was provided with a small secretariat to maintain its records.[150]

Since the Senate proved unwilling to approve Eisenhower's proposed amendments to the Space Act, the establishment of the Aeronautics and Astronautics Coordinating Board proved to be the only positive accomplishment of the lengthy debates of the national space program. In establishing the AACB, Glennan and Douglas carefully avoided the defects found in the Civilian-Military Liaison Committee, which had failed to work primarily because its members lacked authority. Within the AACB panel members were picked in accordance with their responsibilities within their agencies. Meeting as necessary the panels examined problems, arrived at suggested solutions, and made recommendations to the AACB. When the AACB approved the recommendations, they were passed down within the Department of Defense and within NASA for implementation by the

same officers who served on the panels. The Civilian-Military Liaison Committee continued in legal existence, but Eisenhower did not appoint another chairman for it when Holaday resigned the position, and the committee lapsed into inactivity. Some Senators criticized the administration for failing to execute an existing law, and Missiles and Rockets magazine observed that the "spidery problem of defining clear-cut national objectives in space exploration" was evidently going to be passed on to a new Congress and a new administration that would take office in January 1961.[151]

3. Strategic Dialogue: Minimum Deterrence or Counterforce

"The arm holding the hammer and sickle," General White observed in the aftermath of the Sputnik, "has grown longer and stronger."[152] At the same time that the sudden establishment of Soviet missile and space capabilities demanded a reorganization of American military and space establishments, the new Soviet threat touched off an intense examination of strategic thinking. Many persons conceived that the employment of nuclear missiles would lend a virtual mathematical certainty to the conduct of war, and new electronic computers promised to provide ready answers to the complex equations of missile warfare. Early in 1958, for example, the Air Force put a high-speed electronic Air Battle Model computer into operation which was able to work through three days of a two-sided, strategic global air war in about seven hours, maintaining and recording a net capability position by fifteen-minute increments for the opposing forces as the war game progressed. "We have come a long way since World War II," said Major General James H. Walsh, Air Force Deputy Assistant Chief of Staff for Intelligence, "in being able to predict the effects of our bombing campaigns, largely through the continued development or skilled target personnel, the magic of computers, and above all the quantum jump available in nuclear firepower."[153] While computers provided a facile means of war gaming, General White nevertheless insisted that "war is an art and always will be an art" and protested the philosophical approach that wanted to reduce war to mathematical equations. "In the age of missiles," he warned, "it is so easy to add up the number of missiles, the C.E.P., the number of missiles required to knock out a particular target, and come up with a table of equations and give it to a Ph.D. and tell . . . [him] to push XYZ buttons. I do not think war will be that way, because I feel that in this age of nuclear weapons the greatest confusion that mankind has ever faced will reign. We will have variables and we must be prepared for the unexpected. Decisions must be based on human judgment, able to fit many variable reactions to variable situations."[154]

The deterrence of war had been an American objective since 1945 and the concept of nuclear stalemate had been talked about since 1954, but Sputnik precipitated an immediate and intense discussion of both of these matters. "It is a grim enough world," said Dr. Vannevar Bush in November 1957, "if two countries face

each other with such weapons that, if all-out war broke out, both countries would be completely demolished. . . . But we feel that under those circumstances, all-out war would probably not break out, because no man would deliberately throw us into that sort of a holocaust where he and everything else would be destroyed."[155] For some time General Taylor believed that the Navy and the Marines had been moving closer to the Army position that nuclear stalemate was likely and that the United States should emphasize the development of limited war forces. In the winter of 1957-58 Taylor observed that "the Navy and Marine Corps were ready to join in recommending changes that would take into account the implications of nuclear parity, establish finite limits on the size for atomic retaliatory force, and in general make for a flexible strategy for coping with limited aggression."[156] "Given a shield of mutual deterrence," said Secretary of the Navy Gates, "power to prevent limited aggression and win limited war becomes decisive."[157] "A general nuclear war now means," agreed Admiral Burke, "that both the United States and Russia would be most severely damaged. Under these circumstances, initiation of a general war by Russia seems unlikely so long as we have the capability of destroying her."[158] In appearances before Congressional committees early in 1958 Burke pointed out that aircraft carriers were useful to both general and limited war and pointed out that Polaris submarines, which promised to be "invulnerable to preemptive action by an enemy," would be a positive deterrent to war. "As long as an enemy knows that no matter what kind of blow he may first strike at us, he will himself be destroyed in reprisal," Burke suggested, "then he will not rationally decide to start a war."[159]

Many civilian strategists accepted the concept of a nuclear stalemate and the requirements for limited war forces. Governor Nelson A. Rockefeller and the Rockefeller study panel "felt that there was increasing possibility that as the Soviets and ourselves reached equal capabilities of destruction there might--under the cover of our reluctance to use all-out force to oppose an action which did not seem warranted now knowing that such all-out action would bring major destruction in this country--that there might be a nibbling away at the periphery by small wars that we would not want to use all-out retaliation to oppose."[160] In January 1958 Mr. Paul H. Nitze published an article entitled "Atoms, Strategy and Policy" which strongly endorsed the concept of graduated deterrence that he had found to be popular in Europe. Nitze's proposal was not so much concerned with deterring war as in confining war. He considered that the requirements for graduated deterrence involved the maintenance of a superior western nuclear posture; the meeting of aggression without the use of atomic weapons where this was possible; the determination not to extend geographically limited hostilities to other areas unless the situation could not be effectively resolved otherwise; an avoidance of attacks against industrial and population centers and the use of atomic weapons against military objectives primarily for attainment of control of

the air; and the building of western non-atomic elements of strength in order to reduce the extent to which security would depend upon atomic weapons.[161]

In discussions as early as 1956 General LeMay had been willing to admit in theory that a smaller size force might present a deterrent effect upon an enemy, but he still held to his definition that effective deterrence required the United States to maintain a force strong enough to absorb the losses from a surprise Soviet attack and then to inflict damage that would be "unacceptable" on an enemy. "It is reasonable to assume," he observed, "that the original force without losses should certainly be initially stronger than the Soviet force."[162] Speaking in August 1956 Secretary of the Air Force Quarles believed that "the problem before the world today is a problem of deterrence" and that "the build-up of atomic power . . . makes total war an unthinkable catastrophe." Quarles proposed that the relative force strength of the United States and the Soviet Union was less important than "the absolute power in the hands of each, and in the substantial invulnerability of this power to interdiction." He urged that it was necessary only to maintain a level of strength which he called "mission capability" and pointed out that it was "neither necessary nor desirable . . . to maintain strength above that level."[163] Quarles' statement was useful in explaining why the Air Force could safely reduce its force from the 137-wing level, which had been justified as critical to the security of the nation, and it seemed to equate deterrence with the maintenance of capabilities for massive retaliation. Also speaking in 1956 while he was still Air Force Chief of Staff, General Twining emphasized counterforce rather than massive retaliation when he said: "If we are attacked, the Air Force's main job is to knock out the Russian long-range air force and their capability to deliver strikes against the United States."[164]

Partly in order to cause uncertainties to the enemy neither President Eisenhower nor Secretary Dulles ever exactly defined massive retaliation, and, as has been seen, the acceptance of massive retaliation in 1954 did not cause the Joint Chiefs of Staff to change the categories of target systems which they had established for strategic air war planning purposes in August 1950. During the Sputnik crisis, however, the Air Force gave some serious thoughts to a counterforce strategy and for the first time assigned some specific meanings to massive retaliation. Speaking in 1959 General White said that the strategic target priorities continued to be: "One, to destroy the enemy's capability to destroy us--that would be the first priority; next would be to blunt the enemy attack against our deployed military forces in Europe and in Asia; and, third, systematically destroy the Soviet Union's ability to wage war." If it were given strategic and tactical warning, White pointed out that the United States would be able to implement these orderly attack priorities, but he noted that the growth of Soviet capabilities to attack the United States made it likely that a

United States second strike might have to be somewhat improvised. "In case of a surprise attack," he suggested, "the mission would be . . . to do the greatest possible damage to the Soviet Union as a whole with attention to applying that destruction in such a way as to do as much damage as possible to their residual military striking force."[165] Following this same line of reasoning, Colonel Robert C. Richardson demonstrated that massive retaliation had always been a specific response within the whole American strategy. "Massive retaliation," Richardson wrote, "relates principally to what happens after the enemy tries a surprise attack against the United States proper. The deterrent to an attack of this nature lies in the Strategic Air Command's capability, even after having been hit first, to strike back, 'retaliate,' with sufficient atomic power to wipe out the enemy's major urban centers. This is massive retaliation. The targets are cities; the forces used are those that survive the initial attack; and the objective is to devastate the enemy nation to the extent that it would not be able to capitalize on its act of aggression. . . . Now, the ability to destroy cities--the main target of massive retaliation--may constitute a deterrent to surprise attack against the United States. It does not, however, in any way deter aggression anywhere in the world, including NATO. What has deterred aggression in Europe and in other vital areas for the past ten years has been primarily the counterforce aspect of the general-war capability, backed up by the expressed willingness to use any and all forces to defend the free world if it should become necessary."[166]

On the conceptual level Major General Walsh reasoned in December 1957 that Air Force thinking had turned full circle away from the Mitchell-Douhet doctrines of waging strategic air war against enemy industrial capabilities and had returned to the older doctrines of Clausewitz and Schlieffen that considered enemy military forces in being as the prime objectives of war effort.[167] Seen in terms of a counterforce strategy the requirements for strategic air striking forces had to be calculated in terms of its capabilities and vulnerabilities in destroying hostile target systems--not in terms of the residuum that might remain after an enemy surprise attack. By early 1959 the United States air war plan was based upon an analysis and screening of over 20,000 targets in Soviet bloc nations. While nothing was immediately published on the extremely sensitive subject, air targeting apparently became much more exact in the years after 1955-56 when the very high altitude U-2 reconnaissance aircraft became operational on foreign soil. "We know what targets must be destroyed," stated an Air Force planner in 1959. "Our war plans are based on this target analysis."[168] Although the Air Force was apparently willing to accept counterforce as an objective, the Strategic Air Command continued to plan on operating tactics which envisioned that strategic air attacks would be speedily accomplished against all target systems in one mighty effort. Such an all-out attack would provide the largest degree of protection to SAC crews. By a

predominant use of large nuclear weapons, moreover, one crew could be counted upon to destroy many individual targets with single weapons, thus achieving a "bonus effect" that was thought to be quite important in view of the many targets requiring destruction and the limited size of the Strategic Air Command. While Soviet cities were not targeted for air attack, many of them would necessarily be destroyed by nuclear weapons aimed at military objectives in their vicinity.[169]

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Although General Taylor considered that the conversion of the Navy and the Marines to his views on nuclear stalemate-limited war was "quite an achievement," the Army position was not accepted by the Department of Defense or by the Air Force. "One of the most pressing objectives of the Defense Department," Secretary McElroy stated in January 1958, "must be to make it obvious to any potential enemy that we have available and are prepared to use weapons of retaliation so devastating that the cost to an aggressor of an attack on us would be unbearable."[170] In April 1958 McElroy foresaw "less and less likelihood of limited war that would demand sizable forces." While he granted that limited conflict "could occur in primitive countries," he argued that the United States would never consider a Soviet attack against NATO as a limited war. "We better never let anyone," he said, "get the mistaken idea that we are not going to use our big weapons if they are needed."[171] Speaking as Chairman of the Joint Chiefs of Staff, General Twining said: "I personally do not believe you can say that any particular form of war is more likely than any other."[172] Both Secretary Dulles and General Twining were on record with the view that the use of tactical nuclear weapons would not necessarily cause a small war to expand into a general nuclear war.[173] General LeMay pointed out that deterrence was in the enemy's mind. "It is my belief," he said, "that the enemy will not consider as a deterrent a force which he considers weaker than his force. . . . I think we would be gambling more than we should with the security of the country if we should assume that a weaker force will deter him from attack."[174]

Appearing before the National Security Council early in 1958, General Taylor asked that the annual Basic National Security Policy directive be changed to accord limited war forces an active role in future military operations and the atomic-retaliatory forces a passive role. Where ground forces in Europe had been the "shield" behind which the United States could wield its atomic sword, Taylor urged that the atomic retaliatory forces had become the shield that would ward off hostile atomic attack while the limited war forces would constitute the flexible sword. Failing to agree with General Taylor, the National Security Council found no changes in the international situation that justified a change in the basic security policy. In mid-summer the Department of Defense issued guidelines providing that the defense budget for fiscal year 1960

would approximate that of 1959 and would retain the same percentage allocations to individual services.[175] As a result the 1960 fiscal year budget proposed a total of $41.2 billion in new obligational authority, to be subdivided $9.5 billion for the Army, $11.7 billion for the Navy, and $19.1 billion for the Air Force.[176]

While the Department of Defense budgetary decisions were being made, two separate small war incidents tested the capabilities of United States forces. The first incident occurred in the Middle East where, in an effort to stabilize chaotic affairs, President Eisenhower had announced with Congressional approval on 5 January 1957 that the United States would provide economic and possibly military aid to any nation that asked for it and would also employ armed force "to secure and protect the territorial integrity and political independence of nations requesting such aid against overt armed aggression from any nation controlled by international Communism." In November 1957 the Joint Chiefs of Staff directed the Commander-in-Chief, Naval Forces Eastern Atlantic and Mediterranean, to plan for limited action in the Middle East in the event of an overthrow of the Jordanian government or a coup d'etat in Lebanon.[177]

For several weeks after political unrest and riots broke out on 9 May 1958, the Lebanese government made no request for assistance and it seemed that the country would be able to settle its own internal problems, but in the early hours of 14 July a military coup d'etat overthrew the pro-western government of Iraq and caused both neighboring Lebanon and Jordan to fear a similar fate. In this crisis the government of Lebanon immediately sought military assistance from the United States, while Jordan appealed to the United Kingdom to send troops to it to prevent disorder. Following President Eisenhower's decision to assist Lebanon, Admiral James L. Holloway, Jr., the Commander-in-Chief Eastern Atlantic and Mediterranean was designated Commander-in-Chief Specified Command Middle East to execute Operation Blue Bat for the reinforcement of Lebanon. Within 24 hours elements of the U.S. Sixth Fleet landed a battalion of Marines near Beirut. Augmented by C-124 transports of the Military Air Transport Service, the United States Air Forces in Europe airlifted Army Task Force Alpha from Rhein-Main Air Base to Lebanon via Adana Airfield in Turkey and began to provide logistical support to the Americans in Lebanon and to the British forces in Jordan. At 1000 hours on 15 July the Joint Chiefs of Staff directed that the Tactical Air Command dispatch CASF Bravo under the command of Major General Viccellio to Incirlik Air Base at Adana, Turkey. Taking off within two hours from Myrtle Beach, South Carolina, the first F-100's refueled three times en route, and, after following a circuitous route to avoid certain Mediterranean countries, they arrived at Incirlik in less than 13 hours. Within 24 hours, 36 F-100's were at Incirlik and ready to support the ground forces. Troop carrier congestion at the forward base then forced Task Force Bravo to hold a part of its forces in France, but within 50 hours the entire CASF--two F-100 squadrons, one B-57 tactical bomber

squadron, and one RF-101/RB-66 composite tactical reconnaissance squadron--was in Europe, and in less than four days it was established at Incirlik. The Tactical Air Command employed its own tanker aircraft on the Atlantic crossing, and it also kept several of the tankers in the air over Beirut to refuel the tactical aircraft that covered the air landings of Army troops. Flown with USAFE C-130's and MATS C-124's, the airlift effort of 110 planes moved 3,103 troops and 5,073 tons of equipment from Europe to Adana, while the CASF airlift effort amounted to the movement of 860 personnel and 202 tons of equipment from the United States to Adana. At the peak of the build-up in early August about 6,000 Marines and 8,000 Army troops were in Lebanon. The crisis cleared rapidly after the election of a new Lebanese president, and the American forces were withdrawn between mid-August and October 1958.[178]

As the situation in the Middle East was beginning to resolve itself the Soviet Union and Communist China provoked another crisis in the Formosa or Taiwan Straits on the other side of the world. In this area Chinese Nationalist garrisons held the off-shore islands of Quemoy and Matsu, and in accordance with the Formosa resolution of January 1955 the President of the United States was authorized "to include the securing and protecting of such related positions and territories of that area now in friendly hands and the taking of such other measures as he judges to be required or appropriate in assuring the defense of Formosa and the Pescadores." In July 1958 the Chinese Communists intensified their threats to "liberate" Taiwan (Formosa) and began to move jet fighter aircraft into previously vacant airfields in Fukien Province opposite the Nationalist base on Taiwan. After four days of secret talks in Peking, Premier Mao Tse-tung and Nikita Khrushchev issued a communique on 3 August demanding withdrawal of Anglo-American forces from the Middle East. The Communists began to overfly Quemoy and Matsu and improved their interceptions of Nationalist reconnaissance sorties over the coastal mainland of China. On 18 August the Reds began to bombard Quemoy with artillery sited in nearby coastal postions, and after an intensified bombardment the Communist radio beamed a warning on 29 August that "a landing is imminent" and urged the Quemoy garrison to withdraw.[179]

As a part of a general reorganization in the Pacific on 1 July 1957, the U.S. Pacific Command--as the unified theater headquarters superior to the Pacific Fleet, Army Pacific, and Pacific Air Forces--had assumed general responsibility for theater operations, including the United States commitments in defense of Taiwan. On 6 August 1958 the Air Force directed its commanders concerned to examine their plans to support the CincPAC plan for the defense of Taiwan, and with the worsening of the crisis the Joint Chiefs of Staff ordered the aircraft carriers Essex in the Mediterranean and the Midway at Pearl Harbor to join the Seventh Fleet off Taiwan. On 25 August the Joint Chiefs also authorized the deployment to Taiwan of a Marine fighter-interceptor group from Japan and an Air Force fighter-interceptor squadron from Okinawa. The Army was

directed to expedite the shipment of a Nike battalion from Texas to Taiwan. Since the Nineteenth Air Force was already committed to the CASF operation in the Middle East, the Tactical Air Command directed its Twelfth Air Force to prepare CASF X-Ray Tango for movement to the Far East if it proved to be needed. At 1400 hours on 29 August the Tactical Air Command was directed to deploy the force, and under the leadership of Brigadier General Alvin P. Tacon the first planes carrying the task force departed their home stations at 1630 hours on the same day. Had the CASF made non-stop flights its planes could have arrived in the Far East within 48 hours flying time, but deliberate rest stops were scheduled for the crews in Hawaii, Guam, and at either Midway or Wake Islands. With a strength of two F-100 squadrons, one B-57 squadron, two RF-101 squadrons, and two C-130 squadrons, CASF X-Ray Tango was completely in place on Taiwan by 12 September. Mainly as a psychological gesture a squadron of 12 F-104 Starfighter interceptors was transported aboard C-124 transports, and these planes were put into action on 12 September after they had been reassembled. In these movements a total of 137 four-engine aircraft of the Military Air Transport Service and the Tactical Air Command airlifted 1,718 personnel and 1,088 tons of cargo. As this strength was building up, Chinese Nationalist Air Force pilots proved able to handle the Red Chinese MIG-17 aircraft in a series of engagements over the Formosa Straits. In about 25 separate air encounters the Nationalists lost 4 aircraft and destroyed 33 of the Red planes, four of the victories being scored with Sidewinder air-to-air missiles. After firing more than a half million rounds of artillery at Quemoy, the Reds announced a week's suspension of the shelling on 6 October. From this time onward the crisis abated, and the United States forces that were deployed to Taiwan returned to their permanent stations within the following two months.[180]

While there was no doubt that American policy had been accomplished in the Lebanon and Taiwan operations, evaluations made by high-level officials revealed a difference of opinion as to lessons to be drawn from these operations and about the nature of limited war as well. To Secretary McElroy the Lebanon and Taiwan operations gave "assurance" as to the United States capability for limited war. He considered that the response in Lebanon had deterred the outbreak of hostilities and that the action in Taiwan had confined the conflict and had permitted a discontinuation of it to be worked out. "The speed with which you respond," McElroy observed, "is really as important as the force with which you respond." McElroy considered that Lebanon and Taiwan were examples of limited wars. "We do not consider that Korea is a limited war," he added. "We consider that if you had to do Korea again, you probably would handle things somewhat differently." He also emphasized that the United States did not intend to fight a limited war with the Soviet Union. "The people of this country," he said, "should realize that if we are going to fight Russia, we are not going to fight them on the ground in the main. There will be some conflict on the ground, but general

war is the only kind of war that we visualize fighting with Russia."[181] Speaking on the subject of Lebanon and Taiwan, General Twining called attention to the fact that in each case the United States had been given several weeks to ready its forces and to react. Since no shots had been fired by American units supply problems had been simple. Twining nevertheless estimated that the United States "could carry a half dozen" engagements like these, but an engagement of the size of Korea would be a different matter. In Twining's view the Korean conflict was "a big limited-war operation," and if a limited war of similar size occurred in the future its requirements would have to be met by the mobilization of reserve forces.[182]

In presenting the Air Force assessment of the Lebanon-Taiwan crises, General White asserted: "The Soviets have been contained not by the U.S. battalions and ships and tactical aircraft that we deployed but to a great degree by the established capability of American long-range air power." In the case of the Quemoy crisis, however, White added that "the Chinese Communists and perhaps the Russians themselves received a considerable shock with the rapidity with which we reacted and with the efficiency of our forces that were there--and by 'our forces' I am including the Chinese Nationalists."[183] General Power saw Lebanon and Quemoy as illustrations of the deterrence of both general and small wars. "Quemoy," he said, "was even better than Lebanon, because here we took a firm stand for a pile of so-called useless rocks. But it was notice to the world that this country stands for something, that we have principles and oppose the principle of blackmail through military force. If we were willing to stand up and risk war for some so-called useless rocks, what better proof could we give of our determination to stand up to a more serious incident?" Power said that during the Quemoy crisis the Strategic Air Command had been prepared to back up the other forces with planes that could carry "any yield weapon." While he did not think it would be efficient to employ SAC crews to drop conventional weapons, Power pointed out that he could "convert into that posture very rapidly in a matter of hours." Lebanon and Quemoy, Power said, "were real actions to deter war. The reason we could prevent those actions from expanding is that we had the Strategic Air Command backing these forces up."[184] In a delayed analysis General LeMay emphasized the role that American military aid and friendly foreign forces had played in the Lebanon-Taiwan effort. "Assets such as bases and support capabilities as well as many additional items which comprise an effective small war readiness," he said, "are direct results of the Military Assistance Program. Without these benefits, such operations as last year's deployment of units to . . . both the Mideast and Far East to assist our allies could not have been accomplished."[185]

According to Secretary Brucker and General Taylor the Lebanon and Quemoy crises were the latest incidents in a pattern of

of eighteen episodes since World War II in which the presence or pressure of Communist forces had been felt and exploited either directly or indirectly. From this pattern, Brucker drew the lesson that the Communists were using limited war as a device to achieve their objectives on a piecemeal basis. When he was asked to define a limited war, Taylor found it easier to say that a general war was "a war between the United States and the Soviet Union in which they are participating and in which atomic weapons are used freely from the outset." A limited war was "any military conflict short of a general war, one in which our national existence is not at stake." Taylor described Lebanon as "perhaps the extreme of the small limited war," and he believed that the advanced warning, limited force requirement, and lack of combat operations made conditions so favorable for the success of the Lebanon operation as to make it imprudent to attempt to draw conclusions from the experience. Taylor also admitted under questioning that no Army forces would have been required in a Formosan operation. "If we had to go into Formosa in sizable strength," he said, ". . . it would be largely an air and a naval operation." As he looked at the problem of limited war, however, Taylor saw "primarily an Army requirement related to sustained combat on the ground, which is an Army task." Viewing the problem of limited war in this light, he urged a five-point program to improve limited war capabilities, namely the modernization of appropriate equipment, the improved strategic mobility of limited war forces, the use of preplanned airlift and sealift, expanded joint planning and training, and the advertisement of such limited war strength once it was a reality.[136]

While the national military leaders tended to draw different lessons from Lebanon and Quemoy, there were some essential elements of agreement. In its report of the fiscal year 1959 military budget, the House Committee on Appropriations had called for a new study of the role of the super aircraft carrier in modern warfare. After Lebanon and Quemoy Admiral Burke could state that "the deployed attack carrier task force with modern aircraft--teamed with a marine landing force--is the logical ready military force to counter the threats of limited war in many areas of the world."[137] Without derogating the importance of the aircraft carrier, General Taylor's personal opinion was that "we have an ample number of carriers." He was reminded that "in Korea, which was a large limited war, we never had nor needed more than four carriers on station."[138] General White accepted the new implication that an aircraft carrier was more suited for limited than general war, but he opposed a new carrier because he preferred "to see the money that must go into the carrier go on some other weapon system which I would conceive to be more important."[139] Responding to a question, Dr. York was quoted as saying that the Lebanon emergency had demonstrated the importance of carriers, destroyers, and possibly cruisers as "distant bases." He added that in a major war against a "highly sophisticated enemy like Russia, they are going to be blown up."[140] As a result of what Secretary McElroy described as "soul searching . . . at the

very highest level of Government," the Department of Defense budget for fiscal 1960 included the construction of another Forrestal class aircraft carrier. "The importance of the carrier as a means of projecting our military power for a limited war situation into the peripheral areas of the world," he explained, "was very clearly demonstrated in both Lebanon and Taiwan."[191] Where the CASF deployment to Lebanon had encountered problems of areas in which overflight rights were denied and where available airfields were scarce and became congested, the Department of Defense noted that the aircraft carrier was "a very important cold war instrument" since it provided "a very effective limited warfare capability in places where overflight rights for aircraft are often unobtainable and in places where landing fields often do not exist."[192]

In the months prior to Lebanon and Quemoy both Secretary Dulles and General Twining had voiced the opinion that tactical nuclear weapons might be used without necessarily expanding a small war into a general nuclear war. During these crises, however, the Soviets attempted to convince the world that any use of atomic weapons would mean general war. At the height of the Quemoy crisis on 7 September, Khrushchev wrote Eisenhower, warning: "An attack upon the Chinese People's Republic . . . is an attack upon the Soviet Union."[193] In another letter on 19 September, Khrushchev declared that: "Those who carry out plans of atomic attack on the Chinese People's Republic should not forget that not only the U.S. but the other side possesses not only atomic but hydrogen weapons and also the corresponding means of delivery, and should such an attack be delivered on the Chinese People's Republic, then the aggressor will receive a fitting rebuff by the same means." President Eisenhower rejected Khrushchev's threat as "abusive."[194] But the threat that local war could expand into general war if nuclear weapons were used could not be ignored. Vice Admiral Charles R. Brown, Commander of the U.S. Sixth Fleet in the Mediterranean, subsequently stated: "I would not recommend the use of any atomic weapons no matter how small, when both sides have the power to destroy the world. . . . I have no faith in the so-called controlled use of atomic weapons."[195]

The experience of Lebanon and Quemoy thus appeared to justify General Taylor's argument before the National Security Council earlier in 1958 that in many limited war situations the United States would not wish to employ nuclear weapons. "We would always go into a military operation prepared to use nuclear weapons," Taylor explained in March 1959, "because we never know what the outcome is going to be. The decision to use them . . . would be determined by the President."[196] At about this same time, General Henry I. Hodes, Commander-in-Chief U.S. Army Europe, defined limited war as a conflict "in which atomic weapons may not be used freely or on a large scale in the beginning and one in which our national survival is not at stake at least initially."[197] Much of this thinking on tactical nuclear weapons coincided with General Weyland's already expressed belief that flexibility demanded the retention of conventional ordnance delivery characteristics in tactical aircraft.[198]

A Tactical Air Command officer who visited Adana during the Lebanon crisis found a considerable doubt as to whether the CASF crews could have performed conventional weapon delivery missions, although all of them were fully qualified in the delivery of nuclear weapons. Only a few of the F-100 pilots had strafed;" he stated, "none had shot rockets or delivered conventional bombs." The B-57 crews were also regarded as "incapable of performing efficient conventional weapon delivery."[199]

Despite a recognition that it would have had difficulty conducting a conventional limited-war operation with crews that had been trained for the delivery of nuclear weapons, the Air Force remained somewhat less than enthusiastic on the subject of conventional weapons. "We will carry out any instructions we are given," noted Lieutenant General Irvine, "and we can fight an iron bomb war if that is what the President says he wants us to do. . . . We can only say if you want to destroy targets efficiently, we can do it better with a nuclear bomb."[200] As Commander-in-Chief U.S. Air Forces in Europe, General Frederic H. Smith, Jr., believed that many men in scientific, governmental, and military circles evidently lacked an understanding that tactical nuclear weapons could be employed without destroying countries or populations. In the spring of 1960 he accordingly published an article designed "to demonstrate that not only can the intelligent use of nuclear firepower in limited war give us the greatest possible opportunity to win such wars at minimum cost to us and to the country we may be defending against aggression, but that it is highly probable that without the use of such weapons our chances of winning in many areas are slim indeed." Smith ruled out the possibility of a limited war in Europe, but he suggested that tactical nuclear weapons could have been precisely employed with great effect in Korea and in Indochina without serious danger of having provoked all-out war. To prevent hap-hazard employment of nuclear weapons in a limited war, he stated that higher authority would have to provide a local war commander with explicit objectives, including a restriction on strikes outside a delimited zone of hostilities. He noted that new criteria for tactical nuclear targets needed to be developed: these could include "situation-control" targets such as narrow gorges in mountains which could be closed by landslides or forest cover which could be defoliated with nuclear weapons, thus denying concealment to an enemy. "We must achieve through education and through the development of clear-cut, logical tactical doctrine," Smith concluded, " a general acceptance by the United States of the requirement for the use of nuclear weapons in limited war. This country cannot afford the tremendous outlay in dollars, resources, and men needed to defeat aggression by man-to-man combat on the ground, supported only by high-explosive bombs and rockets, napalm, and machine-cannon fire delivered from the air."[201] While General Smith's article was well reasoned, the Lebanon-Taiwan crises had nevertheless demonstrated that American political and military leaders were reluctant to commit nuclear weapons to limited wars.

After a study of the matter, Colonel Albert P. Sights, Jr., concluded: "The crises in Lebanon and in the Taiwan Strait . . . marked a turning point in relying on nuclear weapons for limited wars. Thereafter planners were more inclined to accept the premise that such crises--if they turned into wars--would be conventional, at least at the outset."[202]

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Speaking in support of the Department of Defense fiscal year 1960 budget in January 1959, Secretary McElroy accepted the Air Force position that the military forces that would deter or win general wars would also be able to deter or to win small wars. "It is erroneous to view the U.S. military posture," he said, "as containing a distinct general war capability per se. In reality, those capabilities which the United States has for a limited war are equally applicable to general war and those capabilities which the United States has for general war are, with a few exceptions, equally applicable to limited war."[203] In this statement McElroy also indicated that the United States defense policy was not prepared to accept the concept of minimum deterrence, but the Congressional budget hearings held early in 1959 were marked by a growing vocalization of the concept.

Initially held by a ground of diverse European intellectuals the rationale of minimum deterrence was perhaps best summarized by Britain's nuclear physicist neutralist P. M. S. Blackett, who reasoned: "If it is, in fact, true, as most current opinion holds, that strategic airpower has abolished global war, then an urgent problem for the West is to assess how little effort must be put into it to keep global war abolished."[204] The proposition of minimum deterrence was persuasive to many persons including General Taylor, whose suppressed article prepared in 1956 contained the view that: "The avoidance of deliberate general atomic war should not be too difficult since its unremunerative character must be clear to the potential adversaries. Although actual stockpile sizes are closely guarded secrets, a nation need only feel reasonably sure that an opponent has some high-yield weapons, no matter how indefinite their exact number, to be impressed with the possible consequences of attacking him."[205]

In his appearance before the Subcommittee of the House Committee on Appropriations on 29 January 1959, General Taylor first informed the public of the schism in strategic thought within the Department of Defense. Taking note of the fact that he would retire as Army Chief of Staff on 30 June, Taylor stated flatly that the nation had an excessive number of strategic weapons and weapon systems in its atomic retaliatory force, which included the aggregate of bombers in the Air Force, the Navy, the oversea American and allied commands, of the ICBM's and IRBM's in the Air Force, and of the Polaris system in the Navy. Taylor reasoned that it was

"possible to establish the fact that 'x' targets successfully attacked with 'y' megatons is equal to the destruction of the enemy. . . . Then, having determined the bombs required on target, you can calculate all the possible losses due to enemy action, aborts, ineffectiveness of the weapons, and so forth, and determine how many delivery vehicles are required. When such a computation is made, you end up, in my book, not with thousands, but with hundreds of vehicles as a requirement." In response to a question, Taylor estimated that the United States possessed a capability to annihilate the enemy some 10 times. In a subsequent appearance before the Preparedness Investigation Subcommittee of the Senate Armed Services Committee on 11 March, Taylor urged that the defense budget ought to be made functional by mission areas rather than to continue to make appropriations by services. Such mission areas could include general war forces and limited war forces. "There is," he explained, "a fundamental need to determine standards of sufficiency in the various categories of military forces which we maintain and to which all services contribute."[206]

General Taylor's charge that the United States possessed thousands of units to deliver strategic nuclear strikes when only hundreds were needed--a condition soon popularly described as "overkill"--drew support from Navy officers in appearances both in and out of Congress. Early in February 1959, Admiral Burke informed the House Subcommittee on Appropriations that he believed the United States possessed too much retaliatory power and ought to put more money into limited war capabilities. "Right now," he said, "I think there is nothing Russia can do to prevent her from being destroyed. . . . What we can destroy would be the ability of Russia to continue a war. . . . We would break her back. . . . You would not strike every military target, but you would strike enough of them to prevent Russia from recovering. You would break her back."[207] Rear Admiral Hayward reasoned that deterrence of war comprised "what the Russian planner thinks, not what you or I think. If he thinks he is going to be destroyed no matter what he does, he is not going to start it." Hayward added: "If you have a system that is invulnerable to surprise attack and effective so it would be possible to be effective even if a man read in the New York Times we were attacked, and still destroy your enemy, this is the thing you are working for. . . . Any system completely vulnerable to a surprise attack is a weak one, deterrence should be inevitable."[208] Some days later Hayward told inquiring Senators that he believed "in the years to come, any system that is vulnerable to surprise attack will fade from the scene."[209] What the Navy had in mind in the way of future deterrent capabilities began to be evident on 5 February when Admiral Burke stated: "To knock out the Polaris weapon system . . . the enemy would have to knock out all the Polaris submarines simultaneously. They would have to kill all of these submarines at the same time they initiated their attack. I think that this is impossible."[210] When asked during a national

television interview on 22 March how many Polaris submarines would be needed, Burke replied: "You can take from the number of Russian cities the number of megatons it takes to destroy a Russian city, the reliability of the missile, the accuracy of the missile, and you can compute it pretty accurately yourself. And then you double it just to make sure and you come out someplace in the neighborhood of perhaps 30.[211]

As advanced by Navy spokesmen the strategy of minimum deterrence--or "finite deterrence" as it was soon called apparently to avoid a connotation of gambling with the nation's safety--visualized that a positive threat and a capability of destroying between 100 and 200 Soviet civilian centers of population would be sufficient to deter the enemy.[212] Writing under the title, "Finite Deterrence, Controlled Retaliation," in the U.S. Naval Institute Proceedings in March 1959, Commander P. H. Backus, Executive Secretary of the Navy Ballistic Missile Committee, provided a coherent description of the strategy of minimum or finite deterrence. Backus reasoned that the Soviet capability to deliver thermonuclear intercontinental ballistic missiles had rendered obsolete the strategy and the force commitment of massive retaliation. Because of its vulnerability the Strategic Air Command was being compelled to disperse to hardened bases, but the hardening of SAC bases promised to set off an arms race since the Soviets could also harden their bases. To plan upon the "blunting" operations of the massive retaliation strategy--Backus equated "blunting" with "counterforce"--would also set off a spiralling arms race since proportional additions to the U.S. deterrent/retaliatory forces would be required each time the Russians added a new missile or a new air base. The weakness of the United States deterrent posture was its vulnerability. "If then," Backus reasoned, "our deterrent/retaliatory forces were relatively invulnerable, no matter what the Russians tried to do, we might in fact truly put behind us the frightening possibilities of general nuclear war." Backus asserted that the Polaris submarine would be the perfect weapon for finite deterrence since it possessed inherent invulnerability to a considerably higher degree than any other weapon system. If the Russians knew that even if they launched a surprise attack the majority of their industrial concentrations would be reduced to rubble, they would not initiate a deliberate attack. In the event that the Russians accidentally initiated a general war, Backus proposed that the United States should hit back instantly and hard by destroying two or three predesignated Soviet cities. In this case the United States would retaliate in a controlled manner, allowing time for negotiation between strikes. Such controlled retaliation would be destructive, but it would not reduce the world to rubble. Backus pointed out that the United States had compelled Japan to surrender in World War II by progressively destroying her cities.[213]

Both in public statements and in his book, The Uncertain Trumpet, which he published in 1959 following his retirement, General Taylor wrapped up the proposals for finite deterrence, the avoidance of overkill, and the determination of standards of sufficiency in various categories of forces in one comprehensive outline for a new national strategy of "flexible response." Taylor visualized "the rejection of a strategy of massive retaliation and the adopting of one of flexible response; the determination of how much is enough for all categories of operational functions; the subsequent building of a small mobile and secure missile force and a fully modernized Army and supporting services; a revised structure for the military budget to show clearly what it buys in terms of operational forces; and a new statement of roles and missions to show, then, what we really mean by the Army, Navy, and Air Force."[214]

The grave need to prevent nuclear war without draining the national economy provoked a great debate on the subject of flexible response, overkill, finite deterrrence, and the other proposals offered by Taylor and Burke. A new generation of civilian military analysts--many of whom who had worked in the "think factories" such as RAND and the Army's Operations Research Office--jointed political and military thinkers in the great debate on strategy. In the debate Department of Defense and Air Force spokesmen found it difficult to engage in a many-faced discussion of a new strategy without disclosing security aspects of the existing United States war plan. As the Department of Defense pointed out, moreover, it was practically impossible to answer General Taylor's question: How much is enough? This had always been one of the most difficult questions under constant study by military planners, but it was impossible to determine standards of sufficiency in neat categories of force commitments and still preserve the versatility and flexibility requisite to the fact that there was no clear line of demarcation which would be drawn between limited war forces and general war forces in all cases.[215] Under these circumstances Air Force spokesmen found it necessary to debate the proposed new strategy in detail rather than in its generalities.

The central theme of the new deterrent strategy was the proposition that a general nuclear war had lost its utility as a means of resolving international conflict. "A nuclear war," the proponents of finite deterrence warned, "is too horrible to contemplate, too mutually annihilating to consider." For many years the Strategic Air Command had used the motto "Peace is Our Profession," and a ranking Air Force commander had said, "If nuclear war breaks out, SAC has failed in its mission." General White, however, was unwilling to agree that all participants in a nuclear war would be defeated. "I think," he said, "nuclear war is something that is horrible and difficult to contemplate, but I am afraid that is the sort of thing civilization is faced with."[216] White consistently maintained that the United States and its allies "must possess combat capabilities which can deter or--if necessary--defeat" Soviet aerospace forces.[217] In briefings and papers prepared

at the RAND Corporation and published as a book entitled On Thermonuclear War, physicist Herman Kahn also presented the case that thermonuclear war was not unthinkable but probable and reasoned that with proper precautions the United States could survive such a war even though great casualties were incurred.[218] While many Defense spokesmen began to visualize the prospect that the United States would seek to "prevail" rather than to "win" in a thermonuclear war, an Air Force policy paper submitted to Congress in March 1960 insisted that the nation must possess a "war wirning capability."[219] The Air Force considered that there were sound strategic reasons for maintaining a war-winning capability in its strategic striking forces. Retired Air Force Brigadier General Giffin also suggested that the rationale of a military man required a concept that conflict could be resolved. "The military mind," he wrote, "cannot but accept General MacArthur's dictum that there is no substitute for victory. Yet the meaning of victory in a total nuclear war would be more in terms of the survival of the United States as a self-determining power--and the elimination of the present principal threat to the integrity of the United States--than in terms of classic military triumph."[220]

In view of the long-standing policy that the United States would not strike the first blow in a war, the Air Force had followed the policy during the 1950's that strategic capabilities must be prepared to accept the enemy's first strike and then be able to strike back effectively in reaction. As long as the Strategic Air Command was the nation's main deterrent force the matter of first or second strike was relatively unimportant since the maintenance of the command at a level of strength needed to survive a hostile first strike insured that it would possess capabilities needed for a first strike. The finite deterrence proposal vastly changed this strategic equation, and in January 1959 General Power insisted: "You always must have a capability to strike first, because obviously if these people thought we never could start a war, why, then they could just take this world away from us, piece by piece, because they would know that as long as they do not strike us, we could never do anything about it. So you must have a capability to strike first."[221] Unless the United States possessed a superiority of force, Lieutenant General Schriever demonstrated that it could not possess what he called a "positive deterrent." He defined "positive deterrent" as a posture "which permits this country to take the initiative militarily if it wants to take the initiative, or one which inhibits the Soviet from taking the initiative in the fields of limited warfare, in the field of economic and psychological warfare. Such a deterrent posture is achieved only if we can knock out all of this military capability to strike us. This means hard targets, in fact every military target which has the capability of waging total war against this Nation."[222]

In the process of developing the reasons for maintaining a first strike capability, Air Force spokesmen were careful to note that they did not contemplate "preventive" war, or the initiation

of a war on a nation's own timing. They nevertheless offered the opinion that the first strike capability might be used for "preemptive war," or attacks which might be made by a nation which had received positive tactical warning of an impending enemy attack. A preventive war might be launched months in advance of an anticipated attack, but a preemptive attack could be made hours or even minutes before the launching of a hostile strike.[223] If the United States strategic force had the ability to make an almost instantaneous reaction, moreover, the United States would be able to make strikes while enemy aerospace vehicles were en route to their targets but before they impacted on their assigned targets.[224]

The Air Force leaders found it difficult to determine what the exact size of a minimum deterrent force would be, but they were sure that it would not be a small aggregation of nuclear missiles capable only of destroying Soviet cities. "People sometimes ask me," said General Power, "what I think the minimum deterrent force is. They ask as though it were a package that one could get at the local store and buy off the shelf with a price tag on it. . . . I tell these people, I don't know what the minimum deterrent is, and what is more, there is nobody in this world who knows. . . . If anybody tells you they know what the minimum deterrent is, tell them for me that they are liars. The closest to one man who would know what the minimum deterrent is, would be Mr. Khrushchev, and frankly I don't think he knows from 1 week to another. He might be willing to absorb more punishment next week than he wants to absorb today." Power also pointed out that no one should assume that what would deter the United States would deter the Soviet Bloc. The United States had sustained some 600,000 casualties in the American Civil War; the Soviet Union had killed an estimated 9,000,000 people in the Revolution and has lost some 20,000,000 people in World War II; while the Chinese Communists were said to have "liquidated" as many as 20,000,000 to 30,000,000 persons in their revolutionary effort. Americans and Communists thus attached different values to human life. As for the overkill charge, Power estimated that the Strategic Air Command received about 18 percent of the defense dollar while it carried over 90 percent of the responsibility for deterrence. "If that is babying and pampering," he concluded," I do not agree with you."[225]

Although the Air Force began to advance "counterforce" as a more desirable alternative than finite deterrence, Air Force leaders were initially unable to provide a complete rationale for a counterforce strategy. At least at first, counterforce evolved not as a positive statement but in opposition to the "counter-city" aspects of finite deterrence. Writing in March 1959, as has been noted, Colonel Richardson determined that the counterforce aspect of the United States general war capability--rather than the massive retaliation aspect which would have been directed against Soviet cities--had been the effective deterrent to Soviet worldwide attack. "Failure to maintain the flexible counterforce capability we now have in our strategic effort," Richardson wrote, "will lead to

establishing unlimited requirements for local defense operations. This is a policy which could lead to political, economic, and military bankruptcy, and which would almost inevitably spell defeat."[226] Again as has been seen, Lieutenant General Schriever informed a Congressional committee of the need not only for a first-strike force but also for a positive deterrent force that could knock out "every military target which has the capability of waging total war against this Nation." Treading lightly in discussing a sensitive area, Schriever observed that because "we may not know where some targets are located today, it does not follow that we may not know where these targets are at some future date."[227]

In an Air Force anniversary statement in September 1959, General White categorically disagreed with the overkill augmentation. "Our strategic objective, in the event of global war," he said, "is to eliminate an enemy's war making capacity in the minimum period of time. In determining the force requirements needed to do this, we must take into account not only the number, location, and vulnerability of the targets but the reliability, accuracy, and warhead yield of our weapons--as well as countless operational variables and our evaluation of expected enemy defenses."[228] During the winter of 1959-60 the Air Force accepted the position that an "effective force" was a force in being, a force in place, and a force of such size and capability that when measured against enemy surprise attack its retaliation would be sufficient to insure clearly unacceptable damage to the enemy, that it could destroy the enemy's nuclear delivery capability in the event the United States was forced to take the initiative, and that would insure that the United States would prevail regardless of the circumstances under which deterrence might fail. While Air Force leaders now made a clear distinction between "deterrence" and "war winning capability," they continued to explain counterforce by revealing the fallacy of minimum deterrence. If the United States limited the size of its long-range nuclear delivery force to a capability which could do nothing more than destroy some 100 Soviet cities it might be able to deter attack against the United States proper, but if the Soviets attacked an ally of the United States the possession of a minimum deterrent force would not permit the United States (even if it possessed strategic warning) to launch its forces against Soviet cities, thereby exposing itself to Soviet attack with undamaged forces. On the other hand, if the United States finite deterrent failed and the enemy attacked, his first targets would doubtless be the U.S. strategic forces. The enemy would do this in order to reduce the U.S. ability to strike back, and he could well afford to save American cities as hostages for later attacks. With a minimum deterrent attrited by the enemy's first strike, the United States would lack strength for any kind of counterforce effort. If it attacked Soviet cities, the Soviets could return and easily destroy American cities. "Finite deterrence," the Air Force reasoned, "is purely a bluff strategy and does not include the capability for military victory. On the other hand, the clear capability to

attain military victory would be the most reliable, longest lasting, and most widely applicable deterrent that the enemy could face. Thus we must plan a counterforce strategy and back it with the weapons systems needed in the amounts needed."[229] At least three civilian strategists found reason in the Air Force arguments, for Robert Strausz-Hupe, William R. Kintner, and Stefan F. Possony soon described the strategy of finite deterrence as "a mutual suicide pact."[230]

Because they appeared to offer economy, a check on the arms race, and reduction of devastation, the proposals for minimum deterrence, plus limited war, plus arms control were said to have been accepted by many intellectuals interested in military affairs, a vast majority of foreign and domestic lay analysts, and many military planners.[231] In December 1959, however, James E. King, Jr., Paul H. Nitze, and Arnold Wolfers, research associates of the Washington Center of Foreign Policy Research, completed a study for the Senate Foreign Relations Committee that gave a limited endorsement to counterforce. This study recommended that top priority should be given to the reduction of the vulnerability and the improvement of penetration abilities of American and allied strategic forces, to accelerating the development of solid-fuel intercontinental ballistic missiles and emplacing them in hardened and mobile configurations, to strengthening the forces capable of dealing with lesser aggressions ranging from subversion to very substantial conventional attacks on free oversea nations, to the equipment of American and allied troops with dual-purpose nuclear and conventional weapons, and to the exploitation of space technology for defense. It recommended that the overriding purpose of the U.S. strategic weapons program ought not to be the "matching" of assumed Soviet capabilities in intercontinental missiles but instead the early attainment of an inventory of diverse and relatively secure systems that would prevent the enemy from risking a surprise attack. It suggested that the United States ought not to seek to maintain a "first strike" strategic force, since such action would negate a more desirable alternative "aimed at increasing the stability of the strategic equation by unilateral action, by the encouragement of reciprocal action, and by an arms control policy directed at strategic stability." The United States should nevertheless retain in its "second strike" strategic force "a measure of counterforce ability sufficient for rational target selection in a retaliatory strike, as well as for limited war capabilities and other purposes." Although the goal of maintaining an effective first-strike force would become increasingly difficult and even undesirable in terms of strategic stability, there were several reasons for making continued effort to maintain counterforce capabilities. First, if a local or limited war should break out the United States would be severely handicapped in its choices of action if it had no means of hitting elements of the enemy's strategic force, while the enemy had substantial counterforce capabilities. Second, in a general nuclear war following a hostile

first strike counterforce capabilities would enable the United States to conduct militarily useful operations and to minimize the damage to its population and industrial centers that might be inflicted by subsequent Soviet strategic strikes. Third, only by continuing research in counterforce weapons could the United States insure against still unforeseen technological developments that might upset the strategic balance. Finally, American possession of counterforce weapons would force the Soviets to divert funds to expensive defense efforts that might otherwise be expended for the creation of an overwhelming Soviet first-strike counterforce capability. In the chaos and confusion attending the launching of a second strike following an initial Soviet attack, the United States would quite probably attack both city and counterforce targets, but the study nevertheless recommended that, "in order to maximize the military value of such a strike and to minimize the dangers to civilian populations, a major effort can and should be made to direct the retaliatory attack against the enemy's strategic forces and targets as much as conditions permit."[232]

If the proponents of finite deterrence expected a change in security policy when newly-appointed Secretary Gates began to put together the defense budget for fiscal year 1961 they were doomed to disappointment. According to General Taylor there was to be no change in the Basic National Security Policy,[233] and the Eisenhower administration ruled that the status of the international situation, the state of military technology, and the general economic situation prevailing in the autumn of 1959 demanded that the fiscal 1961 military budget should not exceed the level of expenditures during fiscal 1960. Although service requests for fiscal 1961 budgeting totalled $43.9 in new obligational authority, the final defense budget submitted to Congress in January 1960 amounted to $40.5 billion in such new authority.[234] When he appeared in defense of this budget on 13 January 1960, Secretary Gates pointed out that military forces could not be arbitrarily categorized as being for "general" or "limited" war purposes. "All forces," he emphasized, "are a deterrent to and would be employed in a general war. Most of our forces could be employed in a limited war, if required. For example, air defense aircraft and antiaircraft missiles can be, and in fact are, deployed overseas. The aircraft of the Strategic Air Command could also be used if needed." When he spoke of the enemy Gates asserted that "in order to maintain a valid deterrent we have to maintain a deterrent force capable of knocking out his military power and not just bombing his cities. What we would actually do depends on circumstances, but we are adjusting our power to a counterforce theory; or a mixture of a counterforce theory plus attacks on industrial centers and things of that character. We are not basing our requirement on just bombing Russia for retaliation purposes. . . . The validity of our deterrent must be of such a character . . . that an enemy will believe his military power will be devastated."[235]

In his appearances before Congressional committees during the early months of 1960 the new Army Chief of Staff, General Lemnitzer, voiced his personal belief that the Soviets and the free world were approaching a period when both would possess "a virtually indestructible nuclear capability" and that this situation would render limited war more likely. "Under such circumstances," he remarked, "it seems to me that the most likely form of conflict may well involve the use of integrated land, sea, and air forces in their modernized, yet basically traditional, roles." Lemnitzer was not as adamant on the subject of overkill as his predecessor had been: he recognized that the development of highly-effective Soviet surface-to-air missile defenses promised to increase the attrition of American bombers.[236] Appearing before these same committees, Navy officers continued to argue the case for finite deterrence and to stress overkill. Admiral Burke subscribed to all the statements he had made on these matters a year earlier, and he still felt that the United States was overconcentrating in retaliatory forces, although the balance was getting better. Just as he saw no reason why the United States should build overkill forces, he professed not to fear Soviet overkill. "No matter what Russia does," he said, "there is no possibility she can avoid destruction. She is going to get a terrific beating if she starts a war, no matter how or when. . . . If she builds 500 missiles or 2,000 missiles and does it in 7, 8, 10, or 15 years, sometime in the future, it does not affect our deterrent capability."[237] Speaking even more positively than previously, Rear Admiral Hayward asserted that if he could have his way he would put the entire deterrent force at sea. He specified the total number of megatons placed on targets in Russia that he considered to be adequate as a U.S. deterrent. While this total was not disclosed in the public record, Hayward noted that 45 Polaris submarines would "come close" to providing the total deterrent that the United States needed.[238]

In stating the Air Force requirement for a first-strike counterforce capability, General White characterized finite deterrence as equating with the abandoned "Fortress America" concept. He pointed out that finite deterrence would be extremely dangerous since such a posture would not provide the military forces needed to meet the first-place obligation "to minimize the damage on the United States under any circumstances." He also found finite deterrence inconsistent with requirements of modern war: "Modern warfare," he said, "has as its objective--No. 1, the destruction of the enemy's capability to fight; and secondly, his will to fight." Finally, White pointed out that a finite deterrent posture would strip the United States of its influence in the world. "A nation which does not have the capability to go on the initiative, have the capability to knock out the enemy's military power," he asserted, "is hopeless in my opinion, politically, diplomatically, and militarily."[239] In an article describing the fallacy of minimum deterrence which he published in the spring of 1960, Brigadier

General Robert C. Richardson III stated that city-bombing violated two basic principles: "The only rational military objective in war is the enemy forces, or targets that affect the forces. Destruction which does not affect the outcome of the war in one's favor is irrational and politically and morally unjustifiable." While the strategic bombing campaigns of World War II had been directed against hostile industry for good reason, in an atomic war production and mobilization would contribute little or nothing to the outcome. "Today," he wrote, "victory lies not in the ability to destroy the enemy industrial and manpower potential but rather in the ability to destroy his existing capability for delivering destruction." As for the allegation that Soviet missile sites could not be targeted, Richardson pointed out that new intelligence techniques should provide knowledge of the construction of hardened missile sites, that the vulnerability of mobile missiles to slight overpressures should allow them to be targeted and attacked on an area basis with the help of reconnaissance, and that within the time-frame of concern the United States would have constant satellite surveillance which should provide intelligence on missile movements or site construction. "The minimum-deterrent strategy sought by critics of the existing counterforce deterrent capability," Richardson wrote in summary, "is one which would lead to unlimited requirements for limited war."[240]

While Admiral Burke was presenting the case for finite deterrence to the House Subcommittee on Appropriations in January 1960, outspoken Congressman Flood exclaimed: "This theory I do not believe. This is terrible."[241] When it reported the defense budget bill out in April, the House Committee on Appropriations expressed disbelief in finite deterrence. "In the final analysis," the committee noted, "to effectively deter a would-be aggressor, we should maintain our Armed Forces in such a way and with such an understanding that should it ever become obvious that an attack upon us or our allies is imminent, we can launch an attack before the aggressor has hit us or our allies. This is an element of deterrence which the United States should not deny itself. No other form of deterrence can be fully relied upon."[242] When final action was completed in July 1960, Congress voted $41.4 billion for defense, including approximately $500 million more than President Eisenhower had requested. Most of the additional funds were allocated to the Atlas, Minuteman, Polaris, and the B-170 programs, and the total funds was to be divided to include $9.6 billion for the Army, $11.8 billion for the Navy, and $18.9 for the Air Force.[243]

Despite verbal statements by Secretary Gates, the Department of Defense budget for fiscal year 1961 did not clearly implement either a counterforce or a finite deterrence concept but actually augmented both strategic and limited war forces. It did not provide the first-strike strategic force that the Air Force considered necessary to the counterforce strategy. The compromise pleased neither side of the strategic controversy, and the great debate on

strategy continued to brew.[244] "Our national policy at this writing," Herman Kahn observed in 1960, "seems to be drifting (mostly as a result of decisions evaded or decided for relatively minor technical reasons) toward accepting a strategy between finite deterrence or counterforce as insurance."[245] Strausz-Hupe, Kintner, and Possony described the official United States position as being one of "win strike second" counterforce, but an Air Force reviewer of their book commented: "We do not now have the capability to fight such a war even though this strategy is the most desirible. . . . We lack the forces needed to replace the so-called 'massive retaliation' policy."[246] On the other hand, the Naval Warfare Analysis Group issued a "Resume of Major Strategic Considerations" on 17 October 1960 which continued to argue for a finite level of deterrence. Distributed by Navy officials and said to represent a good summary of Navy views the resume argued that United States efforts to build counterforce capabilities, to harden missile sites, or even to construct civilian defense shelters would accelerate the arms race by forcing the enemy to develop additional overkill capability, and might even cause the enemy to fear that the United States was preparing to attack and to unleash a preemptive strike, thus starting a war rather than deterring conflict.[247]

During 1958 and 1959 the Air Force advanced counterforce as an alternative and wiser strategy than finite deterrence, but the full implications of a damage-limiting "no-city" counterforce war did not become exactly evident until the early months of 1960. Working in the Pentagon, Brigadier General Noel F. Parrish, Assistant for Coordination to the Air Force Deputy Chief of Staff for Plans and Programs, and Lieutenant Colonel Donald F. Martin began to war game existing strategic plans as opposed to a new strategic concept which made the most scrupulous efforts to employ appropriately-sized weapons only against purely military targets. The new concept made sense in its own right since a good many missiles would be required to kill enemy military forces in the first place, but the real surprise was that a "no-city" attack plan promised a tremendous saving of civilian life in the event of a thermonuclear war between the United States and the Soviet Union. War would remain horrible but it would not necessarily be suicidal. Taking their scratchpad figures to General White, Parrish and Martin obtained approval to war game the "no-city" counterforce strategy on the Air Force's Air Battle Model computer. No matter how the situation or the force levels were changed, the "no-city" counterforce plan promised tremendous savings of American and Soviet life.[248]

Although the "no-city" plan was not yet a strategy, the Air Battle Model results confirmed General White's belief that a city-destroying war did not make sense. In a landmark address delivered to the Air Force Association in September 1960, White stated: "As I see it, effective deterrence includes the possession of military forces to deter and, should war occur, the military strength to prevail. There are two key thoughts here: deter and prevail. It

might appear that this is a contradiction since the ability to prevail in war is needful only if our policy of deterrence fails. Nevertheless, the ability to prevail is what provides real and effective deterrence."[249] In a subsequent message to all air commands, White soon directed that all Air Force personnel should understand counterforce and its difference from minimum deterrence. "By counterforce," the message stated, "the Air Force means the ability to selectively and decisively destroy enemy military forces that could otherwise destroy us."[250]

Writing in the winter of 1960-61, Lieutenant Colonel Martin explained the Air Force conception of counterforce. Martin defined the Air Force's objectives in general war as being to gain military dominance over the enemy by the destruction of his military force, to limit damage to the United States and its allies, and by so doing to achieve a favorable outcome of the hostilities. On the basis of the "no-city" war game studies, Martin presented a comparision of the costs of the finite-deterrence terror strategy as opposed to a war-fighting counterforce strategy. If an aggressor launched an attack against United States military forces and the United States responded against the enemy's military forces, some 5 percent of the U.S. population would not survive. On the other hand, if the aggressor launched an attack against United States military forces and the United States retaliated against hostile military forces and cities, some 90 percent of the U.S. population would not survive a counterattack against U.S. cities. Looking ahead to 1965 when increased numbers of nuclear weapons would be available, the counterforce strategy would result in 5 percent destruction of United States industry while the terror strategy would lead to the destruction of 50 percent of the industry of the United States. "The foregoing," Martin observed, "are powerful arguments for accepting a counterforce strategy favoring survival rather than a strategy tantamount to suicide. The difference in the strategies can be measured in terms of this Nation's continued existence."[251] The Air Force had provided a conceptual justification for a counterforce strategy, but acceptance or rejection of it would await the new national administration that would take office early in 1961.

CHAPTER 11

THE NEW FRONTIER: REDIRECTION OF DEFENSE STRATEGY

1. Evaluation of Military Posture, 1959-1960

In the middle 1920's during the formative years of the Air Corps Major General Mason M. Patrick had been favorably impressed by Captain Basil H. Liddell Hart's Paris: Or the Future of War. Based upon the experiences of World War I the British military commentator had spoken against the frontal assault doctrines of Napoleon and Clausewitz and in favor of direct action designed to break the ability and will to resist of a hostile nation. In 1960 at the height of the Unites States presidential campaign, Senator John F. Kennedy, the Democratic candidate, found time to review and agree with a new book by Liddell Hart, entitled Deterrent or Defense. Kennedy endorsed Liddell Hart's grand theme, which was that "the West must be prepared to face down Communist aggression, short of nuclear war, by conventional forces." He observed that this same judgment was supported by other books by "responsible military leaders such as Generals Gavin and Taylor." In an expression of his own views on defense requirements Kennedy stated that the United States: (1) must guarantee that its deterrent was safe from sudden attack and capable of effective penetration of enemy defenses, (2) must bring rapidly into being the new generation of Polaris and Minuteman mobile missiles that "should diminish the need for hair-trigger decisions and should give the United States, and the world as a whole, a greater degree of stability," (3) must "think through afresh" the military mission of the North Atlantic Treaty Organization and ensure that NATO had sufficient ground divisions "to provide a persuasive deterrent to the Russian temptation to seek a limited advance in Europe, on the assumption that the West's only protection is a nuclear attack the West would not use," (4) must take steps to provide greater air and sea mobility for conventional Army and Marine forces not to fight limited wars but to remove the temptation to Moscow and Peking to attempt local aggression, and (5) must insure that United Nations forces (such as had been used in the Middle East and the Congo) "must be ready for instant movement." Senator Kennedy also emphasized the importance of arms control negotiations. "The notion that the Free World can be protected simply by the threat of 'massive retaliation,'" Kennedy added, "is no longer tenable."[1]

Senator Kennedy's review of the nation's defense requirements provided a convenient summary of the criticisms that Democratic leaders were bringing against the military policies of President Eisenhower. These criticisms included dissatisfaction with the level of defense appropriations and with defense management,

allegations that a concern for balanced budgets was causing a "missile gap," demands for increased conventional forces and for augmented airlift, and strong statements of a new need for civil defense. The Democratic dialogue on national defense would provide a background for the new national strategy of flexible-response and multiple-options that would be implemented when President Kennedy took office in January 1961.

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"It is a fact," stated Senator Lyndon B. Johnson on 11 March 1959 after hearing testimony on major defense matters as chairman of the Senate Preparedness Investigating Subcommittee, "that the strength of the Nation's security cannot be measured solely, or even primarily, in terms of money. . . . Throughout these hearings I have been unable to escape the conclusion that we are not doing enough, fast enough, or thoroughly enough."[2] Johnson indicated a grave fear that the Eisenhower defense budget ceilings might be jeopardizing security. While defense spending under the Eisenhower administration had inclined upward from $35.5 billion in fiscal year 1955 to $41.2 billion in fiscal year 1960, the Department of Defense computed that in terms of constant value fiscal year 1953 defense dollars the net purchasing power of defense appropriations had decreased from $34.9 billion in fiscal year 1955 to $32.5 billion in fiscal year 1960.[3]

Following his retirement as Army Chief of Staff, General Taylor criticized the defense budget ceilings which he said were arbitrarily imposed by the Bureau of the Budget and also recommended budgeting by military task rather than by military service.[4] In another influential post-retirement book, Lieutenant General Gavin charged that the United States would find itself in a "missile-lag period" which would be most critical in the years 1960-64. "Actually," Gavin wrote, "some of our most important missile programs have been slipping steadily because of the diminishing value of the dollar and the increased cost of labor and scientific help."[5] At the RAND Corporation a group of analysts headed by economist Charles J. Hitch proposed that the existing Department of Defense financial management system did not "facilitate the relating of costs to weapon systems, task, and missions," did not "disclose the full time-phased costs of proposed programs," and did not provide the data needed to assess properly the cost and effectiveness of alternative programs."[6]

Closely related to the defense budget ceilings were allegations that the National Security Council had failed to provide realistic strategic policies. General Taylor described the Basic National Security Policy papers issued annually as being "so broad in nature and so general in language as to provide limited guidance in practical application."[7] In an address made in September 1959, Paul H. Nitze charged that dissatisfaction with the National Security

Council technique caused the Eisenhower administration to rely more and more upon outside committees of private citizens to assist in the task of policy review and formulation. These distinguished citizens groups included the Kelly, Sprague, Killian, Gaither, and Coolidge committees. Although charged to make important policy recommendations, these outside groups were necessarily powerless to perform a necessary step in policy formulation: to help the fight to secure adoption of recommended policies within the government.[8] Despite the important role that Secretary of State Dulles played in national policy formulation, Senator Henry M. Jackson observed: "Judging by his appearances before Senate Committees, Mr. Dulles seemed not to be well informed on military scientific developments having an important bearing on foreign policy and tended to regard budgetary questions as being outside his proper concern."[9]

Speaking in support of the fiscal positions of the Eisenhower administration that had prevailed during his tenure as Department of Defense Comptroller, W. J. McNeil did not consider "the word 'ceiling' used in connection with the budget. . . a nasty word at all." Comptroller McNeil emphasized that governments had operated under budgetary ceilings in the past and doubtless would do so in the future. After studying the experience of the Truman administration which had operated for a time during the Korean war without reference to fixed budgetary ceilings, McNeil recorded that the Eisenhower administration had determined that the defense plateau of the nation ought to cost "in the neighborhood of $35 to $40 billion a year."[10] Closely questioned about budgetary ceilings in February 1959, Secretary McElroy was confident that the nation would be willing to pay whatever it needed for its security. But McElroy insisted that any country had "just so many resources," and he maintained that defense spending had to be computed in context with national requirements for schools, roads, aid to underdeveloped nations, and an advancing standard of living. "It is inherent in the obligation of an administration," McElroy said, "to consider not only what its obligations are in national security, but what its obligations are in the administration of the resources of the country for the various projects that have to be taken care of by the whole thing." He also explained: "The thing that you try to do in defense is to determine what you need for your national security and to have enough cushion there so that you are not taking a substantial chance with the national security. If you are doing that, then that is all you should do and you should use the remaining resources for other constructive purposes."[11]

Since the Eisenhower administration believed that military force possessed flexibility, its key officials found it impossible to define "limited" or "general" war and impractical to design forces to participate in specialized forms of combat. While Secretary Gates considered in March 1960 that increased amounts of money had been put into limited war capabilities each year, he

maintained: "Many people have tried to put our budget on a functional basis, and we have found it impossible to do so."[12] When pressed to state official definitions of limited and general war in 1959, the Department of Defense responded: "With respect to the duration and scope of the action, and the selection of weapons to be used. . . there are an infinite variety of possible combinations. For this reason. . . there is no practical way in which we can precisely define limited and general war in these specific terms, or even index all the possible situations which might fall into these two broad classifications."[13] As a result of this experience as Defense Comptroller under both Truman and Eisenhower, McNeil pointed out that any process of budgeting forces to perform specific defense tasks "would not be conducive to economy of force" and "tends to compartmentalize the forces." "If we budget by certain weapons system type compartments," he urged, "it tends to freeze the use of forces thus supported. . . . I would far rather support the forces at the approximate level we thought would do the job and leave flexible the use of forces where, as, and if, necessary."[14]

* * * *

"The facts are," Senator Stuart Symington informed his colleagues on 27 January 1960, "that a very substantial missile gap does exist, and the administration is going to permit this gap to increase."[15] The gnawing apprehension that the Soviet Union enjoyed a substantial margin of superiority in missiles over the United States traced back to an interview with Nikita Khrushchev reported by James Reston in October 1957. "I think I will not be revealing any military secret," Khrushchev said, "if I tell you that we now have all the rockets we need: long-range rockets, intermediate-range rockets and close-range rockets." From this time onward, Khrushchev asserted that surface-to-air missiles had made bombers obsolete, good only for display in museums. "We do not want to scare anyone," he told press correspondents in late 1959, "but we can tell the truth--in saying that we have now stockpiled so many missiles and so many atomic and hydrogen devices that, if we were attacked, we could wipe all our probable enemies off the face of the earth. . . . In one year a plant that we visited produced 250 missiles with hydrogen warheads on the assembly line." Appearing before the Supreme Soviet in January 1960 Khrushchev asked and received authority to reduce the manpower strength of the Soviet armed forces from 3,623,000 to 2,423,000 persons by the autumn of 1961.[16]

Based upon demonstrated technological achievements of the Soviets U.S. estimates made in 1958 credited the Soviet Union with the ability to possess a significant missile threat in the years 1960-63 when the United States would be missile limited. This estimate appeared additionally creditable because the Soviets had demonstrated an already developed long-range missile technology,

while the delay in U.S. missile programs was attributable to development rather than to production. One commonly accepted estimate in 1958 and 1959 was that the Soviets would possess a 3-to-1 superiority of intercontinental ballistic missiles over the United States in the early 1960's. Speaking in the Senate in 1958, Senator Kennedy announced: "We are rapidly approaching that dangerous period which General Gavin and others have called the 'gap' or the 'missile-lag period'--a period, in the words of General Gavin, 'in which our offensive and defensive missile capabilities will lag so far behind those of the Soviets as to place us in a position of great peril.'"[17]

As officially conceived for implementation in the winter of 1957-58 the Air Force ballistic missile program envisioned deployment of 4 Thor and 4 Jupiter IRBM squadrons to Europe between December 1958 and March 1960 and deployment of 9 Atlas and 4 Titan ICBM squadrons at bases within the United States by January 1963. This was not as large a force objective as the Air Force believed necessary. As Supreme Allied Commander Europe, General Norstad had requested the assignment of 10 IRBM squadrons to NATO, and the Air Force wanted to program 16 Atlas and 11 Titan squadrons instead of the force authorized. Early in 1958, however, Secretary McElroy was inclined to give emphasis to the deployment of the IRBM's. "I think that we become stronger," he said, "as of the time we have some IRBM's deployed in our allied countries in Europe and the Far East, . . . where we have some Polaris submarines around the periphery of Europe, and where we have ICBM's which can be deployed in this country and have manned bombers." The successful development of the solid-propellant SM-80 Minuteman would affect the ICBM program since this missile would be cheaper and easier to deploy in protected positions than Atlas or Titan.[18] In February 1958 McElroy announced that he urgently favored production of long-range missiles as soon as practicable. He nevertheless stated three reasons for a cautious approach to missile production: he was reluctant to go into large-scale production until missile testing programs were more advanced; he expected great progress in the field of solid-propellant missiles and did not want to build up large inventories of early-model missiles; and he wanted to avoid duplication in building inventories of different missiles. In short, McElroy wanted to get more time in which to test and decide what missiles should be put into production.[19]

Even though he wanted more time to make decisions on the ICBM's McElroy believed that the Department of Defense should take "a calculated risk and move faster than the testing results would in themselves justify" in preparing for operational deployments of Thors and Jupiters.[20] The negotiations for oversea bases which were begun late in 1957 and actively prosecuted in the summer of 1958 dictated the extent of the IRBM programs. Great Britain agreed to accept four Thor squadrons (60 operational missiles) which would be manned by Royal Air Force personnel, with the United States retaining custody of the nuclear warheads. According to General LeMay the

British were "never very enthusiastic about Thor as a weapon system," but this deployment was brought to completion early in 1960 when the 60th operational missile was airlifted to Great Britain.[21] France did not accept the Jupiter squadrons offered, but Italy accepted two squadrons (30 missiles) and Turkey agreed to take one squadron (15 missiles) of the Jupiter IRBM's. Shortly after deployments to Italy were completed and while the establishment of missiles in Turkey was still in progress, a subcommittee of the Congressional Joint Committee on Atomic Energy recommended on 11 February 1961 that the Italian Jupiters be replaced with mobile IRBM's and that the Turkish deployment should be halted. The subcommittee demonstrated that the thin-skinned, liquid-fueled Jupiters were particularly vulnerable to sabotage and would be easily destroyed by a Soviet first-strike missile attack. The committee recommended that a Polaris submarine operated by U.S. personnel should be assigned to NATO in lieu of the 15 obsolete Jupiters slated for deployment to Turkey. At this time the United States did not have a Polaris submarine immediately available for such an assignment, and the Turkish government was unwilling to modify the existing agreement. While Secretary of Defense Robert S. McNamara would later state that "the Turkish Jupiters should never have been placed in position," the United States proceeded with the agreed program, and the Jupiter missiles became operational in Turkey by about July 1962. As was the case in England, United States crews controlled the nuclear warheads for the missiles sited in Italy and Turkey.[22]

Despite a rising feeling of national concern about the predicted missile gap, President Eisenhower's fiscal year 1960 defense budget submitted to Congress in January 1959 called for 9 Atlas and 11 Titan squadrons to become operational by June 1963. "The reason why the Defense Department does not plan to produce the same number of ICBM's that the Soviets are estimated to be capable of producing over the next few years," Secretary McElroy explained, "is that, in the judgment of the President of the United States, the National Security Council and the military experts of the Department there is no particular logic in trying to match everything it is estimated our opponent might do." McElroy urged that there would be no gap in the nation's defense posture if all combinations of delivery systems were considered. He acknowledged that the United States had a capability to produce more of the first-generation missiles than it would produce, and he suggested that the Soviets, who would doubtless recognize the deficiencies of early-type missiles, might not be willing to produce anything like the number which the national intelligence estimate credited them with an ability to produce.[23]

Before submitting the fiscal 1960 budget to Congress, Secretary McElroy had cautiously sought and received a statement that the Joint Chiefs of Staff found no "serious gaps" in its "key elements." As far as missiles were concerned, the military leaders supported the administration's objectives when they appeared before Congressional

committees. When asked about the missile gap, General Taylor replied: "I would not be unduly concerned at this time because we have so many other compensatory weapons which can do the same job of putting bombs and missiles on target."[24] Admiral Burke agreed that the United States had sufficient strategic weapons. "I think," he said, "we do have too much retaliatory power, and I think that we should put more money into limited capability."[25] General White called attention to the slow reaction time of the first-generation Atlas and Titan missiles and observed: "I feel we should not increase the production of either of those missiles under the present circumstances when all factors including the manned bomber are considered plus the fact that the Minuteman, the second generation, the solid fuel missile is, shall we say, just around the corner."[26] Speaking for the Strategic Air Command, General Power said: "I think you should produce the Atlas at the maximum logical, practical rate, because you are going to get it first. . . . I think we ought to get it as fast as we can, and get it on hardened sites." But Power was even more enthusiastic about the Minuteman, which would be relatively cheap and could be deployed in large numbers either in hardened underground silos or on mobile railway trains. "This is really the philosophy of deterrence," he explained, "in that we will have so many of these missiles. . . . Then it becomes mathematically impossible for an aggressor to destroy them all, and you will always survive with a percentage high enough to strongly deter him."[27] Only Lieutenant General Schriever, who admitted that he "would have to be considered as not necessarily biased but certainly perhaps narrow" in his viewpoint, strongly urged the need for more ballistic missiles at an earlier date. Schriever considered that the Atlas and Titan missiles would be useful throughout the 1960's and would have "considerably greater growth potential than the Minuteman."[28]

Although they supported the Eisenhower ballistic missile program, General Power and the other Air Force leaders were apprehensive about the Soviet missile threat to the United States. On the basis of tangible evidence, Power privately admitted that the United States knew the locations of the experimental and test missile sites in the Soviet Union, but he pointed out that the Soviets might not be deploying their operational missiles from the same type of relatively ponderous sites that the United States was erecting.[29] In an effort to reduce the vulnerability of the Strategic Air Command, General Power sponsored the testing of an airborne alert posture during 1958. In this concept bomber crews flew courses and met aerial tankers at optimum points which ensured that the bombers could attack an assigned target at any time that they were in the air. Early in 1959 Power requested the Joint Chiefs of Staff to authorize SAC to begin a continuous airborne alert.[30] When he appeared before the Subcommittee of the House Committee on Appropriations in February 1959 Power explained the airborne alert concept. "I feel strongly," he said, "that we must get on with this airborne alert to carry us over this period."[31]

During the Congressional hearings on the defense budget for fiscal 1960, Democratic members found little satisfaction in the expectation that the United States would lag behind the Soviets in intercontinental missiles. In February 1959 the House Committees on Armed Services and on Appropriations asked for pertinent data on the possibility of matching the Soviets missile for missile. After study, the Air Force recommended against a "crash program" in May but found it possible to plan for the orderly establishment of 17 Atlas squadrons, 12 Titan squadrons, and 3 Minuteman (150 missiles) squadrons by June 1963. In July Secretary McElroy announced that the Soviets possessed only 10 long-range weapons "at most," but Congress proved in no mood to accept the administration missile program. In August it accordingly voted an additional $85 mission looking toward eight additional Atlas squadrons and $87 million to further accelerate the Minuteman development program. Congress also added a section to the 1960 appropriation act authorizing the Secretary of Defense, upon the determination of the President, to provide for the cost of an airborne alert as an excepted expense.[32]

In preparation for his defense of the fiscal 1960 defense budget, Secretary McElroy had referred the individual service budgets to the Joint Chiefs of Staff, and they as a corporate body had advised McElroy that they "found no serious gaps in the key elements of the budget."[33] With such reassurance, McElroy informed the Senate on 17 June that he would probably spend any additional money appropriated for Minuteman but would impound any additional funds for Atlas.[34] Accepting the need to permit flexible decisions, the 1960 appropriation bill authorized the Secretary of Defense to transfer funds in order to accelerate the missile programs he deemed advantageous. This action seemed doubly wise since Atlas tests conducted during the spring of 1959 were marked by a spectacular series of failures, leading General White to comment: "A faint heart in. . . February to July 1959 could well have caused a program cancellations of Atlas." In the autumn of 1959, Atlas began "turning in a remarkable performance," and new and better informed decisions could be made on the ICBM programs. Prepared under the direction of Secretary Gates, the defense missile program for fiscal year 1961 called for 13 Atlas and 14 Titan squadrons and for funds to establish a production facility to manufacture 30 Minuteman missiles per month, this despite the fact the the Minuteman was still in research and development.[35]

In the last half of 1959 the Department of Defense also considered General Power's request that the Strategic Air Command should be augmented in order to undertake an air alert posture. Power specifically recommended that the Strategic Air Command should be given men, spare parts, and operating funds to permit a continuous air alert with one-fourth of its B-52 force. General White was unwilling to go along with Power's proposal that the continuous air alert be put into effect, but he recommended that SAC be provided an on-the-shelf capability to conduct the around-the-clock alert with one-quarter

of its B-52's in times of national crisis. To make a long story short, the Joint Chiefs of Staff accepted air alert in principle, but they were not willing to accept the estimated $3 billion that Power's proposal would cost. Shortly after he took office, Secretary Gates released $85 million to enable SAC to begin procurement of long leadtime spare parts for an airborne alert, and he directed the Air Force to make plans for implementing an airborne alert program without increasing its manning level. As subsequently worked out between Gates and the Air Force the defense budget for fiscal year 1961 made provisions whereby the Strategic Air Command would have an emergency capability to maintain one-eighth of its B-52's on a continuous airborne alert. This action satisfied the Department of Defense and the Joint Chiefs of Staff, but it did not satisfy General Power. "I am compelled to reiterate," Power wrote White on 10 December 1959, "that the goal for a heavy force must be one-fourth. Any steps short of this, while certainly steps in the right direction, are based on a gamble too great to take--the security of the United States."[36]

While defending the fiscal year 1961 defense budget on 13 January 1960, Secretary Gates emphasized that no "deterrent gap" was in prospect, but he conceded that: "If we compare the estimated Soviet ICBM and sea-launched missile programs with plans for deployment of U.S. ICBM's and Polaris missiles, we note that the Soviets may enjoy at times a moderate numerical superiority during the next 3 years."[37] Looking for new methods of evaluating the potential threat, Gates announced on 20 January that the National Intelligence Board would begin to estimate projections of Soviet ICBM strength on the basis of "intent" rather than "capability." Based upon "intent" the revised national intelligence estimate accordingly reduced the number of long-range missiles that the Soviets were expected to have by mid-1961 by 66 percent of the figure that had been accepted earlier.[38]

The Eisenhower administration's assurances did not quiet public fears about the missile gap and what it could mean. In The Uncertain Trumpet which was published in January 1960, General Taylor stated: "My personal conclusion is that until about 1964 the United States is likely to be at a significant disadvantage against the Russians in terms of numbers and effectiveness of long-range missiles--unless heroic measures are taken now."[39] Speaking before the Economic Club of New York City on 19 January, General Power stated that with 300 intercontinental missiles the Soviet Union could virtually wipe out the 100 facilities from which the United States could launch aircraft or missiles. "With adequate and timely preparations for meeting added demands for support," Power added, "SAC can maintain an airborne alert long and effective enough to bridge what could otherwise become the most dangerous gap in our military posture since Pearl Harbor."[40] On the floor of the Senate on 27 January, Senator Symington urged that the unfavorable missile gap still existed even when new estimates based on Soviet intent

rather than capability became the standard of prediction. "The truth is," he said, "that if we compare the ready-to-launch missiles attributed to the Soviets on the new intelligence basis with the official readiness program for U.S. ICBM's, the ratio for a considerable length of time will be more than 3 to 1."[41]

Obviously seeking to allay public apprehension in late March 1960, the Department of Defense summarized its views in a 17-page letter sent to some 600 business leaders. "For more than a year now," the letter stated, "a few critics of the defense program have been successful to an incredible degree in confining discussion of our military strength to one single segment--the intercontinental ballistic missile."[42] From General Twining down, Air Force officers who appeared before Congressional committees supported the administration's viewpoint about the missile gap. "On the basis of all the information available, and in view of the mix and strategic locations of our retaliatory weapons systems," Twining said, "I just do not believe that any nation possesses the ability to destroy us, or attack us, without receiving unacceptable damage in return."[43] While General White first observed that he would personally like to see more ICBM's, more B-58's, and a number of other things if "we had more money," he submitted a written statement two days later to the House Subcommittee on Appropriations which declared: "The Air Force has taken into account all the known aspects of the threat and the forces required to deter that threat, within the major parameters of time, numbers, and state of the art. The present mix of ICBM's. . . is in our judgment the best force obtainable within these limitations."[44]

Apparently seeking to head off a political issue, the Republican Party platform adopted in the summer of 1960 pledged the party to accelerate missile programs, but the "missile gap" continued to be a rich political issue. Both Senator Kennedy and Senator Johnson had been active critics of the Eisenhower defense program, and in the course of the presidential campaign Kennedy demanded "new defense goals" and attacked the Republicans for not doing enough in the missile gap crisis.[45]

* * * *

In his speeches during the two years prior to 1960 Senator Kennedy often expressed his conviction that the Soviets would take advantage of their growing strategic nuclear missile capability as a "shield from behind which they will slowly, but surely, advance--through Sputnik diplomacy, limited brush-fire wars, indirect non-overt aggression, intimidation and subversion, internal revolution, increased prestige or influence, and the vicious blackmail of our allies." He maintained that the Soviets had "invalidated the original strategic concept of NATO, by outflanking its key element--the deterrent power of the U.S. Strategic Air Command." Kennedy criticized the Eisenhower administration for cutting the numbers and

strength of Army and Navy ground forces and for failing to provide the airlift and sealift needed to give those forces swift mobility for deployment anywhere in the world.[46] As has been seen, General Taylor's proposal for a national military program of "flexible response" also emphasized the development of limited war forces deployed in theaters of operation, limited war reserves in the United States, and provision of sea and airlift mobility for the limited war forces.[47]

On the philosophical level the Air Force did not deny that small wars might be becoming more likely, but it was unable to accept the argument that since small wars might be more probable than a general war the United States must devote more of its scarce resources and planning to them. One Air Force speaker observed: "This is like an investment counselor advising the head of a family to buy automobile insurance before life insurance because he is more likely to dent his fenders than he is to die."[48] Speaking of the airlift problem on 27 January 1960, General White noted that it had been around a good many years and was solely attributable to the fact that no one had been able to establish a definite requirement for additional airlift within existing budgetary guidelines. "If there is to be more airlift," White added, "the only question is to establish a requirement for it, and provide the funds."[49]

Within the Department of Defense the problem of providing air mobility for the Army traced back to 1954-55 when the Army advanced the concept that limited war was the most likely threat to the United States. Within the Air Force the problem of military airlift involved the separate capabilities of tactical troop carrier aviation whose old mission was curtailed at the lower extremity by the Army's development of organic airlift and of the Military Air Transport Service (MATS) whose capabilities were kept in check by civil air carriers which insisted that military air transportation unfairly and inefficiently competed with the civil reserve air fleet. Expenditures for transport aircraft also competed unfavorably for money and productive capability required to support combat aircraft.

During the Korean war the Air Force had accepted the Tactical Air Command's concept that intratheater troop carrier airlift forces should comprise heavy, medium, and assault troop carrier wings, the latter to be composed of a fixed-wing group and another rotary-wing group. Such a force would be able to serve all theater airlift requirements from the front lines to the theater's rear area, and requisite units were programed in the 137-wing Air Force objective. The Air Force procured C-124 aircraft for the heavy wings, C-119's for the medium wings, C-123's for the fixed-wing assault groups, and H-21 cargo helicopters for the rotary-wing assault groups. This program was changed even before it was accomplished. Late in 1954 the Army stated that it had no requirements for Air Force rotary wing support within the combat zone.[50] Despite a successful employment of assault-rotary wing troop carrier squadrons in the

"Sage Brush" maneuver in November and December 1955, the Air Force decided in January 1956 to concede superiority in rotary-wing air transport to the Army, this decision being based both upon the Army's manifest determination to possess its own combat-area air transport and a belief that helicopters were too short ranged and vulnerable to serve as assault aircraft. The Tactical Air Command dropped plans to activate additional rotary-wing assault troop carrier groups and inactivated the existing units of this type in July 1956.[51] As a part of the Department of Defense's establishment of a single manager and industrial fund system for military airlift, the Tactical Air Command's C-124 wings and groups were transferred to MATS on 1 July 1957. These C-124's would continue to perform the same Army training maneuvers, DEW-line support, and other nonscheduled tasks as they had previously been performing.[52]

In May 1956 troop carrier capabilities met stated requirements for existing emergency war plans, but General Weyland nevertheless considered the troop carrier end position in the 137-wing program to be marginal at best since the programing did not reflect growing demands for intratheater airlift.[53] Army officers stated that troop carrier deficiencies existed, but the Army did not make official requirements for added theater airlift units.[54] Early in 1957 Weyland also protested that the assignment of the C-124's to MATS would vastly complicate the Tactical Air Command's CASF deployments. As it happened, however, the Tactical Air Command began to profit from acquisition of new C-130A and C-130B Hercules troop carrier aircraft as replacements for C-119's. The versatile turboprop Hercules had good short-field characteristics, truck-bed loading heights, and an airdrop capability, and it appeared to be a suitable aircraft to replace the C-123 as well as the C-119. Interested in getting intercontinental transportation for its CASF's, the Tactical Air Command also placed a requirement for the development of a long-range version of the Hercules, designated the C-130E. The increased capabilities of the Hercules permitted reductions in regular troop carrier unit strength. When the retrenchment neared completion in 1959 the Tactical Air Command possessed two wings of C-130's and two wings of C-123's. In the theaters, the United States Air Forces in Europe possessed one wing of C-130's and one wing of C-119's and was additionally supported by one squadron of MATS C-124's on rotational duty. The Pacific Air Forces had one wing of C-130's and was additionally supported by two MATS C-124 squadrons. In order to receive the troop carrier aircraft released from regular units, the Air Force in November 1957 programed the strength of the Air Force Reserve at a force structure of 15 troop carrier wings. By 1959 the Air Force Reserve had 14 C-119 and 1 C-123 wings, all of which were available to the Tactical Air Command for airlift and for exercises and maneuvers with the Army.[55]

When the Military Air Transport Service was established in 1948, the Navy chose to maintain the organizational integrity of Marine Corps assault transport squadrons and Navy fleet logistic

air wings. The two fleet logistic air wings (one being assigned to the Atlantic Fleet and one to the Pacific Fleet) provided special, immediate, and unpredictable airlift required by the fleet commanders.[56] By 1957 the Navy had 40 four-engine aircraft assigned to MATS and 112 transport planes (including 35 four-engine aircraft) assigned to fleet logistic air wings.[57] The Air Force followed the same pattern for the transportation of nuclear weapons. In order to provide expedited weapons delivery anywhere in the world, the Air Materiel Command activated three logistic support squadrons in the years 1952-54. These squadrons collectively possessed 36 C-124 aircraft in 1959. By 1959 the Strategic Air Command also employed three strategic support squadrons, each with 16 C-124 aircraft, to move nuclear weapons between its bases within the United States.[58]

Based upon the seminal thinking of Major General William H. Tunner, who was then Deputy Commander, Air Materiel Command, and upon the work of Brigadier General John P. Doyle, Air Force Director of Transportation, the Air Force accepted the concept in 1953-54 that accelerated air delivery of high value logistical support items (particularly aircraft engines) would result in large savings of high cost items that otherwise would have to be stocked in large quantities. Issued on 30 March 1954 the controlling Air Force policy regulation described the objectives of the use of air transportation as being to develop a wartime capability for providing rapid and flexible deployment of men and materiel, to expedite the transaction of business, and to reduce the nonproductive time of men and materiel by a reduction in pipeline time.[59] Extending the policy throughout the government, the White House on 26 May 1954 issued a directive charging all agencies to make wider use of air transportation.[60] In the Air Force the use of airlift for the transportation of engines and other "High Valu" spares resulted in an estimated $1.5 billion savings in the purchase of spare equipment between 1955-58 and also permitted the closing of a number of overseas air depots,[61] but it also posed a requirement for highly-reliable special air transport services. Beginning in June 1954 the Air Materiel Command annually contracted with civil airlines for the services of some 54 C-46 Logair aircraft which were employed in scheduled flights between Air Force depots, air bases, and ports of aerial embarkation in the United States.[62] In addition to its organic air transport capabilities the Navy in July 1950 instituted a contract air service--called Quicktrans--to facilitate logistical support within the United States. The Navy ordinarily contracted each year on a bid basis for the performance of these services without specifying the number of aircraft that the civil contractor would employ. In 1959, however, eight DC-4 (C-54) cargo aircraft were being used by the Quicktrans contractor.[63]

Although the Military Air Transport Service had been established in 1948 as the Department of Defense air transport agency, the performance of this mission was necessarily affected by the proliferation of special purpose transport organizations outside of its control.

The mission of MATS required it to "provide under one authority, for the transportation by air of personnel (including the evacuation of sick and wounded), materiel, mail, strategic materials, and other cargoes for all agencies of the Department of Defense and as authorized for other Government agencies of the United States, subject to priorities and policies established by the Joint Chiefs of Staff."[64] War requirements for military airlift were dictated by the emergency war plans approved by the Joint Chiefs of Staff, and the routine usage of MATS airlift was allocated by the Joint Military Transport Committee. Except for the Navy transports assigned to it, MATS was funded and supported by the Air Force, and such new planes as it received came principally from appropriated Air Force funds.[65] Calling attention to the many duplicative air transport services that existed, the Hoover Commission on Governmental Organization in 1955 recommended that the Secretary of Defense issue directives merging all of the services within the Department of Defense (except for administrative aircraft, which ought to be "drastically reduced" in number) into the Military Air Transport Service. It also recommended: "That the peacetime operations of the integrated MATS be restricted and realistically limited to persons and cargo carefully evaluated as to necessity for military air transportation and, only after commercial carriers have been utilized to the maximum practicable extent, should transportation on Service carriers be authorized."[66] Issued on 7 December 1956 the Department of Defense directive entitled "Single Manager for Airlift Service" designated the Secretary of the Air Force as the single manager and stated that he would work through MATS which would be the single manager operating agency. The intent of the directive was to integrate into "a single military agency of the Department of Defense all transport type aircraft engaged in point-to-point service whose operations are susceptible of such scheduling, and such organizational and other transport aircraft as may be specifically designated by the Secretary of Defense." As has been seen, the Air Force transferred the Tactical Air Command's C-124's to MATS, and the Navy similarly assigned 15 four-engine aircraft from its fleet logistic air wings to the single management agency. When industrial funding was begun on 1 July 1958 MATS received a one-time appropriation of $75 million to use as a revolving fund that would be replenished as airlift was sold to service customers.[67] The reorganization of MATS on the single-manager industrial fund basis ended complaints that a considerable part of the military airlift traffic comprised items that did not require air movement, but the industrial fund also emphasized the airline characteristics of the military air service. Moreover, some 920 Air Force and Navy transport aircraft remained outside the control of MATS.[68]

The conversion of the Military Air Transport Service to industrial funding did not affect the fact that its modernization aircraft would have to come from appropriated Air Force or Navy funds. When he was in command of MATS, Lieutenant General Joseph Smith

insisted that MATS required new jet transport aircraft. In order that it would be able to handle outsize missile cargoes, MATS began to take delivery of a total of 23 turboprop C-133 Globemaster III aircraft in August 1957. The C-97's replaced by the new C-133's were transferred to Air National Guard squadrons. When Lieutenant General Tunner took command of MATS on 1 July 1948, he also insisted that modernized equipment ought to be provided, but his planning brought him into quick competition with the Strategic Air Command. Tunner's studies indicated that the most feasible means of providing cargo-jet (C-jet) aircraft would be to purchase a quantity of "swing-tail" C-135 planes. This was the same plane that Strategic Air Command held in highest priority for procurement as the KC-135 tanker. While SAC admitted that jet transports would speed the recovery and relaunching of post-strike and restrike forces, it was strongly opposed to a diversion of KC-135 resources which would reduce the strength of its initial striking force. Speaking of the situation in July 1958, General LeMay said: "I would like to have some jet transports." But he immediately added: "If you gave us money now for jet airplanes, I would buy tankers, not airplanes for MATS. . . . I think we would increase our combat capability more in that manner than we would in augmenting the MATS fleet."[69] General Twining emphasized that the Joint Chiefs of Staff had an open mind in regard to airlift, but, with only so much money available, he had to observe: "Somewhe the Joint Chiefs of Staff as a corporate body has to make up its mind what you are going to buy."[70]

At the same time that it had a secondary priority to combat forces, the Military Air Transport Command was jealously regarded by many civil air carriers. From its establishment, MATS had figured its aircraft requirements in peacetime in terms of the capability it would require to perform a D-day mission. Under ideal circumstances the military air transport force maintained in peacetime would have equalled D-day requirements and its aircrews would have been flown at wartime rates in order that they would be capable of surging to the wartime requirements without delay. The maintenance of such a fleet in peacetime, however, would have been very costly, and the most practicable means of augmenting military airlift involved use of planes from the Civil Reserve Air Fleet (CRAF). Even with such augmentation, MATS would have to surge into all-out action on D-day and maintain a high tempo of operations for 30 days. This posed a requirement for well-trained military crews, who needed to be flying at least 40 hours a month in peacetime in order to be proficient. From experience, MATS had learned that it had to exercise its system at a daily aircraft utilization rate of 6 hours if it was to be able to meet wartime requirements. At the beginning of the Berlin airlift, for example, MATS had been operating its aircraft at about 4 hours a day, and it was able with priority effort to get its rate up to 5½ hours a day by the end of 30 days. At the start of the Korean war, MATS was operating at a rate of 2½ hours a day, and it was able to increase to only 4.3 hours in the first

30 days. In each instance, MATS was able to purchase civil airlift to augment its resources, but the civilian planes were unable to fly into either Berlin or into Korea. During the Korean conflict the cost of the civil airlift amounted to $69,941,034 in fiscal year 1951, to $68,951,344 in fiscal year 1952, and to $70,843,376 in fiscal year 1953.[71] With the ending of the war in Korea government contracts for civil air transport rapidly decreased, but for two years shortages of civilian airlift in an expanding economy allowed the civil carriers to maintain their prosperity. By 1956, however, the civil airlines were receiving new equipment in large amounts, and the supply of civil airlift began to exceed demand. By flying MATS at a rate of slightly more than 4 hours a day in fiscal years 1956 and 1957, the Department of Defense was able to provide $43,269,349 and $49,746,935 in contracts with the civil air carriers, but the civilian operators nevertheless needed more business. People whom Assistant Secretary of the Air Force Dudley C. Sharp sadly said should have known better began to describe MATS as "a billion dollar boondoggle," a "second family car," "plush," "excessively costly," "unnecessarily large," and most frequently "competitive with the carriers."[72]

In the spring of 1958 Congressional committees investigated the MATS-CRAF problem. The House Committee on Government Operations recommended that the MATS fleet should be modernized, but it also recommended that MATS "should concentrate on outsize and special-cargo traffic and technical missions, leaving to the civil air carriers the primary responsibility for the transportation of passengers and more conventional kinds of military cargo."[73] Concurrent hearings by the Senate Commerce Subcommittee arrived at similar conclusions. Speaking of MATS, Senator A. S. Monroney said: "Our quarrel is that they haven't got any special-duty modern equipment except the C-133. . . while they are duplicating, and continuing to duplicate in new purchases, the passenger carrying capacity that is available in large amounts."[74] Seeking a solution to airlift problems, President Eisenhower asked the Secretary of Defense on 23 July 1958 to make a study of the military role to be performed by MATS in peace and war. During the year and a half that this study was underway in the Office of Assistant Secretary of Defense (Supply and Logistics) an extraordinary amount of attention was given to the future of the Military Air Transport Service. According to General Twining the Joint Chiefs of Staff made 18 airlift studies during 1958, three being major studies "about the size of the New York telephone book." Airlift, Twining added, "has been studied and restudied more than any other single problem we have."[75]

Shortly after he assumed command over MATS, Lieutenant General Tunner stated a strong case for the assignment of jet aircraft to the military airlift command. These planes could be justified by their relatively low cost of operation, their ability to fly non-stop to Europe, and the personnel savings incident to their use. Tunner also announced criteria for an effective air transport force,

namely the ability to be "immediately available and responsive to tight military control. . . . conditioned to operating as part of a military combat effort with attendant consideration of command and discipline. . . . trained and ready to undertake flying in unusually hazardous conditions. . . . prepare[d]. . . for use of very large volume capacity aircraft, and for the handling of large bulk and, frequently, very sensitive cargo loads. . . composed, in part, of aircraft which are readily convertible from cargo to passenger and to patient-evacuation use. . . be able to shift operational effort over wide geographical ranges."[76] Tunner recognized that MATS depended upon the civil reserve air fleet for augmentation, but he insisted that there was a hard core military mission that must be performed by military crews flying modern aircraft. He maintained that these military planes must be flown at a peacetime rate of 5 hours a day in order to meet wartime surge requirements. This peacetime flying would generate air transportation, which in the interest of the national economy had to be used for the movement of defense traffic.[77] The experience of MATS in the Lebanon and Taiwan crises in the autumn of 1958 bore out the need for military manning of a hard core airlift. Tunner believed it inadvisable to send any transports into Lebanon and Taiwan that were not manned by military crews under military discipline. No civil augmentation was required in the case of Lebanon, but when cargo backed up at San Francisco during the Taiwan crisis MATS sought civil assistance for a part-way shuttle to mid-Pacific bases. At this moment, however, the civil airlines were in the midst of the tourist season and either demanded high prices for their services or refused to bid on the government business. In November 1958 Trans-World Airline employees went on strike, and MATS had to take over all but four of TWA's contract flights.[78]

At the same time that MATS faced charges that it was in competition with the civil air carriers, General Taylor expressed dissatisfaction with the availability of airlift for local war deployments. When they criticized airlift, Army officials did not specify that there was a shortage of airplanes. General White found it difficult to reconcile the different emphasis that General Taylor placed on airlift inside and outside the Joint Chiefs of Staff.[79] In January 1958 Deputy Secretary of Defense Quarles observed: "The air transport we now have provided does meet the Joint Chiefs of Staff requirements for air transport, but it does not meet the Army concept of what the air transport should be."[80] When asked to speak to these charges in February 1958, Taylor responded: "When I look at the four engined-aircraft--the so-called strategic aircraft available in all the services--in MATS, in the Navy, in the Air Force and in the Marines, and then look at the airlines I am impressed that we have large assets. The real question is: Do we have the means to assemble these assets fast enough, and when the time comes what will be the decision as to their allocation? Because there will be lots of customers for airlift. So with these question marks

in my mind, I have difficulty in saying dogmatically 'Yes, there is enough or there is not enough.'"[81] In a positive statement of Army airlift requirements, Taylor requested the Joint Chiefs on 17 June 1958 to preallocate sufficient strategic airlift to deploy the spearhead elements of a two-division force--5,840 personnel and 7,438 short tons of impedimenta.[82] By early 1959, however, the Army was contemplating a movement of at least two of its three Strategic Army Corps divisions anywhere in the world within 30 days by a combination of precommitted airlift and sealift.[83] As a result of the detailed studies made during 1958, General Twining testified that the Joint Chiefs of Staff agreed that airlift capabilities to meet general war requirements were "generally adequate" and that four of the five members agreed that airlift capabilities were also "adequate as a basis for planning to meet limited war situations." Twining added: "We are still working on this problem to meet with General Taylor's views. But the problem here is that you can let your imagination run wild and have six or eight limited wars going on at one time."[84]

When they received General Taylor's specific airlift requirement in June 1958 the Joint Chiefs of Staff deferred final consideration of it pending the submission of detailed transportation requirements from the unified and specified commanders during 1959.[85] Although action was thus suspended, the Air Force got agreement from the Department of Defense to include $50 million in its fiscal year 1960 budget for an "off the shelf" purchase of 10 turbojet transports (converted Boeing 707's or something similar) to begin the modernization of MATS.[86] Early in 1959 Senators Monroney and Symington advocated government assistance for the development of a civil cargo aircraft, which they said was "essential, not only in terms of our specific defense needs, but also if we are to maintain our international leadership in commercial aviation."[87] On the other hand, Congress refused to appropriate the funds that the Air Force requested for the procurement of an initial order of turbojet transports and added a provision to the defense appropriation requiring $85 million of the funds voted to MATS to be made "available only for the procurement of commercial air transportation services."[88] Following another series of hearings in the spring of 1959 the House Committee on Government Operations repeated its earlier recommendation that MATS should concentrate on the handling of outsize and special cargo and technical missions and leave the transportation of passengers and conventional military cargo to civil air carriers.[89]

The Joint Chiefs of Staff reopened their airlift studies early in 1959. They considered airlift requirements for a war that might begin under three assumed conditions: six months of mobilization followed by 60 days of general war; general war occurring without warning or prior mobilization (D-day and M-day coinciding); or the resumption of hostilities in Korea. On 15 October, the Joint Chiefs reached an agreed position on airlift requirements on the

basis of planning assumptions.[90] The new Army Chief of Staff, General Lemnitzer, requested enough strategic air transportation to: (1) lift at least two reinforced battle groups and their combat equipment to any trouble spot in the world within hours of the time that the order to move was given; (2) to move by air within a matter of days enough troops and supplies to build up a full division force with necessary logistical support in the combat area; (3) to increase the size of the fighting force to two divisions within 2 to 4 weeks and to provide it with adequate supplies and supporting forces to conduct operations for an extended period of time. In regard to tactical airlift in both general and limited war situations, the Army required sufficient troop carrier airlift to lift and support the assault echelon of at least one airborne division.[91] The Joint Chiefs of Staff did not determine airlift requirements for limited wars other than in Korea. Once again, General White explained that "limited war variations were so infinite that you could not state a simple limited war requirement for airlift and . . . a hypothetical case was not one. . . upon which you can justify military requirements."[92]

Inasmuch as the Joint Chiefs of Staff did not state airlift requirements for limited war other than in Korea, Generals White and Lemnitzer agreed to tackle the problem at what Lemnitzer described as the "grassroot level."[93] On 20 November 1959, the Air Force directed the Commander, Tactical Air Command, to serve as the sole contact with Department of Army commands for all Air Force airlift applied to joint airborne training. During a visit to the Headquarters, Tactical Air Command, and Headquarters, Continental Army Command, on 21 December, White and Lemnitzer further agreed that the Tactical Air Command should be made the single Air Force focal point not only for joint training but also for the development and testing of air plans for the deployment of CONARC forces in support of emergency or contingency war plans. White and Lemnitzer also agreed on the need for a joint planning group at the CONARC-TAC level, for a lower-level joint plans development group, and for a joint CONARC-TAC strike force headquarters that would be capable of rapidly deploying Army and Air Force units placed under it. Upon returning to Washington, White and Lemnitzer concluded an agreement under which the Army specified the forces and timing for a typical limited war deployment over a long line of communications to an area with limited logistical and command facilities and the Air Force agreed to attempt to secure sufficient airlift to meet the Army requirements. As a matter of fact, the Air Force had the capability to move the specified number of people but not within the specified time parameters. The White-Lemnitzer agreement was set down and signed on 15 March 1960.[94]

Obviously exasperated with the long airlift controversy and wanting to get some matters "off my chest," General White spoke quite frankly on 27 January 1960. "The airlift presently available," he said, "meets the criteria established by the Joint Chiefs of Staff. . . . I would also submit that under the guidelines and total

defense budget. . . the most important mission the Air Force has is the strategic retaliatory force. . . . I would also say that a proper air defense of this Nation is of a very high order of importance. . . . In addition to that, we have the tactical strike missions in support of the Army. . . . I sometimes think that the Air Force is impairing its own future by standing for the Nation in those very important roles. . . . They take an enormous part of our budget. Yet at the same time we are accused of not providing airlift. There are even suggestions that the airlift functions should go to some other service. . . . I say we want it and cannot get it within the budget guidelines and within the priorities. . . . If there is to be more airlift, the only question is to establish a requirement for it, and provide the funds."[95] In the same month that General White got his opinions in the open, the long freeze on air transportation began to show signs of thawing.

In anticipation of changes in government airlift policy, Secretary of the Air Force Sharp appointed a civilian committee headed by Gordon C. Reed on 4 January 1960 to investigate the most advantageous method by which MATS could contract for commercial airlift, the number of hours of training exercises that MATS should fly in order to assure its readiness for emergency operations at 6 to 10 hours a day for 30 days, the dependability of the Air Force Reserve and Air National Guard for providing backup airlift to MATS, and the most advantageous equipment for the modernization of MATS. Working against a very short deadline, the Reed committee recommended that a greater proportion of MATS' peacetime capability should be employed in training exercises. While the committee recognized that the one-year, competitive bids through which MATS negotiated for CRAF support provided airlift augmentation at the cheapest costs, it suggested that the CRAF operators could hardly modernize their aircraft under such circumstances. It therefore recommended that MATS procure transportation from certificated and supplemental air carriers at civil tariff rates approved by the Civil Aeronautics Board. It also recommended that certificated route carriers be given the right of first refusal to all defense traffic over their routes. The committee acknowledged that its recommendations would cost the Department of Defense a great deal more money, but it believed that they would make the CRAF operators more able to provide themselves with modern aircraft.[96] These recommendations were on hand early in February when the Department of Defense study requested by Eisenhower in 1958 was released under the title of "The Role of Military Air Transport Service in Peace and War." Mindful that the feeling against MATS airline-type operations had become so strong as to constitute an effective block to the modernization of military airlift capabilities, the Defense report recommended that MATS should withdraw from routine channel operations to the extent that the function could be performed effectively and at reasonable cost by commercial carriers without detriment to the "hard-core" military mission or unnecessary

duplication of airlift services. The report recommended that MATS should "consist of a modern military air transport nucleus (hard-core) capable of meeting effectively those airlift requirements which by nature and timing must be moved by military aircraft."[97] Secretary Gates immediately accepted the report. "I have concluded," he informed the Chairman of the Joint Chiefs of Staff, "that the level of airlift capability maintained within MATS should, as an objective, be the minimum required to accommodate the Department of Defense hard core airlift requirements, and that the peacetime operations of MATS should be geared primarily to hard core mission support rather than regularly scheduled channel operations."[98]

As submitted to Congress early in January 1960, the Department of Defense budget request for fiscal year 1961 included $120.4 million for modernized airlift, the amount comprising $70.4 million for the purchase of 25 C-130B medium range troop carrier aircraft and $50 million for the development of a new "uncompromised cargo aircraft" that would be able to perform either tactical or strategic airlift functions.[99] Obviously dissatisfied with these limited proposals during the annual military posture briefing presented to the House Armed Services Committee, Chairman Vinson named Representative L. Mendel Rivers to head a special subcommittee to conduct "an inquiry into the adequacy, or inadequacy, of the national airlift, insofar as that national capability relates to the requirements of national defense."[100] When he appeared before the House Appropriations Subcommittee on 15 February, Lieutenant General Tunner posed requirements for aircraft modernization that far exceeded the administration's requests. Tunner submitted that 454 of MATS aircraft were "obsolescent in speed, range and overall capability." He posed a requirement for three types of planes: an airplane for movement of outsized cargo which was already being met by the 50 C-133's which were on hand or on order, a modest number of fast reaction planes for the support of nuclear strike forces, and, finally, "an austere workhorse airplane which will form the backbone of the military airlift forces." He proposed that the fast-reaction planes should be provided by off-the-shelf purchases of 94 swing-tail jet planes, of which 45 might well be cargo versions of the KC-135 tanker. He anticipated that MATS would need 188 "workhorse" aircraft, planes which would have to be developed as a result of a special operational requirement (SOR) and which would come into the MATS operating inventory in about five years.[101]

Looking back at the opening of the hearings of the Special House Subcommittee on National Military Airlift, Chairman Rivers would note on 8 March 1960 that "there was no sentiment whatsoever in the Defense Establishment for the support of interim modernization of MATS, and there was open hostility in some quarters outside of the Defense Establishment." For the first time, however, the military services jointly participated in a full discussion of the airlift problem.[102] While it was still taking testimony the subcommittee

arrived at a decision that MATS required expedited modernization, and on 30 March Rivers appeared before the House Appropriations Subcommittee and recommended that $50 million be appropriated for the SOR development and that an additional $335 million be appropriated for the procurement of 50 C-135's and 50 C-130B's with extended range (the latter subsequently designated as C-130E's).[103] At the conclusion of its hearings the Rivers subcommittee found that strategic airlift capabilities were seriously inadequate in terms of requirements that would be encountered in the first 20 days of either general war without warning or limited war under any then-current planning assumptions. It recommended that the military transport and troop carrier forces should be modernized, that MATS be limited to a hard-core mission, and that Air National Guard and Air Reserve units would continue to receive the planes released by the modernization programs. The committee also recommended that the CRAF fleet be modernized (this to be facilitated by longer-term contracts based on negotiated contracts that would be fair and reasonable to both parties) and that the responsiveness of CRAF crews to military requirements be increased either by legislation or by company-negotiated agreements against work stoppages.[104]

In its version of the fiscal year 1961 defense appropriation bill the House of Representatives not only appropriated the originally-requested $120.4 million but added $250 million for the procurement of 50 C-130's with extended range as well as an unspecified number of a cargo version of the C-135. This amount of money was more than the Department of Defense wanted, and in an appearance before the Senate Subcommittee on Appropriations Deputy Secretary of Defense Quarles asked that the additional amount be reduced to $150 million. The Senate reduced the $250 additional million to $190 million and provided that 50 C-130E's would be procured from this added sum. In its final bill, Congress specified that the $310.8 million voted for airlift modernization could not be diverted to other purposes, nor should any of the money be used for the procurement of aircraft to be used for scheduled passenger service. As matters worked out, the 50 C-130E's specified for mandatory purchase would cost about $170 million, and the additional funds voted by Congress would thus not permit the purchase of a meaningful number of C-135's.[105]

While the Department of Defense proved unwilling to accept the total amount of airlift funds that Congress appeared willing to appropriate, General White nevertheless believed that the airlift hearings by the Rivers subcommittee had been beneficial. Working closely together as the hearings progressed, White and Lemnitzer achieved a meeting of minds as to what the Army wanted in the way of airlift and this, White said, "implies an Air Force obligation to do its reasonable best to get it." Even though the Joint Chiefs of Staff did not pass on the White-Lemnitzer agreement, White

remarked that "in JCS deliberations in the future, at least the Army and the Air Force will be together on some subjects that we have not been together on in the past." White also welcomed the fact that Congress had expressed an opinion that modernized airlift was needed.[106]

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In the evaluations of military posture during the heat of the presidential campaign of 1960, Senator Kennedy demanded "new defense goals" and attacked the Republicans for the "missile gap" and for "unrealistic limited war preparations." On the other hand, the Republican candidate, Vice President Richard M. Nixon, pledged himself to accelerate missile programs, to intensify development of an active civil defense, and to strengthen the military might of free-world nations.

Viewed on the record the election year debates of 1960 narrowed the military differnces between the Republican and Democratic parties. Thus in August 1960 the Eisenhower administration released some $476 million previously appropriated for additional Polaris submarines, modernization of army weapons, greater airlift capability, the development of the B-70 as a weapon system, and increased capabilities for the Strategic Air Command airborne alert. In the preparation of the national defense fiscal year 1962 budget, the Department of Defense required the services to accept the 1961 budget as a starting point, but the services were authorized to present a "C" budget which exceeded the 1961 obligational authority by 5 percent and a "D" budget that included all other desirable priority items. On the basis of this guidance, the Eisenhower defense budget estimate for fiscal year 1962 totalled $44.9 billion, an increase of about 5 percent over the $43.2 billion appropriated for fiscal year 1961.[107] At the same time that the Eisenhower defense budget was being increased, Secretary of State Christian A. Herter in an address in September 1960 stated new requirements for military forces that were significantly different from those that had been required under the massive retaliation strategy. Herter said that the nation's foreign policy sought to prevent war, to reinforce historic trends that would reshape the world along constructive lines, and to move toward a world of law. This foreign policy required the United States to maintain an invulnerable strategic deterrent; to maintain "a secure and diversified capability for responding to, and suppressing, a wide variety of lesser threats to the peace;" to maintain collective security arrangements that would diminish the chance of conflict by miscalculation; and to seek "safeguarded arms reduction" which would "diminish the risk of war resulting from a continuing and spiralling arms race."[108]

Even though the Republican strategy appeared to be moving away from a transcendent emphasis on the strategic deterrent, President Eisenhower could not agree that his defense programs, kept under control by annual budget ceilings, had been inadequate for the

security of the nation. In a final address to the American people on the eve of the inauguration of President Kennedy, Eisenhower warned: "In the councils of government, we must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex. . . . Only an alert and knowledgeable citizenry can compel the proper meshing of the huge industrial and military machinery of defense with our peaceful methods and goals, so that security and liberty may prosper together."[109]

2. The Kennedy Administration: Redefinitions of Defense Policy

Early in 1961 in the days before the new administration took office on 20 January, President John F. Kennedy assembled the new men who would form his government for orientation briefings and informal talks about the affairs of state. In these talks, Robert S. McNamara, who was coming to Washington from the presidency of the Ford Motor Company to be Secretary of Defense, and Dean Rusk, who would become the new Secretary of State, agreed that there were few great issues of military policy and posture that were ~~not~~ inextricably wed to the field of foreign policy. As will be seen, the appreciation of this fact would lead to the establishment of closer and more intimate organizational relationships between the State and Defense Departments. In these early days, Kennedy also directed McNamara to recommend the size and type of military establishment required to protect national security without regard to arbitrary budget ceilings and that, having done this, to take every possible action to provide the military establishment of the appropriate size and type at the lowest possible cost.[110] "I would say," McNamara recollected, "that a major instruction which I received from President Kennedy was to develop a defense program that would assure the security of our Nation without regard to arbitrary budget ceilings. I think this instruction by itself may have had much to do with the change in the program."[111]

In his State of the Union message delivered in person to Congress on 30 January 1961, President Kennedy stated that he had instructed Secretary McNamara to reappraise the entire United States defense strategy and that pending this study he had ordered quick action to increase military airlift capacity, step up the Polaris submarine program, and accelerate the missile programs.[112] In the reappraisal of the national defense strategy one of the first concerns of the Kennedy administration was to inform itself in greater detail of the changes that were taking place in the structure and strategy of the Soviet armed forces. Following his announcement in January 1960 that the size of the Red Army forces would be greatly reduced, Krushchev had announced in May 1960 the establishment of a new rocket command as one of the five main directorates of the Ministry of Defense, on coequal level with

ground, air, air defense, and naval forces. These Soviet actions appeared to be designed to adapt the Soviet forces to new military technology, including nuclear weapons and missiles.[113]

Assembled in Moscow in November 1960, a Conference of World Communist Parties addressed the problem of defining Communist strategy during an era of thermonuclear missiles, and Chairman Krushchev reported the findings of the conference in a speech entitled "For New Victories of the World Communist Movement" delivered on 6 January 1961. After describing the horrors of a thermonuclear war, Krushchev drew the conclusion that Communist ideology could no longer regard a general thermonuclear war or even a limited war that would rapidly escalate into thermonuclear war as being a useful instrument of policy for the extension of world communism. Krushchev nevertheless asserted that "liberation wars and popular uprisings" were "not only admissible but inevitable." In order to hasten the historical inevitability of the triumph of world communism, Krushchev stated that the Soviets would support subversion, guerrilla, and insurgency wars, particularly in the emerging nations of the world. Shortly after he took office, President Kennedy secured a detailed analysis of Krushchev's speech, which he circulated among the top governmental officials with instructions to "read, mark, learn, and inwardly digest." Referring back to this speech, McNamara later commented that in it Krushchev "stated as clearly as any one has ever stated, to my knowledge, the strategy of the Soviet Union."[114]

During his first fortnight in office McNamara examined the relative missile capabilities of the United States and the Soviet Union. In August 1960 the official estimate of the number of ICBM's that the Soviets could be expected to have by mid-1961 had again been reduced, so that the estimate was only 30 percent of what it had been at the beginning of the year.[115] McNamara soon determined, as he said, "that although there might have been a missile gap there certainly was no deterrent gap and that in any event there almost certainly would not be a missile gap at any time in the near future if this country pursued an appropriate missile procurement program."[116] On the evening of 6 February McNamara met with a group of news correspondents for an off-the-record background briefing and one of them subsequently broke confidence and stated that McNamara said there "appeared at this time no signs of a Soviet crash effort to build intercontinental missiles, though overall Russian military preparations were continuing at a rapid pace." McNamara subsequently said that this statement was an unwarranted publication that came "directly from our national intelligence estimates."[117] At a press conference on 8 February, President Kennedy noted that the Defense Department had not yet indicated whether or not there was an existing missile gap, but with the passing of time it became evident that the Soviets were procuring only a small fraction of the number of ICBM's that they had been believed capable of producing in 1959.[118] Exactly why the missile gap did not materialize remained a mystery. Looking back in 1964 General Schriever believed that the missile gap had existed in 1957 and 1958, even though the

expected numbers of Soviet ICBM's did not materialize. "The threat, particularly in the ballistic missile area," he argued, "was real." Schriever believed that the Soviets had been ahead in the production of liquid-fueled missiles, but that they had been slow to make a breakthrough into solid propellant technology. "I personally believe," he added, "that the solid-propellant breakthrough is the most important breakthrough since World War II. Relatively speaking it made it possible for us to mass-produce ballistic missiles. The Soviets were far down the line with a large liquid-fuel missile with which they are unable to match us in numbers. So it was this breakthrough that really has given us the upper hand in ballistic missiles."[119]

Facing the need for a revision in the Eisenhower defense budget Secretary McNamara conceived that the defense budget had to "start with the political objective, the formulation of which is presented to us by the Secretary of State and upon which the President indicates his desires that we develop a military program that will support the political objective."[120] As announced by President Kennedy on 28 March 1961, the new basic U.S. defense policies were as follows:

> 1. The primary purpose of our arms is peace, not war--to make certain that they will never have to be used--to deter all wars, general or limited, nuclear or conventional, large or small--to convince all potential aggressors that any attack would be futile--to provide backing for diplomatic settlement of disputes--to insure the adequacy of our bargaining power for an end to the arms race. . . .
>
> 2. Our arms will never be used to strike the first blow in any attack. . . . In the area of general war, this doctrine means that such capability must rest with that portion of our forces which would survive the initial attack. We are not creating forces for a first strike against any other nation. . . .
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> 3. Our arms must be adequate to meet our commitments and insure our security, without being bound by arbitrary budget ceilings. . . . We must, of course, take advantage of every opportunity to reduce military outlays as a result of scientific or managerial progress, new strategic concepts, a more efficient, manageable and thus more effective Defense Establishment, or international agreements for the control and limitation of arms. But we must not shrink from additional costs where they are necessary. . . .
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> 4. Our arms must be subject to ultimate civilian control and command at all times, in war as well as peace. . . . This requires effective and protected organization, procedures, facilities, and communications in the event of attack. . . as well as defensive

measures designed to insure thoughtful and selective decision by the civilian authorities. . . .

5. Our strategic arms and defenses must be adequate to deter any deliberate nuclear attack on the United States or our allies--by making clear to any potential aggressor that sufficient retaliatory forces will be able to survive a first strike and penetrate his defenses in order to inflict unacceptable losses upon him. . . .

6. The stength and deployment of our forces in combination with those of our allies should be sufficiently powerful and mobile to prevent the steady erosion of the free world through limited wars; and it is this role that should constitute the primary mission of our oversea forces. . . . In most areas of the world, the main burden of local defense against overt attack, subversion and guerrilla warfare must rest on local populations and forces. But given the great likelihood and seriousness of this threat, we must be prepared to make a substantial contribution in the form of strong, highly mobile forces trained in this type of warfare, some of which must be deployed in forward areas, with a substantial airlift and sealift capacity and prestocked oversea bases.

7. Our defense posture must be both flexible and determined. Any potential aggressor contemplating an attack on any part of the free world with any kind of weapons, conventional or nuclear, must know that our response will be suitable, selective, swift, and effective. . . . We must be able to make deliberate choices in weapons and strategy, shift the tempo of our production, and alter the direction of our forces to meet rapidly changing conditions or objectives at very short notice and under any circumstances. . . . To purchase productive capacity and to initiate development programs that may never need to be used. . . adopts an insurance policy of buying alternative future options.

8. Our defense posture must be designed to reduce the danger of irrational or unpremeditated general war--the danger of an unnecessary escalation of a small war into a large one, or of miscalculation or misinterpretation of an incident or enemy intention. Our diplomatic efforts to reach agreements on the prevention of surprise attack, an end to the spread of nuclear weapons--indeed all our efforts to end the arms race--are aimed at this objective.[121]

These basic policies were used to direct the revision of the defense budget for fiscal year 1962, and they would continue to provide guidance to national defense posture, since the Kennedy administration would not issue the Basic National Security Policy papers that had annually guided the preparation of defense budgets during the Eisenhower era.

* * * *

Inside the Department of Defense the work of restructuring the national defense posture in terms of the characteristics of the forces desired by President Kennedy and (inferentially) by Secretary Rusk would be accomplished first by making "quick fix" amendments to the 1961 fiscal year budget and then by the preparation of a longer range 5-year defense projection which would be offered to Congress with the fiscal year 1963 budget. To make the basic reappraisal of military strategy and capability directed by the President in his State of the Union address, McNamara appointed several special task groups, each under the direction of a senior government official and with representatives from the Joint Staff and the military services. The task group assigned to study strategic delivery system requirements was headed by Charles J. Hitch, Assistant Secretary of Defense for Comptroller; Paul H. Nitze, Assistant Secretary of Defense for International Security Affairs, headed the task force reviewing limited-war requirements; and Dr. York, who continued to be Director of Defense Research and Engineering, headed the task force that reviewed research and development projects.[122] Not content to depend upon briefings and special studies for his information, McNamara also prepared a list of 96 questions relating to defense projects--called by some "McNamara's Ninety-Six Trombones"--which he sent to the Joint Chiefs and the service departments for answer. These questions were subsequently expanded into some 150 research projects.[123] Accompanied by General Lemnitzer, who had become Chairman of the Joint Chiefs of Staff on 30 September 1960, McNamara went to Omaha late in February for briefings on the Strategic Air Command's strike planning and to discuss with General Power the means for increasing the Strategic Air Command's ground alert posture to 50 percent, thereby reducing its vulnerability.[124]

Among McNamara's associates both Hitch and Nitze were familiar with the counterforce strategy proposals, and, in addition to this, McNamara asked to be briefed on the subject of counterforce shortly after he took office. After hearing the briefing of the Strategic Air Command's strike plans, McNamara was said to have disliked what he called the "spasm war" that seemed inherent in an all-out salvo of nuclear weapons at the beginning of a general war.[125] After having become acquainted with counterforce and having studied the finite deterrent strategy favored by the Navy, McNamara noted that both strategic concepts stressed the requirement for highly-

survivable second-strike forces and the importance of maintaining positive and secure command and control systems. As early as February, McNamara was inclined to accept some elements of counterforce as one of the building blocks in the new defense strategy because of the multiple options that it offered, but he did not believe that the terms "finite deterrent" or "counterforce" were "used sufficiently consistently or precisely" to warrant their being applied to the revisions of the defense budget which were submitted to Congress on 28 March 1961.[126]

Instead of emphasizing any particular strategy, the McNamara revisions to the Eisenhower budget followed the same categories of interest already made evident by the establishment of the task forces. The first categories of budget changes were concerned with the development of strategic delivery systems for nuclear weapons that would be able to survive an attack with sufficient power to destroy the enemy's warmaking capacity in a second strike. McNamara announced that it would be necessary to shift as rapidly as possible from the first-generation Atlas and Titan programs to second-generation solid-fuel Polaris and Minuteman missiles. The Eisenhower budget included funds for the construction of 5 Polaris submarines in fiscal year 1962 for a total of 19. Drawing upon fiscal year 1961 funds, President Kennedy had already authorized 5 additional Polaris submarines, and McNamara asked Congress to add 5 more to the 1962 funding, making a total of 29 Polaris submarines to be constructed. In view of the increase in Polaris submarines, McNamara stated that plans to mount Polaris missiles on the nuclear-powered cruiser Long Beach had been cancelled. Where the Eisenhower budget had funded for a 13 squadron Atlas program and a 14 squadron Titan program, McNamara advocated the deletion of 2 Titan squadrons in view of the funding of 12 Minuteman squadrons, each to possess 50 missiles which would be widely dispersed in well-hardened underground sites. The Eisenhower budget had programed 3 squadrons of train-mounted mobile Minuteman missiles, but the cost of the mobile squadron was expected to be over 50 percent greater than that of a fixed-base squadron and the revised budget deferred mobile Minuteman deployments. McNamara additionally recommended that the production capacity of Minuteman should be doubled, looking toward even greater procurement of these missiles for the future. The Polaris-Minuteman mix had been carefully thought out: the Polaris submarines appeared to be relatively invulnerable, but a Polaris deployment cost more than an equivalent Minuteman deployment, and there was an additional danger that some breakthrough in antisubmarine detection apparatus might reduce the invulnerability of the Polaris system. Both Polaris and Minuteman fitted into President Kennedy's defense criteria: "Polaris, and to a somewhat lesser degree Minuteman," McNamara pointed out, "are not dependent for their survival on a hair-trigger response to the first indications of a ballistic missile attack and, therefore, lend themselves to a more calculated and deliberate response." He urged that these missiles would

significantly increase the nation's deterrent power. "It is essential if the deterrent is to be a successful deterrent," he said, "that an enemy understand that we have developed a deterrent power which can survive a surprise attack with sufficient force to destroy an enemy and it is that element of credibility which makes it a deterrent."[127]

During World War II McNamara had served with Army Air Force bomber units as a statistical control officer, and he remarked that it was difficult for him "to conceive of a time when we would not have them." Nevertheless, when judged according to the new defense criteria that strategic weapons had to be either survivable or capable of quick reaction, manned bombers did not compare favorably with the Minuteman or Polaris missiles. Speaking of manned bombers in April 1961, McNamara observed: "I think the evidence points to a declining emphasis on them, but I am not prepared personally at the present time to say for sure that they are on the way out."[128] With B-47's still in the inventory at the time that the old B-36's were being phased out by new B-52's and the supersonic B-58's were becoming operational, the Air Force manned bomber strength reached its postwar peak of 1,800 aircraft in the 1957-59 time period. General White personally favored retention of the admittedly obsolescing B-47's as long as possible since they could provide mass for a strategic air campaign, but he nevertheless agreed to phase out the B-47's at a rate of two wings of B-47's for each additional B-52 and B-58 wing added to the Strategic Air Command's strength. Based upon the build-up to 14 B-52 wings and 2 B-58 wings, the number of Air Force strategic wings declined from 43 in mid-1959 to 37 in mid-1961, and the number of strategic bombers was reduced from 1,800 in 1957-59 to something over 1,500 in mid-1961.[129] In addition to normal bomb loads, later model B-52's were equipped to carry two GAM-77 Hound Dog missiles for use in stand-off attacks: the air-breathing Hound Dog had been successfully test launched from a B-52 in April 1959 and late in 1960 they were operationally available in one Strategic Air Command wing. It was planned that the Hound Dog would be replaced by GAM-87A Skybolt air-launched missiles and that a B-52 would be able to carry four of these 1,000-mile-range missiles. By employing Hound Dog and later Skybolt, the manned bombers would be able to penetrate through increasingly difficult Soviet surface-to-air missile defenses.[130]

Since the equipment of the planned numbers of Strategic Air Command B-52 and B-58 wings would be completed with funds provided in prior year budgets, the Eisenhower defense budget for fiscal year 1962 did not contain funds for the procurement of additional strategic bombers. Based in part upon Congressional insistence that the Air Force required the B-70 as a follow-on weapon system to the B-52 (Congress had voted an additional $265 million for the B-70 program in July 1960), the Eisenhower administration released funds for reinstatement of limited weapon system development of the B-70 in November 1960, and the Eisenhower defense budget for

fiscal year 1962 contained $358 million for the development of one stripped prototype XB-70 and two test-quantity YB-70's, the latter to have weapon system capabilities. Given the $358 million for continuing development and adequate funding in subsequent years, the Air Force planned to have a B-70 combat wing in its inventory by August 1968.[131] In departmental considerations of the 1962 defense budget late in 1960, General White was willing to accept the cut-off in the B-58 program at two wings or 116 aircraft: although these planes had supersonic dash capabilities they were very expensive, relatively short ranged, and were unable to carry either Hound Dog or Skybolt missiles. At the same time, White argued against the decision to terminate B-52 production. Pending the demonstration of missile reliability and the availability of B-70's, White urged that B-52 production facilities should be kept in operation as a hedge and insurance against unforeseen events: he actually wanted to keep both of Boeing's B-52 lines open, but he was willing to settle for one line and for a modest feasible rate of continuing B-52 production--say about four planes per month.[132]

Already in difficulty during the Eisenhower administration, the Air Force manned strategic weapons program fared poorly in the defense reevaluations early in 1961. "In reevaluating our general war position," McNamara noted, "our major concern was to reduce our dependence on deterrent forces which are highly vulnerable to ballistic missile attack or which rely for their survival on a hair-trigger response to the first indications of such an attack. Consequently, we sought to place greater emphasis on the second approach--the kind of forces which could ride out a massive nuclear attack and which could be applied with deliberation and always under control of the constituted authority."[133] Since strategic bombers could not be deployed in a mode which gave them a good chance to survive an attack, they had to be launched into the air within a relatively short tactical warning time--about 15 minutes--or risk destruction on the ground. In an era in which the enemy would be able to launch an intercontinental ballistic missile attack with little warning, the number of bombers on an alert status and capable of immediate launching promised to be much more important than the total number of bombers available in the inventory. McNamara accordingly did not recommend the procurement of additional bombers in fiscal year 1962, but he instead urged that the number of bombers maintained on constant alert be substantially increased. Only the B-52's were believed to be suited to ground alert, and, in order to provide the additional personnel that the Strategic Air Command would require to raise its ground alert posture from 33 to 50 percent, McNamara programed a phase out of B-47 wings faster than planned and the inactivation of the superseded Snark air-breathing long-range missile wing in December 1961 rather than June 1963. The B-52's and B-58's would continue in the SAC inventory throughout the 1960's but no additional aircraft of these types would be procured.[134]

Based upon this same estimate of the situation relative to the vulnerability of bombers and the fact that ballistic missiles would be plentiful in 1968, McNamara conceived that the Air Force would not have a valid operational requirement for the B-70. Even though the B-70 would operate at mach 3 at 70,000 feet altitude, it would not be able to employ Skybolt missiles. In his personal opinion, McNamara believed that a B-52 equipped with Skybolt missiles would be "a more effective, efficient delivery system" in the late 1960's than the B-70. On the other hand, there were important advantages inherent in a mixed missile and bomber force, and, from a purely technical point of view, development of a B-70 would afford an opportunity to explore the many diverse problems involved in flying a large aircraft at great speed and at high altitudes. After weighing advantages and disadvantages, McNamara terminated the B-70 as a weapon system and limited the program to three XB-70 prototypes. He established a projected development ceiling of $1.3 billion, including $800 million from prior-year funds, for the XB-70 program, and reduced the funding for it requested during fiscal 1962 from $358 to $220 million. McNamara emphasized that President Kennedy had personally made the decision on the B-70 based upon recommendations which McNamara had made. McNamara also explained that his personal recommendations came out of exhaustive personal analyses and a two-day discussion of the problem with the Secretaries and the Joint Chiefs of Staff.[135] The Eisenhower fiscal 1962 budget had not included additional development funds for the Skybolt missile in the belief that the $150 million available in the 1961 appropriation could be stretched out, but McNamara believed that the project should either be dropped or efficiently pursued and accordingly added $50 million for Skybolt development in the revised 1962 budget.[136]

While President Kennedy had committed himself to an improvement of limited war capabilities, the Department of Defense task force studying limited-war requirements ran into some initial difficulties. For one thing, the new Army Chief of Staff, General George H. Decker, called for a "man-for-man" ground force capability. "I think we should have the capability," he said, "to fight man-to-man if the occasion demands it, and I am sure there will be times in the future when that will appear to be the best course of action."[137] In the revised 1962 defense budget submitted to Congress on 28 March 1961, Secretary McNamara allocated only small strength increases to the Army and Marine Corps. The Army would continue to be structured at 14 combat divisions, but it was allocated 5,000 addditional spaces--3,000 of which were to be used to double the size of the Army special forces who were trained for guerrilla warfare. In order to enhance the effectiveness, versatility, and readiness of limited war forces, however, McNamara emphasized a twin program aimed at increased mobility and the establishment of dual conventional-atomic capabilities. Immediately after President Kennedy's State of the Union message in January, the Defense Department increased procurement of Lockheed C-130E transport aircraft from 50 to 99 planes, a

part of the augmentation order comprising the deletion of 26 shorter-range C-130B troop carrier planes. The Defense Department also directed that 17 KC-135 jet tanker aircraft which were on the production lines should be turned into a transport configuration and ordered 13 additional C-135's, making a total of 30 C-135's which would become available at a rate of two per month beginning in June 1961. The revised defense budget also increased the Navy's appropriation for modernized sealift. Most of the changes in the limited war program, however, had to do with an enhancement of non-atomic capabilities. "Even in limited war situations," McNamara explained, "we should not preclude the use of tactical nuclear weapons, for no one can foresee how such situations might develop. But the decision to employ tactical nuclear weapons in limited conflicts," he added, "should not be forced upon us simply because we have no other means to cope with them. . . . What is being proposed at this time is not a reversal of our existing national policy but an increase in our nonnuclear capabilities to provide a greater degree of versatility to our limited war forces." The revised budget provided augmented funds for purchase of modern conventional weapons, including heavy orders of Bullpup missiles and non-nuclear bombs, and a substantial increase for research and development in conventional ordnance. Funds were also included for the improvement of the capabilities of F-105 tactical fighters to handle conventional ordnance and for the initial development of a new triservice tactical fighter. "In general," McNamara said, "what we are striving for is one fighter to fill the needs of all the services--a fighter which could operate from the larger number of existing smaller airfields all over the world and yet fly without refueling across the ocean, thus greatly increasing its value for limited war purposes."[138]

When he appeared before the House Subcommittee on Appropriation on 6 April 1961, McNamara was asked the reason why "more bodies" had not been provided for the Army and Marines. Although he noted that limited war studies had not been completed, he replied: "Point No. 1, one of the most effective elements in any limited war are the guerrilla forces. We are proposing a more than double increase in guerrilla forces. I think that is a tremendous step forward. Point No. 2, a major factor affecting the effectiveness of a military force in limited war is mobility. We are proposing a very sizable increase in modern, long-range transport cargo aircraft."[139] Later on before the same committee, McNamara loosely defined "limited war" as "nonnuclear warfare." "I think," he stated, "by 'limited' war we simply mean war that is carried on, for the most part, with nonnuclear weapons, and what we are proposing in the budget is a further emphasis on the procurement and potential use of such nonnuclear weapons in order to be better prepared to meet any situation."[140]

In their appearances before Congressional committees in the spring of 1961, Eugene M. Zuckert, the new Secretary of the Air Force, and General White, who was making valedictory appearances imminent to his retirement as Air Force Chief of Staff on 30 June, were

gravely distrustful of the strategic implications of the forces envisioned by the revised defense budget. "The Nation's military forces," Zuckert emphasized, "must be designed not just to wreak unacceptable destruction but to win. . . . Since America's defense objective is more than just survival, our forces must be designed and adequate to carry through the initial engagement with the will and means to put an end to the further use of force by an aggressor . . . . What you are going to do. . . is to destroy his military potential."[141] General White maintained "that a nation that is going to live has to make survival a part of its national policy. If it gets in a war it is going to try to win it." He admitted that winning a nuclear war would be difficult, but he urged that "we can't afford to have any other basic philosophy than that our military force is designed to win a war if it is forced upon us."[142] White conceived that a future nuclear war could be won only by concentrating forces against "those elements of enemy strength that can do the greatest damage to us, namely, his military forces."[143]

Among the members of the Senate Armed Services Committee, White encountered a friendly skepticism about the counterforce strategy--particularly its plan for a measured employment of force. "If you ever start using the atomic weapon," Chairman Russell speculated, "I say there is no way to control it or to limit it, and I think you had better use the whole arsenal right after they hit us with the first atomic weapon."[144] White admitted that war had always been full of surprises and speculated that "in the next one. . . there will be more confusion, more surprises, and more uncertainty than ever existed in human history before," but he continued to endorse counterforce and provided the Senators with the Air Force definition of the strategy. This written statement read:

> In the Air Force view, "counterforce" is a military concept for the design and employment of military forces to destroy, neutralize, or render impotent the military capabilities of an enemy force, under any circumstances by which hostilities may be initiated. It is not a "strike first" concept--it is a concept for the development of a capability to prevent under any conditions of attack. This concept has, as its central theme, the application of superior offensive and defensive military force against enemy strengths that directly threaten the continued freedom and security of the United States and her allies.
>
> Implementation of a counterforce strategy demands a well-integrated national military structure. This concept is both offensive and defensive--a point often misunderstood. It requires strategic offensive forces capable of surviving initial enemy attacks and of destroying enemy offensive strike forces and control and

> support structures. It requires defensive forces in depth to destroy enemy mass destruction weapons in flight and as far from the United States and its allies as possible. It also requires forward area forces which, in conjunction with our allies, can conduct initial holding action to deny enemy access and prevent the infiltration or overrun of friendly territory. The size and effectiveness of a military force necessary to defeat the enemy's military force are dependent upon the size and effectiveness of that enemy force. A civil defense effort to provide greater protection to our civilian population is an additional strength that complements this military concept.[145]

In a succinct summary of these same thoughts, White stated: "Until such time as worldwide disarmament under a positive system of controls and inspection is achieved, the United States and its allies must be superior to. . . our enemies in decisive military power. They must possess the ability to destroy the military strength that would hurt us while, at the same time, minimizing damage to our own military forces, to this Nation and to our friends and allies as well."[146]

To General White the Soviet Union's growing aerospace weapons inventories and the many uncertainties that were likely to prevail in a period of uneasy peace and possible general war demanded that the United States maintain a proper mix of manned and unmanned weapons in its future aerospace forces. He thought that there was no question that the nation's defense posture would be greatly improved by the acquisition of intercontinental ballistic missiles; as a matter of fact, he disagreed with the decision to delete two squadrons of Titan missiles, since these missiles could carry large warheads which would be required against extremely hard targets. Without dismissing the value of mobility, White was willing to accept McNamara's decision to delay the mobile Minuteman in order to get as many missiles as soon as possible. But he nevertheless insisted: "We will have to rely on manned weapons systems to perform vital war functions which require on-the-spot trained, human judgment." Manned bomber systems, for example, would be required to prosecute "hunter-killer" follow-up attacks against imprecisely located counterforce targets in the wake of an initial missile salvo. Beyond this, White maintained that there would be "two incontestable over-riding mandates" for the continuation of manned systems. The first of these concerned the "simple but awesome decision to launch." Bomber aircraft could be launched at critical junctures, even on suspicion of impending attack. They could proceed to a prearranged line and loiter there and could either return or, if given an order, attack. "Consequently," White explained, "their operations do not pose the problem of finality of decision which must inevitably accompany the launching of ballistic missiles." White conceived that

even a perfected missile would be "the most inflexible weapon you can have. . . . It has two modes--go; no go." The second mandate, White said, "concerns the perpetual requirement for operational flexibility. In any future war there is the almost certain probability that events will not unfold exactly as planned. Thus, there will be a tremendous premium on systems which can look, and find, and report, and attack, and return, and attack again. We will always need systems which can search out and destroy mobile targets, as well as fixed or rapidly developing targets whose positions are uncertain or unknown until observed. We will also need a poststrike reconnaissance capability to assess the results of our attacks and to show the way to the most effective employment of succeeding strikes." White also feared the effect of missiles on the psychology of the nation and of the missile crews, the latter who would "have to sit there day after day ready to push the button. . . they will get a static, nondynamic frame of mind." He pointed out that there had been "invulnerable weapons systems in the past." The Great Wall of China and the Maginot Line were examples, but they had not proven invulnerable, any more than missiles were apt to be.[147]

In response to questions directed at him by Congressional committees, White presented a detailed commentary of the Air Force view on McNamara's specific proposals in regard to the bomber force. He favored the 50 percent ground alert for the B-52's, but he argued against the concomitant rapid phase-out of the B-47's. "The B-47 is an osbolescing airplane," he said, "but in these critical times, particularly during the periods of known unreliability of missiles and this day of rather uncertain international situations, it would be my thesis as the Chief of Staff of the Air Force that we ought to maintain all of the strategic forces that we can in our inventory." He also repeated his recommendation that the B-52 production line ought to be kept open.[148]

In appearances before the House Armed Services Committee and the House Subcommittee on Appropriations in March and April 1961, General White drew upon his "responsibilities as Chief of Staff of the Air Force and as an aviator of more than 35 years' service in flying" to present the "philosophical side of the question" as to why the Air Force required a B-70 weapon system. Much of these presentations involved his unwillingness to see a situation develop in which the nation "would have to depend for its survival on missiles for nearly 100 percent of its offensive capability." Drawing upon history, White asserted: "The word 'bomber' . . . has historically been a nasty word, for various reasons. Every bombing system we have ever developed has had many obstacles put in its way. . . . I refer to the B-17, which was restricted for some years in its operating radius. I refer to the B-29, in World War II. The B-36 was controversial, but it is a fact that we had no wars while we had the B-36. And I would hate to think where we would be now if we didn't have the B-47's, the B-52's, and the B-58's." White

emphasized the importance of mobility in the historic war of warfare. "We can't leave the only exploitation of the air to ballistic missiles," he said. "The ability to be over your target, over enemy territory, to have dynamics in our strategic systems is essential. The missile is too inflexible to be the whole part of it." Speaking particularly about the B-70, he suggested, "if we don't build this airplane, in a certain sense the science of aeronautics is dead, because this is a breakthrough of the heat barrier." The technology of the B-70 would have very great application to the development of a mach 3 transport for civil employment. White also pointed out that the B-70 would serve as a "hunter-killer" that would be able to find targets and destroy them. In future international negotiations, atomic missiles might be outlawed: bombers, however, could not be outlawed unless civil aircraft were outlawed because any plane that could carry passengers could also carry a bomb. "I forecast," White concluded, "from a solemn point of responsibility upon me and a reading of history which I think need not be very deep, that the future is very likely to depend on something like the B-70."[149]

During the House Armed Services Committee's extended hearings on military posture and procurement, Chairman Carl Vinson noted the growth of "a perceptible hesitancy in placing complete confidence and dependence in the ICBM for now or the near future." The committee believed that the bomber was a vehicle of known capability whereas the only knowledge of the effectiveness of the ICBM came from extrapolation. "The committee," Vinson stated, "is unwilling to place the safety of this country in a purely academic attitude." In a discussion with Secretary McNamara, Vinson secured agreement that the Department of Defense would initiate planning that would place the bomber in proper perspective with other weapons at least until 1970. McNamara further assured Vinson that there was no iron-clad date for phasing out B-47 bombers. Despite these assurances Congress apparently felt that the Air Force ought to have some additional bombers. As finally enacted in August 1961 the Department of Defense Appropriation Act for fiscal year 1962 included an additional $180 million to increase the B-70 from prototype development to a weapon system program and an additional $514.5 million for the procurement of another wing of B-52 bombers.[150]

When he discussed the Air Force's requirement for bombers with the Subcommittee of the House Committee on Appropriations in May 1961, General White indicated that the Department of Defense probably would not authorize additional bombers even if the money for them were appropriated. Secretary McNamara confirmed White's prediction by stating that the Defense Department had enough bombers and would not need any more until 1967 or 1968.[151] Somewhat later McNamara pointed out that the three prototype B-70's would still be built under a low cost program and that the first of the planes would have the same "fly date" as would the first plane under the high cost program advocated by the Air Force.[152] Speaking in opposition to the B-70

as a weapon system, Dr. York described the big question about the manned bomber system as "not really a scientific one, but a military operational question." He asserted that the intercontinental strategic bombardment aircraft was a variety of military aviation which "may very well become less important and disappear . . . possibly within the decade."[153]

After he had conducted a review in the Department of Defense and had obtained President Kennedy's personal approval, Secretary McNamara informed Congress on 27 October 1961 that the B-70 would continue as a prototype development program.[154] McNamara also impounded the additional funds which Congress had appropriated for the procurement of an additional wing of B-52's. He reasoned that procurement of another wing of B-52's would increase the operational inventory of that aircraft by only 7 percent. For what it would cost to procure a wing of B-52's with tankers and Skybolt missiles and to operate it for five years, the Defense Department could buy and operate 250 hardened and dispersed Minuteman missiles, or about 6 Polaris submarines. "Furthermore," McNamara concluded, "manned bombers present soft and concentrated targets and they depend upon warning and quick response for their survival under nuclear attack. This is a less reliable means of protection than hardening, dispersal, and mobility. Moreover, reliance on warning and quick response means that bombers must be committed to attack very early in the war and cannot be held in reserve to be used in a controlled and deliberate way."[155]

* * * *

The immediate quick fix amendments to the Department of Defense budget acted upon in the spring of 1961 left many larger decisions unmade, apparently because the evidence had not been completely sifted by defense studies that were still underway. At the same time that Secretary McNamara initiated his series of studies on critical requirements problems, he also ordered a detailed review and analysis of the Communist threat based on the latest and best intelligence information available.[156] In 1958 Soviet Premier Krushchev had begun to threaten unilateral action that would jeopardize the West's position in Berlin, but it seemed to McNamara that the Soviet dictator became "much more categorical as to the actions he proposes to take" in the spring of 1961. McNamara related Krushchev's actions to his endorsement of support for "wars of liberation" in his policy address of 6 January 1961.[157]

Krushchev's announcements and actions appeared to "put flesh on the skeleton" of his January 1961 policy statement. On 18 April 1961 he charged that the Free Cuban invaders who had failed to overthrow Fidel Castro's Communist regime in Cuba in the ill-fated Bay of Pigs invasion had been "trained, equipped and armed in the United States of America." He added: "We shall render the Cuban people and their Government all necessary assistance in beating

back the armed attack." During summit discussions in Vienna on 3-4 June held to exchange views on the German problem, Communist subversion in Laos, and other world problems, President Kennedy had what he described as a very "somber" meeting with Krushchev. "He never gave way at all," Kennedy said. "I kept insisting that there could be no agreement between us as long as he supported Communist subversion all over the world, but he never gave way, never gave an inch." Speaking at the Kremlin on 8 July, Krushchev announced that the Soviet Union was suspending its planned troop reductions and increasing its 1961 defense spending. He reiterated his determination to sign a separate peace treaty with East Germany by the end of 1961 if the West refused to sign treaties with both East and West Germany and to make West Berlin a demilitarized "free city," thus depriving the western nations of their occupation responsibilities there.[158]

At the same time that Krushchev announced bellicose intentions, the Kennedy administration continued its evaluations of U.S. force capabilities. According to report, the administration felt itself desperately short of conventional force capabilities when it considered the situations in Cuba and Laos. On 22 April President Kennedy appointed retired General Maxwell D. Taylor as Presidential Military Adviser and directed him to investigate the Cuban affair, U.S. counterinsurgency capabilities, and other aspects of defense policy. At a meeting with Rusk, McNamara, and Taylor on 8 July, Kennedy ordered an urgent review of United States military strength to determine if forces and planned expenditures were adequate in view of the Soviet threats to Berlin. Sometime in the spring of 1961 the Department of Defense evaluation of the Soviet Union convinced McNamara that the United States and its Allies had far larger conventional capabilities in relation to the Soviet Union than was commonly thought to be the case. Speaking of the Russians, McNamara observed: "They aren't 12½ feet tall. They don't have 187 divisions. They don't have 175 divisions. A major portion of their divisions today are under strength. . . compared to the U.S. division with its support forces."[159] The Secretary's staff also started to question prevailing assumptions about Soviet tactical air power and soon concluded that the numbers of Soviet tactical fighters had been inflated and that the performance of the Red aircraft had been exaggerated.[160]

Appearing before Congress on 25 May 1961 in what he described as his second State of the Union message, President Kennedy among other things requested an additional $100 million to provide non-atomic weapons modernization for the Army and $60 million to enable the Marine Corps to expand its strength to 190,000 men, thus filling up its three existing divisions-air wings and organizing a cadre for a fourth division. The major response to the Berlin crisis, however, came on 25 July when Kennedy explained to the American people: "We cannot and will not permit the Communists to drive us out of Berlin--either gradually or by force." He had already stated that

the nation must possess "a wider choice than humiliation or all-out nuclear action: and in a message to Congress on 26 July the President requested an additional 1962 appropriation of $3,247 million for the Armed Forces, an increase in the Army's strength from 875,000 to 1,008,000 men, and an increase of 29,000 and 63,000 men in the active duty strength of the Navy and Air Force. Kennedy also asked Congress to enact a joint resolution that would authorize the President, until 1 July 1962, to order units and members of the Ready Reserve to active duty for not more than 12 consecutive months.[161]

When he began to explain President Kennedy's expanded defense program to Congress on 26 July 1961, Secretary McNamara prefaced his presentation with an assessment of the Soviet challenge and the indicated western response to it. "Believing that the Western World will be very reluctant to invoke the use of nuclear weapons in response to anything short of a direct threat to its survival," McNamara said, "the Kremlin leaders hope to create divisive influences within the [NATO] alliance by carefully measured military threats in connection with the Berlin situation. In order to meet such threats with firmness and confidence and to provide us with a greater range of military alternatives, we will need more nonnuclear strength than we have today."[162] In a later comment, he added: "We feel very strongly that the U.S. Defense Establishment must have a greater degree of flexibility in responding to particular situations. We need to expand the range of military alternatives available to the President in meeting the kind of situation which may confront us in maintaining our position in Berlin . . . . What we are proposing now is not only to strengthen our nuclear capabilities, but also to increase our nonnuclear capabilities to provide a still greater degree of versatility to our military forces."[163]

Acting in an air of emergency, Congress approved President Kennedy's authority to order up to 250,000 members of the Ready Reserve for one year's active duty, and as finally enacted in August 1961 the National Defense appropriation for fiscal year 1962 totalled $51 billion--an increase of $6.1 billion over the $44.9 billion recommended in the original Eisenhower budget. Since strategic forces were already in a high state of readiness, McNamara believed that they required little augmentation for the Berlin crisis. He did, however, allocate funds and personnel to enable the Strategic Air Command to move more rapidly toward a 50 percent ground alert for both B-47's and B-52's, and he decided to retain the six wings of B-47's scheduled for inactivation in active service during the fiscal year. In the air defense field the emergency program hastened the preparation of manual backup facilities for the control of interceptor aircraft at radar sites, thus enabling the vulnerable SAGE facilities to be by-passed if this were necessary. So far as the Air Force was concerned, however, McNamara's chief concern was with tactical air units and airlift. The Air Force received authority to retain the light bomber, tactical reconnaissance, tactical fighter, and C-118 air transport squadrons that were

scheduled to be phased out during the fiscal year. In October and November 1961 the Air Force also called to active duty 36 squadrons from the Air National Guard and Air Force Reserve. These units included tactical fighters, tactical reconnaissance, and C-97 and C-124 transports. Seven Air National Guard fighter squadrons, one tactical reconnaissance squadron, and a tactical control group were deployed by air to European bases about a month after the October recall. Three Air National Guard F-104 air defense squadrons which were recalled on 1 November dismantled their aircraft for shipment overseas in C-124's and were in place in Germany and Spain on 24 November. Largely as a result of the calls to active duty, Air Force strength rose from 88 to the equivalent of 97 wings (339 squadrons) in the year ending on 30 June 1962.[164]

As a part of its augmentation the Navy increased its amphibious lift and reactivated troop transport ships. The Army received far the largest force increase incident to the crisis. Of the 14 Army divisions, 8 were overseas, 3 were assigned to the Strategic Army Command (STRAC) in the United States, and 3 were partly manned and employed in recruit training in the United States. As an initial response, the Army was authorized to bring the three training divisions up to full strength and to assign them to STRAC; it also brought the Seventh Army and other units in Europe up to full strength. Heavier draft calls and mobilization of Army reservists filled existing units, and on 19 September two Army National Guard divisions were mobilized. In August the Berlin garrison was increased by 1,500 men, and in September some 40,000 troops were sent to Europe to bring the Seventh Army up to full strength. By the end of 1961 the three former training divisions became combat ready, and the two National Guard divisions completed their combat training in February 1962. The Strategic Army Command was accordingly expanded to two corps, each with four divisions. The expansion of the ground forces left the Marines programed for three division-wing teams, plus a cadre organization for a fourth division. The decision not to expand the Marine Corps was justified by the fact that the type of divisions which might be required in Europe were Army divisions, rather than Marine divisions which were organized and equipped for independent assault operations.[165]

Of the $3,247 million requested to meet the Berlin crisis, $1,753 million was committed to the procurement of weapons, ammunition, and equipment to meet non-nuclear requirements. Even in the case of Nike-Hercules batteries in Europe, Secretary McNamara foresaw "circumstances under which we would wish to utilize these batteries without nuclear warheads, avoiding if possible the immediate escalation to nuclear war that might well follow the use of nuclear warheads in these batteries."[166] Most of the large appropriation for conventional weapons, however, was justified to correct a situation which McNamara described as resultant from past tendencies "on the part of the services to base their planning and force structures on their own unilateral views of how a future war might be fought."

McNamara said that the Air Force had planned primarily in terms of a short nuclear war, had not provided sufficient stocks of combat consumables for conventional limited war, and thus could not fight a conventional war for as long a period as the Army. The Army had based its requirements on plans for a large-scale conventional war of long duration, but these requirements had been only partially used as the basis for annual procurement programs. As a result the Army had only about one-third of its so-called requirements in its inventories and specific items in the inventory were badly out of balance.[167]

The Joint Chiefs of Staff visualized the fundamental purposes of the Berlin crisis build-up as being to improve the credibility of United States national policies and the total deterrent posture and to place the United States "in a better position to implement military operations on whatever scale may be required."[168] What the effect of the conventional augmentation may have been on Soviet policy remained a matter of speculation. In a speech on 11 August, Krushchev expressed doubt that the West would fight to preserve the freedom of the West Germans. Before dawn on 13 August the East German government closed access routes between East and West Berlin and shortly thereafter the Communists built a wall along most of the 25-mile border within Berlin, thus effectively although illegally ending free movement within Berlin and between Berlin and the East German territory. On 31 August the Soviet Union also announced that it was resuming nuclear weapon tests, allegedly because the West had threatened to unleash war as a countermeasure to the conclusion of a peace treaty with East Germany. As the Berlin crisis abated, Secretary McNamara stated: "We are convinced that the rapid buildup in our conventional forces made possible by the callup of the Reserves has done much to stabilize the Berlin situation." A little later McNamara described the mobilization of the reserves as being the thing that had called the hand of the Russians. "I don't believe," he said, "there is any action that has been taken that more clearly demonstrated the strength, the will, and the firmness of purpose of this Nation than the callup of those units."[169]

3. Emerging Strategy: Flexible Response and Multiple Options

In the same months that the Kennedy administration made quick fix amendments to the original Eisenhower defense budget during 1961, Secretary McNamara commenced studies of a 5-year projection of defense requirements which would in effect engraft strategy into the national defense budgets. In this task McNamara indicated that he expected to "start with the plan or the policy and translate it into quantitative terms." "I consider the budget," he added, "nothing more than and nothing less than the quantitative expression of a plan or a policy."[170] The establishment of the 5-year force projection involved the mission to be accomplished by military forces,

the latest intelligence data on the capabilities of the Soviet Union and its satellites, and the cost-effectiveness relationships among the various alternative means of performing the defense mission.[171]

In his message to Congress on 28 March 1961 President Kennedy had already stated the basic mission to be accomplished by military forces, and this guidance was elaborated in continuing statements by both Kennedy and McNamara. In his State of the Union message of 11 January 1962 Kennedy explained: "We have rejected any all-or-nothing posture which would leave no choice but inglorious retreat or unlimited retaliation." As the military representative of the President, General Taylor explained that this statement meant that the administration had accepted a need for "great flexibility in our present and future military policy, and in the military forces designed to sustain that policy. . . . Mindful of the awful dangers of atomic warfare, we require a military policy which takes as its primary purpose the deterrence of that disaster. At the same time . . . it must give due recognition to the need to cope with many situations short of general war--particularly para-war."[172] From time to time President Kennedy reiterated the policy that the United States definitely would not "launch a preemptive attack, an act of aggression." There were at least two concrete reasons for this policy. In the first place, Kennedy conceived that no nation could win a nuclear war. "Now, if someone thinks we should have a nuclear war in order to win," he stated on 14 February 1962, "I can inform them that there will not be winners of the next nuclear war, if there is one, and this country and other countries would suffer very heavy blows. So we have to proceed with responsibility and with care in an age where the human race can obliterate itself."[173] Several weeks later Kennedy pointed out a second reason for foreswearing a military initiative when he observed that "the basic problems facing the world today are not susceptible to a final military solution." In a major policy address at the University of Michigan on 16 June 1963, Secretary McNamara added his own interpretation of the role of military force in United States policy. "I want to emphasize," he said, "that we see our military strength not as the means of achieving the kind of world we seek, but as a shield to prevent any other nation from using its military strength, either directly or through threats and intimidation, to frustrate the aspirations we share with all the free peoples of the world."[174]

While the 5-year force projection was being planned, the Department of Defense conducted a careful review of prospective Communist capabilities to endanger the United States. In President Kennedy's view the changing Communist military capabilities in themselves demanded changes in United States military policy. "As late as 1954," Kennedy explained in March 1962, "the balance in air power, in the nuclear weapons, was all on our side. That change began about 1958 or 1959 with the missiles. Now we have got to realize that both sides have these annihilating weapons, and that changes

the problem."[175] At the Tushino air show over Moscow in July 1961 the Soviets displayed three new supersonic bombers, two new mach-2 fighters, a new jet seaplane, a flying crane helicopter, and a very large converti-plane. The new bombers included an exceptionally large delta-wing plane called the Bounder; an advanced swept-wing mach 2.5 heavy bomber slightly larger than the B-58 and designated as the Beauty; and a mach-2 swept-wing design called the Blinder that could apparently perform a dual role as a bomber or interceptor. The Bounder was almost as large as a B-36, and while it was powered by large jet engines it seemed capable of serving as a test vehicle for nuclear engines. Older Badger twin jet bombers carried air-to-surface missiles resembling the Hound Dog design, and the Beauty carried what appeared to be a ballistic missile similar to a Skybolt slung under its belly.[176] Although the new Soviet aircraft demonstrated excellent progress in aerodynamics, Secretary McNamara received no evidence that the Soviets were producing any significant numbers of long-range bombers, and he could only estimate that the number of manned bombers that the Soviets might send against the United States would not be very large. By November 1961 his study of Communist force projections caused him to conclude that "while the ICBM threat will be increasing during the next several years, present indications are that the manned bomber threat will be declining." A manned bomber attack against the United States, moreover, would assumably follow an initial Soviet ICBM attack. In view of the vulnerability of the United States to intercontinental or submarine launched ballistic missile attack, McNamara visualized that "the protection of our strategic offensive forces against surprise missile attack can be achieved only by warning, hardening, mobility, rather than by an active defense." Similarly, since the main danger of hostile bomber attack would be in the wake of a missile attack, McNamara noted that "warning and dispersal and protection of our air defense forces are more important than mere numbers."[177] While McNamara recognized that the first-generation Soviet missile force would be vulnerable to attack on its exposed launching pads, he also predicted that "as the Soviet Union hardens and disperses its ICBM force and acquires a significant number of missile launching submarines. . .one problem will be further complicated."[178] "It will become increasingly difficult, regardless of the form of attack," he added a little later, "to destroy a sufficiently large proportion of the Soviet's strategic nuclear forces to preclude major damage to the United States, regardless of how large or what kind of strategic forces we build."[179]

In evaluating the Soviet threat to the United States, Secretary McNamara apparently continued to attach great importance to Krushchev's "For New Victories of the World Communist Movement" address of 6 January 1961. He told Congressional committeemen that this was "one of the most important speeches of 1961," and, in an address in Chicago on 17 February 1962, he suggested that "it may

prove to be one of the most important statements made by a world leader in the decade of the 60's." Speaking of Krushchev, McNamara said: "I have every reason to believe that he was outlining very clearly his objectives and his plans for accomplishing them." While Krushchev had indicated that the free world would continue to face the cold war struggle for years to come, McNamara was confident that the United States could deter the Soviets from initiating general or limited war by maintaining "the kind of forces which would make global nuclear war, and even local wars, unprofitable for the Soviet Union." "We must continue to convince him," McNamara said, speaking of Krushchev, "that thermonuclear wars would destroy the Soviet Union and therefore that he should refrain from actions that would bring on such wars."[180] During these strategic evaluations, Secretary McNamara's staff redoubled its efforts to solve the riddle of Soviet ground strength. Although the evidence apparently was not conclusive in the winter of 1961-62 something seemed to be wrong with assessments of Soviet surface strengths. With a strength of a million men the U.S. Army could field only 16 divisions, yet the Soviets were credited with being able to obtain something like 150 American-style divisions from about 2.2 million men. The Soviets possessed a heavily mechanized and armored force, but if they launched an attack in Western Europe the Soviet forces would be operating at the end of a very long supply line. As a result of the force augmentations incident to the Berlin crisis, NATO would soon have the equivalent of 26 divisions, including the 5 fully manned U.S. divisions, and their supporting forces on its central front in Europe.[181]

At the start of preparations for making the fiscal year 1963 defense budget estimates in May 1961, McNamara asked the Service Secretaries and Chiefs to make recommendations on the force levels and weapons they would require during fiscal year 1963 and in subsequent years through fiscal year 1967. While the services were asked to submit individual requirements with no budgetary limitations, they were directed to group recommended forces into "program packages"--such as "strategic retaliatory," "continental air and missile defense," and "general purpose forces"--which were related to the accomplishment of specific missions. During the months of July through October 1961 Secretary McNamara and Deputy Secretary of Defense Roswell L. Gilpatric received and reviewed the service requirements. McNamara described the review process as being essentially an act of ensuring that "we are to attain the specific force levels necessary to support the political objectives at the lowest possible cost."[182] Gilpatric characterized the review as being a "fusion of force structure to military strategy and, ultimately, the two of them to our larger national goals."[183] Had all of the service recommendations been accepted the fiscal 1963 budget would have totalled about $63 billion, but, by having in effect invited the services to bid freely against each other for the performance of mission responsibilities within program packages,

McNamara was able to get cost-effectiveness evaluations of competing service proposals. Thus on the afternoon of 4 August, McNamara and Gilpatric heard the Navy present its proposals in the presence of key Air Force officials, the Air Force present its proposed program with key Navy men listening, and Army officials commented on both the Navy and Air Force proposals. Based upon this and other review, McNamara prepared and forwarded to the Joint Chiefs and Service Secretaries in mid-September a tentative program guidance for computing the 1963 budget and for making program projections for the 5-year period. When the service budgets were submitted beginning on 23 October, McNamara found that they still totalled about $54.5 billion. Working with the Service Secretaries and the Chiefs, McNamara made some 620 separate decisions in the next month, some raising items and others lowering items in the service budgets. Upon reclama McNamara reversed himself on about 60 items but ended with about 560 changes which reduced the total defense budget for fiscal year 1963 to the $51.6 billion which President Kennedy asked Congress to appropriate in January 1962. As a result of the whole budgetary process, McNamara defended the proposed force structure as being necessary to meet military requirements without regard to arbitrary budget ceilings but so calculated as to be attainable at the lowest possible cost.[184]

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When he presented the fiscal 1963 defense budget and the 5-year force projections to Congress in January 1962, Secretary McNamara explained that they reflected "the conclusion that, while our nuclear forces are increasing, greater emphasis than in the past must be given, both by ourselves and our NATO allies, to our nonnuclear forces. . . . What is being proposed. . . is not a reversal of our existing national policy but an increase in our nonnuclear capabilities to provide a greater degree of versatility to our limited-war forces."[185] When he was asked to cut across the program package approach and rate the priority of separate items in terms of national importance, McNamara stated this order of priority: (1) nuclear deterrent forces to include Air Force Minuteman and Navy Polaris missiles;(2) raising the Army to 16 regular combat-ready divisions; (3) proper equipment for the 16 Army divisions; (4) airlift and sealift capabilities to move the combat-ready forces; (5) nuclear attack submarines for antisubmarine warfare; (6) Air Force fighter aircraft for the support of ground forces; (7) increased procurement of Navy and Marine Corps aircraft; (8) a new aircraft carrier. He further remarked that torpedoes for the Navy and iron bombs for the Air Force would rank high on the illustrative priority list.[186]

Unlike most other military requirements, Secretary McNamara considered that the requirement for strategic retaliatory forces--the program package that included long-range bombers with air-to-ground and decoy missiles and supporting tankers, land-based and

submarine-based strategic missiles, and the system for command and control of the forces--lent itself "rather well to reasonably precise calculation." The major mission of these forces was to deter war by their capability to destroy the enemy's warmaking potential. This was judged to be a reasonably finite problem and the quantitative procurement of strategic retaliatory forces included allowances to be made for losses incurred in a hostile first strike; the number, types, and locations of the aiming points in hostile target systems; the numbers and explosive yields of weapons that would be required to destroy specified targets; the degree of reliability of each weapon system; and the cost effectiveness of each weapon system in comparison with alternate systems. Assuming that the Soviet Union would ultimately build a large ICBM force, the United States had to develop the kind of strategic offensive forces which would "be able to ride out an all-out attack by nuclear-armed ICBM's in sufficient strength to strike back decisively."[187]

In the way of forces the defense budget for fiscal year 1963 visualized the completion of the 13-squadron Atlas and 12-squadron Titan missile programs, the funding of four additional squadrons of hardened Minuteman missiles (thus providing 17 squadrons and 800 missiles), and the addition of 6 Polaris submarines, with 6 more programed for fiscal 1964, making a total projection of 41 Polaris submarines in the 5-year program. The development of the rail-mobile Minuteman missile was cancelled, since McNamara was convinced that the benefits to be gained from the system would not be worth the cost. A mobile Minuteman would cost "several times" as much as a fixed-base Minuteman; it would be more expensive to operate, less reliable, less accurate, more susceptible to sabotage, and fraught with difficult operational problems such as its protection from sabotage. As for strategic bombers, the 5-year defense protection included the maintenance in the inventory of 14 wings of B-52's (many of which were supposed to be equipped with Skybolt missiles) and 2 wings of B-58's. As the missile forces were built up, the number of B-47 wings would be reduced. After additional study, McNamara still believed that "the B-70 will not provide enough of an increase in our offensive capabilities to justify its very high cost." He nevertheless wished to continue the B-70 in the limited development program which would "preserve the option of developing a manned bomber if we should later determine that such a system is required."[188]

Under the program package budgeting arrangement continental air and missile defense forces included the weapon systems, warning and communications networks, and ancillary equipment required to detect, identify, and track unfriendly forces approaching the North American continent and to destroy them. Viewing the threat to the United States as rapidly changing from manned bombers to the ICBM and submarine-launched missiles, McNamara envisioned the defensive task as being to: (1) reduce the vulnerability of the existing bomber defense system to ballistic missile attack; (2) improve the

certainty and the timeliness of warning against ballistic missile attack; (3) provide to the extent feasible for an active defense against ballistic and submarine-launched missiles; (4) develop a defense system against unfriendly satellites; and (5) provide to the extent feasible fallout protection for the population of the United States. Believing that the air defense system against hostile aircraft was already "very extensive and sophisticated," McNamara proposed to continue the system in being over the next several years with few improvements other than continuing to provide manual back-up for the SAGE system and more dispersal for existing air defense fighters. Most new air and missile defense expenditures would have to be programed in the research and development of anti-ballistic missile systems, including continuing development of the Nike Zeus terminal defense system. "We must bear in mind," McNamara observed, "that no matter how much we spend, we simply cannot in this day and age provide an absolute defense for the continental United States."[189]

The defense budget for fiscal year 1963 included most of the Army's combat and combat support units, virtually all Navy units, all Marine Corps units, and the tactical air warfare units of the Air Force under the general purpose forces program package. McNamara explained: "These are the forces on which we would depend in any conflict short of general nuclear war. . . . it is the limited war mission which primarily shapes the size and character of the general purpose forces." In McNamara's view the general purpose forces were in a large measure intended for the support of United States allies around the world, and the great diversity of units and weapons in this package, the wide variety of possible contingencies that had to be contemplated, the role that the reserve forces might play, and the relationship of United States and Allied general purpose forces made it most difficult for the Department of Defense precisely to determine the specific requirements for general purpose forces with any degree of precision. As Secretary McNamara looked at the problem, however, United States general purpose forces either had to be stationed in potential trouble areas or else had to be highly mobile and readily deployable from a central reserve in the United States. If the forces were retained in a central reserve, the United States had to have adequate airlift and sealift to move them promptly to trouble areas. Since there was a practical limit on the volume of material that could be shipped overseas in a short period of time, attention had to be given to prepositioning stocks for mobile forces in various parts of the world. Since no one could be sure where forces might have to fight, the general purpose forces had to have a great deal of built-in versatility. Finally, since the general purpose forces would to a large extent complement similar Allied forces, their size and character would be affected by the size and character of Allied forces.[190]

In response to the Berlin crisis the Department of Defense had already increased the size of the general purpose forces by the mobilization of National Guard and Reserve units for a year's service. On 3 January 1962, President Kennedy announced that the Regular Army's strength would be increased from 14 to 16 divisions, and the activation of two new regular divisions in February 1962 brought the Army to a newly-authorized strength of 960,000 military personnel. Where earlier planning had relied upon the expansion of Army units to meet war emergencies by the mobilization of reservist elements, McNamara stated an objective of immediate readiness for Army units and the maintenance of a capability rapidly to deploy up to six divisions to Europe, while simultaneously maintaining a reserve of other ready divisions for deployment to other parts of the world.[191]

During the Berlin crisis the Navy expanded its force level to 16 attack carriers and 10 air-sea warfare carriers. In determining force levels for fiscal year 1963 the Joint Chiefs of Staff agreed that 15 attack carriers and 9 ASW carriers should be supported, with these levels to be subject to review in future years. In the course of budget review within the Department of Defense, however, Generals LeMay and Decker questioned the advisability of including the construction of a new Forrestal class carrier in the fiscal 1963 funding. LeMay also urged that in the future greater emphasis ought to be placed upon antisubmarine carriers and less emphasis should be given to attack carriers. On the other hand, Admiral George W. Anderson, Jr., Chief of Naval Operations, strongly urged that the attack carriers were uniquely suited for limited war employments and would be able to survive under general war conditions. General Lemnitzer agreed with Anderson. "I think," Lemnitzer said, "the attack carrier is as important today as it was during World War II." In the end McNamara accepted the value of the attack carrier in the limited-war role although he conceived that the value of the attack carrier would gradually diminish in the general war role as larger forces of strategic missiles became available. "There are many potential trouble spots in the world," he stated, "where the attack carrier is and will continue to be the only practical means of bringing our air striking power to bear. Carrier airpower can be employed without involving third parties, without invoking treaties, agreements, or overflight rights. And . . . the carrier task force is a most effective means for presenting a show of force or establishing a military presence, which often has helped to maintain the peace and discourage hostilities." Admiral Anderson believed that the Navy required a nuclear-powered aircraft carrier, but McNamara's studies indicated that a nuclear-powered carrier would cost about one-third to one-half more to construct and operate than an equivalent conventionally-powered carrier. "The operational benefits to be derived from the nuclear-powered carrier, particularly in limited-war operations," he observed, "do not, in our judgment, justify the higher cost."[192]

Reflecting the mobilization of Air National Guard and Air Force Reserve units in the autumn of 1961 the strength of worldwide tactical air forces--including tactical fighters, bombers, and reconnaissance, Matador and Mace missiles, troop carrier planes, and oversea-based fighter interceptors--rose sharply from 32 to 43 wings. Looking toward the release of reservist personnel and yet to an augmentation of tactical air forces, the Air Force secured McNamara's approval in November 1961 for an expansion of the regular tactical fighter force from 16 to 21 wings.[193] The temporary equipment of the five additional fighter wings would be managed by retention of old F-84 fighters in the regular inventory when Air National Guard squadrons were released from the federal service. In the future the TFX (F-111) was expected to be developed for use by both the Air Force and the Navy. In the interim some new fighter was required for the modernization of the tactical fighter wings. Taking an active interest in the matter, McNamara worked closely with LeMay in an examination of the prospects for Air Force procurement of either additional F-105's or of Navy-developed A-4D;s or F-4H's. At first McNamara ruled that the Air Force would procure A-4D's since they would cost only about a third as much as F-4H's. The Air Force preferred the F-4H since it was newer, carried more ordnance, and was operationally superior, and, on the basis of these arguments, McNamara reversed his order. The Air Force nevertheless continued to pose some reservations about the F-4H in comparison with the F-105. Because of stresses placed upon fighter bombers during maneuvers, the Air Force had long required these planes to have a built in strength capable of withstanding 8.67 G loadings. The F-105 had been designed with such characteristics, but the McDonnell had a designed strength of only 6.5 G. It was the Navy opinion that a modern fighter which employed guided missiles from greater ranges would not be subjected to tight high-G maneuvers, and after studying the statistics the Air Force ultimately agreed that it could accept the design capabilities of the F-4H. Other than for slight reservations about the stress loading, Air Force tests showed the F-4H to be superior in many ways to the older F-105. In February 1962, the Department of Defense accordingly authorized the Air Force to reduce F-105 procurement and order substantial numbers of F-4H's, which were subsequently designated F-110A's and finally F-4C's. The Air Force also changed its plan to procure RF-105 aircraft in favor of RF-4C's. Somewhat later, McNamara described the F-105 and F-4 experience as a "perfect illustration" of opportunities for major savings. "It was not until after the completion of development and the start of procurement," he said, "that we standardized on the F-4H for both services. This is very wasteful, because we had duplicate development and, to a considerable degree, duplicate production facilities prepared for these aircraft. We did. . . achieve. . . savings . . . in spare parts procurement and certain maintenance functions as a result of the standardization. We are better off than if we had not standardized, but we standardized too late."[194]

From the start of his administration President Kennedy emphasized the need to expand national military airlift capabilities, and Secretary McNamara was confident that the establishment of the separate planning, programing, and budgeting package for airlift/sealift forces would bring these forces into balance with forces, equipment, and supplies that would require deployment.[195] In the mobilization of 1961 five Air Force Reserve C-124 squadrons reported to the Tactical Air Command and six Air National Guard C-97 squadrons joined the Military Air Transport Service. Made available by diverting production from tankers to transport planes, 45 C-135's became available to MATS, which assigned them to three squadrons, one of which was a converted C-118 squadron.[196] Except for the C-133's and C-135's, however, airlift aircraft in service early in 1962 were more than ten years old, and the expansion of airborne mobility was still more a matter of promise than of actuality. While the C-135's proved useful for quick movements of troops over long distances, they had no airdrop capability and a limited cargo capacity. In making the fiscal year 1963 budget, McNamara considered procurement of more C-135's, but he ultimately decided that these planes could not be delivered until a time when better aircraft could be had.[197] The better plane would be the C-141 Starlifter, an aircraft selected for development during 1961 in what General LeMay described as "the best coordinated project that we have had up to date." This plane was configured to carry 98 percent of the equipment items of an airborne division for distances up to 5,500 nautical miles at a speed of more than 440 knots. The 1963 budget contained funds for the initiation of production of the C-141 and for the purchase of a test and evaluation quantity of the plane. As of January 1962 Secretary McNamara nevertheless confessed that he had found "no simple black or white solution" for calculating military airlift requirements. "We estimate," he said, "that our current capability is sufficiently great to permit the deployment of significant forces to any remote area in a relatively short time. This capability, while impressive, is nevertheless less than what we feel we ought to have to meet a full range of contingencies."[198]

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As a matter of fact General LeMay, who had become Air Force Chief of Staff on 30 June 1961, agreed "with the administration's policy of trying to build up a little more conventional power that could take care of limited wars in a little better manner than we might have been able to do it in the past." He also believed that the total amount of defense money requested in the 1963 budget was generous. "When you get an increase in the overall Department of Defense budget of the size contemplated this year," he remarked, "I do not think any reasonable man will say we should have more." LeMay was nevertheless greatly concerned that the 1963 budget and the 5-year force projection would not continue to build strategic

superiority. The total obligational authority allocated to strategic retaliatory forces in 1963 ($8.5 billion) was a lesser amount than in 1962 ($9.1 billion), and according to the 5-year program the commitment of funds to strategic forces would trend downward from about 18 to 20 percent of the total defense budget to about 8 percent. "I think," LeMay said, "that your strategic forces must come first. . . . I worry about the trend as established by this year's budget. . . . I do not think you can maintain superiority in this field with that sort of a program."[199]

LeMay feared the loss of strategic superiority because experience indicated that a nation could counter limited aggression only if it maintained its strategic initiative. "I point out," he said, "that you cannot fight a limited war except under the umbrella of strategic superiority. For example, we would not have dared to go into Lebanon. . . without strategic superiority which kept the enemy air force off."[200] Speaking as Air Force Director of Plans, Major General David A. Burchinal further developed the relationship of strategic capability to the handling of lesser conflict. "If you have a strategic capability which is clearly superior. . .," Burchinal explained, "then you have in fact established your ability to control . . . escalation in the lower levels. In other words, if two conventional forces in a limited engagement come together, the fact we could win at the higher level would make it unprofitable for the enemy to let it expand, and we would therefore control the intensity and be able to keep it at that [lower level]."[201] In public speeches and in testimony in the winter of 1961-62, General Frederic H. Smith, Jr., Air Force Vice Chief of Staff, emphasized that strategic superiority was a prerequisite of counterforce. "The gravest risk an aggressor faces," Smith pointed out, "is the loss of his military forces. Without these forces, he is helpless. Agression is no longer possible. Worst for him, without forces an aggressor can't even control the people he has already conquered. Thus the capability to defeat an enemy's forces is the only rational objective of military preparedness."[202] Smith demonstrated that the maintainance of strategic superiority was imperative both in order to keep ahead of Soviet technological challenge and to permit the United States to enjoy a wide variety of counterforce options in target selection. Speaking of a Soviet commander, Smith rationalized: "He will realize his range of options as we realize ours, and if he determines that regardless of how he attacks we are going to end up with a clear advantage, then I do not think he will come. And certainly he would decide that if he does not concentrate on our military force, then we have an overwhelming force to go back at him, and I don't think he would be illogical. . . . By having two or more options we might well better our situation if war comes, over that which it would be if we just had a complete all-out phase destruction without any application of logical reasoning."[203]

General Smith also presented an epitome of Air Force strategic thinking to the Armed Services and Appropriations Committees of the Senate and House of Representatives in February 1962. This statement read:

> At the outset, we should be quite clear that of the various levels of international conflict--from troubled peace through cold, limited, and general war--general war and local wars that can escalate to general war pose the primary military threat to the security of the free world.
>
> This will remain true for the foreseeable future. It is our conviction, therefore, that the core of our security planning lies in the maintenance of an effective capability to prosecute successfully a general war. Only with this capability can we insure national survival if general war occurs. Only if we have, in fact, the shield of this capability can we support our commitments worldwide--either in the cold war or in limited conflict.
>
> Accordingly, ours must be a posture based upon strategic force capabilities which provide confidence in winning a general war if one is forced upon us. All of our other capabilities depend upon this fundamental one. Such a posture will provide the basis for an effective deterrent to a Soviet decision to attack the United States or its allies. With lesser capabilities, the Nation might ultimately reach a position of strategic inferiority marked by repeated, potentially disastrous incursions against our security, and, finally, against our very survival.
>
> The foregoing is fundamental to our strategic concept. This concept requires a war waging capability--our primary goal is to deter war, but, if deterrence fails, we must have the capability to fight and prevail.
>
> In assessing the types of forces required to maintain this strategic posture we must first determine the tasks to be performed and under what conditions they must be accomplished. Simply stated, our forces must possess the ability to survive an enemy attack, penetrate enemy defenses, and attack with weapons of sufficient yield and accuracy to assure the destruction of targets that remain to threaten the United States and our allies. At the same time, we must obtain the essential facts concerning the course of the conflict during and after our attacks. This requires reconnaissance of enemy territory for both targeting and retargeting as well as for damage assessment.

Our strategic capabilities must include a secure means for sustained command and control of the strategic force. The decision making process must be geared to the quick reaction and flexibility which is built into the strategic weapon systems.

In our strategy, we must continue to cover with a high assurance factor all targets representing long-range enemy strategic forces. This requires warheads and bombs of adequate yields, and missiles and aircraft of sufficient range and accuracy to do the job. In the event of war, an important part of the overall task is to determine the degree of success we have achieved in destroying targets, and the capability to restrike those targets which we have not yet destroyed.

Essential to continued strategic superiority is a diversification of the force to include both manned and unmanned vehicles, since no single weapon system can do the entire job. In general, diversification provides four advantages: First, it gives us a flexible or versatile capability, so that if one method of attack is rendered ineffective because of enemy defenses, we have other methods available. Second, it forces the enemy to expend effort and resources in his attempt to defend against all methods of our attack. Third, it compounds the enemy attack problem, both in types and numbers of weapons, which in turn enhances the survivability of each of our systems. And, fourth, the manned systems give us a capability to observe and report the physical evidence of an enemy's situation. This information is a vital requirement for the conduct of war. For, without it, it would be impossible to make controlled responses or even to find bases for negotiations, were the enemy to indicate his desires to negotiate.

Since the enemy capability is by no means static, there is a requirement for continuous modernization--improving existing weapon systems and introducing new ones. As the enemy develops new defenses, we must develop new means to penetrate those defenses.

A trend that is obvious from continuous study of the changing threat and analysis of our force requirements is that all weapons sooner or later are overtaken by events. We do not believe there is such a thing as an ultimate weapon and certainly nothing in our present or projected inventory can claim that distinction. Therefore we believe we must continue to take full advantage of the broadening horizons of technology both to meet the threats posed by our adversaries and, where possible, present those adversaries with technological surprise.

> Strategic offensive forces and continental defense forces have a complementary role in providing a deterrent posture or in providing for survival of the Nation should general war occur. A nation whose national philosophy is not to strike the first blow must have. . . overwhelming offensive forces--and by 'overwhelming' . . . I mean forces of sufficient character, hardness, and size, as to endure a first strike by an enemy and have the resultant strength necessary to destroy any residual capability which he has, to enable us to achieve our objectives and prevail.[204]

Against the backdrop of these summarizations of the importance of strategic superiority, General LeMay and Air Staff officers made known their specific objections to the fiscal year 1963 budget. LeMay believed that in addition to the 200 Minuteman missiles authorized for procurement at least 100 more ought to be purchased and that the budget should include money for the long leadtime items for about 150 additional Minuteman missiles. Given a choice between these additional missiles and a manned strategic system, however LeMay admitted a preference for a manned system, though he urged that both could be had by rearranging rather than increasing Air Force budget allocations.[205] While the Air Force was confident that the B-52H, equipped with Skybolt missiles (which were being funded for initial procurement in the 1963 budget), would be able to penetrate hostile defenses, McNamara's refusal to release the $525 million that Congress had already appropriated for additional B-52's made it evident that continuation of this plane in production was impossible. The Air Force accordingly placed all its efforts behind getting approval for the B-70 as a strategic weapon system.[206]

Even in its original concept the B-70 had included many features that fitted it for service as a reconnaissance/strike aircraft as well as a bomber. With the passing of time the role and reliability of ballistic missiles could be seen more clearly, and many state-of-the-art advances were achieved in reconnaissance sensors and air-to-ground missiles. Thus by the summer of 1961 the B-70 system was increasingly referred to as the RBS-70, and, as a result of new studies, the Air Force submitted to Secretary McNamara on 5 October 1961 a proposal for the development of the RS-70 as a weapon system capable of performing reconnaissance, strike, damage assessment, and intelligence collection missions. The Air Force was confident that suitable air-to-ground missiles could be developed to replace gravity bombs as the armament for the RS-70, and since the RS-70 would not have to fly directly over highly-defended target areas defensive subsystems could be simplified. In its submission, the Air Force asked that six RS-70 aircraft should be built (including the three B-70's) in order to develop and test the full reconnaissance-strike concept. After review of the proposal the Office of the Secretary of Defense ruled that the state-of-the-art was not

adequate to support the system development outlined by the Air Force. It believed that technical development programs ought to be conducted for a year or two on radar sensors, strike missiles, and communications equipment prior to a decision on the RS-70 weapon system. Except for LeMay, the Joint Chiefs agreed with Secretary McNamara's decision to proceed with a limited development program designed to provide three flyable B-70's, without weapon system components.[207]

In an appearance before the House Appropriations Subcommittee in January 1962 Secretary McNamara accepted the possibility that a reconnaissance-strike aircraft might be useful, but he considered that the RS-70 proposal would require a great deal more study to determine whether the advantages of such an aircraft would be worth the great costs involved.[208] McNamara's presentation to the House Armed Services Committee proposed to continue the B-70 program in a development stage, both to realize benefits from past expenditures of funds and to maintain an option to introduce the vehicle into the operating force.[209] Both Secretary Zuckert and General LeMay disagreed with the Secretary of Defense position on the RS-70. "Our recommendation," Zuckert told the Senate Subcommittee on Appropriations on 27 February, "was that we should proceed with the B-70 as a full weapons system rather than the limited development program which was approved. . . . I think that the judgment as to whether or not you go ahead is determined by your judgment as to the effectiveness of the weapons system. On this, the Secretary of Defense and the Air Force quite obviously do not agree."[210] LeMay was equally positive. "I do feel," he said, "that we must go on with the manned systems development--the RS-70 and the full weapons system."[211] At the invitation of the House Subcommittee on Appropriations, an Air Force officer, Colonel David C. Jones, made a special presentation on the RS-70 on 15 March. "We in the Air Force," Jones remarked, "are firmly convinced that the capabilities ascribed to the RS-70 are well within the current state of the art. We have had this problem reviewed in detail by highly qualified personnel who have confirmed the technical feasibility." Jones urged that the RS-70 would be employed to complement the future ballistic missile force. He strongly emphasized the reconnaissance aspects of the manned system: such on-the-spot reconnaissance could not be provided by a reconnaissance satellite that would have to orbit far above the banks of cloud cover that lay over Russia and China a large part of each day. In summary, Jones said that the RS-70 would accomplish essential tasks: "First, observe and report the condition of the enemy during and after the initial strikes. . . . Second task. Increase assurance of destruction of primary targets . . . . Third task. Seek out and destroy unique targets--the extremely hard, the mobile, and imprecisely located, and fourth, provide the prevision, discrimination, and flexibility which must be an inherent part of our strategic capability." Jones submitted that the RS-70 "will fill a serious void in the planned force

structure by providing on-the-spot judgment, force management visibility of the entire force, and the extremely accurate delivery of weapons of appropriate yield. It is ideally suited for employment in a strategy of flexible response."[212]

Secretary McNamara acknowledged that either Zuckert or LeMay had the right to appear before a Congressional committee and to express personal opinions (not as official Air Force positions), but he considered it inappropriate that a representative of the Air Force should present what purported to be an official Air Force position that was distinct from the President's position as represented by the administration budget.[213] On 13 March McNamara requested the Secretary of the Air Force to establish a study group to reassess the RS-70 weapon system.[214] At a press conference on 15 March, McNamara delivered a long statement in which he described the B-70 as "a more technically complex vehicle than any of the ICBM's" and the RS-70 as introducing even more complicated subsystems that "may well lie beyond what can be done on the basis of present scientific knowledge." He insisted: "Until we know much more about the proposed system--its technical feasibility, its military effectiveness and its cost--we have no rational basis for committing this aircraft to weapon system development or production." McNamara saw no reason why B-52's or B-58's, which would arrive in the hostile target area after ICBM's had suppressed the enemy's defenses, could not perform necessary reconnaissance functions.[215]

Already on record with the belief that the Department of Defense was prematurely discarding manned bombers in favor of missiles, the House Armed Services Committee readily accepted the Air Force proposals for the RS-70. "As our missile force grows," the Committee reported in March, "the role for manned strategic aircraft shifts more toward observing, reporting, evaluating and exercising on-the-spot judgment and action." Referring to the Defense Department's refusal to spend the additional money Congress had voted in 1961 for long-range bombers, Chairman Vinson thought that the time had come to determine whether Congress could "exercise a positive authority" by requiring that funds be spent for appropriated purposes. The report of the House Armed Services Committee therefore "directed, ordered, mandated and required" the spending of $491 million authorized for the RS-70, this being the amount necessary for the six-plane program that the Air Force recommended. "If this language constitutes a test as to whether Congress has the power to so mandate," the report read, "let the test be made and let this important weapon system be the field of trial."[216] On 14 March a presentation which McNamara gave to Vinson in the Pentagon left the House Armed Services Committee apparently unmoved. Vinson declared that he and his committee would "fight for legislation on the floor of the House in the exact form that we recommended it."[217] While he did not change his mind on the need for the RS-70, Vinson later remarked that he knew that Congress could not "compel" the President to do its bidding. On 20 March, moreover, McNamara informed Vinson that the

Department of Defense would restudy the matter in the light of Congressional recommendations. Writing on this same day, President Kennedy declared that it was "incumbent upon the Executive to give every possible consideration. . . to the views of Congress." Late that afternoon in the Rose Garden at the White House, Kennedy discussed the RS-70 with Vinson, and, on the morning of 21 March, the House Armed Services Committee unanimously voted to move an amendment to its earlier report deleting the word "directed" and adding "authorized" in the mandate for action on the RS-70. Later in the day the House passed the appropriations act with such wording, thereby authorizing $491 million for the RS-70. Vinson assured his colleagues from the floor that "'authorized' in this particular instance means more than ever before" and promised that "we are going to watch this new study by the department every step of the way from this point on."[218]

After he had carefully studied the material with Secretary Zuckert, Secretary McNamara permitted Colonel Jones to present the Air Force briefing on the RS-70 to the Senate Subcommittee on Appropriations on 2 April. The revised presentation maintained a more cautious tone on the technical side of the story.[219] Sentiment in the Senate, however, ran in favor of an expanded RS-70 program. Speaking on 11 April, Chairman Russell of the Armed Services Committee conceded that Secretary McNamara probably would not spend any additional money that Congress appropriated for the RS-70, but he nevertheless wished to raise the RS-70 appropriation to $363.7 million, thus financing the three B-70's and two additional RS-70 aircraft. "It would be worthwhile for the United States to have some of the RS-70's going around the world and landing at airfields, where the people of various countries could see them," Russell said. "The long-range missiles could be placed in silos all over the United States, and we could have 1,000 or 10,000 of them, but that would not impress people all over the world and lead them to believe that we are still the most powerful nation on earth."[220] Before the Senate Subcommittee on Appropriations on 18 May, LeMay again expressed his reservations about the amount of funds allocated to strategic forces in the fiscal 1963 budget and called for additional Minuteman missiles as well as an acceleration of the RS-70 program. To LeMay the RS-70 was a "low-risk program" that would be "a tremendous weapon system." He emphasized that he believed in the RS-70 because of its capabilities rather than just because it was a bomber. "I object," he said, "to having the term 'bomberman' applied to me. I use the weapon system that will do the job. If kiddie cars will do the job I will use those." "If we lose our strategic superiority," he concluded, "we are losing a considerable proportion of our security, if not all of it, because without the strategic umbrella, you can do nothing else."[221]

Although LeMay asked the Senate to approve the $491 million amount requested for three XB-70's and three RS-70's in order to prevent the dismantling of sub-contractor facilities that were being

used to build the stainless steel aircraft, the final budget voted by Congress in August 1962 followed the Senate recommendations that $363 million be committed to the RS-70 program to finance the completion of the three XB-70's and the construction of two additional RS-70's with necessary weapon subsystems. By raising the amount for the RS-70 from the $171 million requested in the administration budget, Congress had apparently voted the funds that the Department of Defense would need to move rapidly ahead with the RS-70 program, providing reviews of the program justified such action.[222]

According to his later recollections on the subject, Secretary McNamara had told the Air Force and the Congress as early as February 1962 that he would proceed with a three-aircraft test program for the B-70 but that he was "absolutely and unequivocally opposed to the deployment of the airplane."[223] Following his directive for the establishment of a study group to reassess the RS-70 weapon system, Secretary McNamara further directed Zuckert on 31 March to have the study group broaden its work to a review of the possible usefulness of an RS-70 force in a non-nuclear or limited war environment. Headed by Dr. Joseph V. Charyk, Under Secretary of the Air Force for Research and Development, the RS-70 Ad Hoc Group submitted a total of 11 documents on the system during June 1962. In August General LeMay and Secretary Zuckert made program change recommendations, and, according to LeMay, on 29 September the Chairman and the members of the Joint Chiefs of Staff agreed that the XB-70 program should be reoriented to the armed reconnaissance concept and recommended approval of those portions of the proposal necessary to accomplish the reorientation required to demonstrate the feasibility of the aircraft and the associated subsystems in a timely manner. In explaining his support for the RS-70, General Earle G. Wheeler, Army Chief of Staff, described his opinion as a "purely military" judgment. Admiral Anderson recommended the continuation of RS-70 development because it represented "a considerable advance" in the development of high-speed aircraft and related subsystems for reconnaissance purposes and because we wanted fully to capitalize on the already great investment in the B-70.[224]

At the same time that the Joint Chiefs of Staff provided Secretary McNamara a military judgment in favor of developing the RS-70, Dr. Harold Brown, who had become Director of Defense Research and Engineering, provided McNamara "views on the technical feasibility of doing some of the things that the RS-70 was supposed to do."[225] Dr. Brown concluded that "so far as vulnerability is concerned, speed and altitude are not great advantages." He believed that the Nike-Hercules was probably capable of knocking down a B-70 and that by the time that the airplane could become operational missile defenses would be even more sophisticated. Brown also argued that the recallability of manned aircraft, which might be dispatched in critical junctures on "fail safe" missions, did not give an added time for decision making. Even in an all-missile force, he demonstrated, "human judgment is present in deciding which missiles

to fire, how to change the war plan. . . during the war and so on. The judgment goes in before you press the button. Once you press the button the equipment takes over just as it takes over after you drop the bomb out of the airplane." Rather than the RS-70--which would fly higher and faster--Brown suggested that study ought to be given to an airplane "designed to fly low and as fast as it can comfortably fly low."[226] Brown specifically predicted that the RS-70 probably could not in its operational time period attain the attack accuracy claimed for it and that its capability to penetrate un-degraded defenses at high altitudes would not be "very large."[227]

Possibly as a result of Dr. Brown's reasoning, Secretary McNamara requested the Air Force on 15 October to study the possible development of a long endurance aircraft--called the Dromedary--which might serve as a mobile platform for certain types of missiles that might be added to the strategic force.[228] As a result of the continuing studies of the RS-70, McNamara was not able to make a final decision on the matter until 20 November 1962, by which time the Department of Defense review of the fiscal year 1964 budget was already underway. At this time McNamara ruled that the program would be limited to the development of the three prototype B-70's but that $50 million of the additional funds voted by Congress for the RS-70's would be used to develop selected sensor components for such aircraft. President Kennedy subsequently approved McNamara's decision on the matter.[229] When he explained the administration decision, McNamara related it not to the future of manned weapon systems but to the question of "whether this particular aircraft, in either of its configurations, could add enough to our already programed capabilities to make it worth its very high cost." The Air Force had justified the RS-70 as necessary for trans-attack reconnaissance (reconnaissance during or after a missile attack) and for an ability to examine targets and to attack them immediately with strike missiles. If a target were known to be somewhere within a relatively small area, McNamara believed that its location could eventually be established with enough precision to permit it to be attacked by a missile. As for post-attack reconnaissance, he suggested that "other means are expected to be available to determine whether targets previously attacked by ICEM's have been destroyed." In summary, McNamara said: "The RS-70, by carrying air-to-surface missiles, would provide only a very small increase in overall effectiveness. In my judgment this increase is not worth the large additional outlay of funds estimated at more than $10 billion above the $1.35 billion already approved."[230]

* * * *

In his commentaries on the Department of Defense budget for fiscal year 1963 General LeMay was chiefly concerned with the reduction in emphasis accorded to strategic forces within it. As early as the autumn of 1961, however, the Air Force evidently viewed

the new program package budgeting approach as providing for undesirable divisions of air power which would deny air power its inherent flexibility in operations. In the course of a major address in Philadelphia on 21 September 1961, General LeMay reminded his audience that aerospace power was indivisible and offered the ultimate in flexibility. "Our problem then, as I see it, as we reach higher and farther," he continued, "is that we must maintain our unity of mission and unity as an organization. . . . To be a credible deterrent, aerospace power must consist of flexible and diversified forces that have a war-waging and war-winning capability . . . . We need to restate firmly that the United States Air Force is an entity. Its elements all contribute to the aerospace power that is vital for our defense."[231]

Presented on 24 April 1962 by Brigadier General Jerry D. Page, USAF Deputy Director of Plans for Aerospace Plans and subsequently circulated as an Air Force position paper, "The USAF Concept for Limited War" engrossed many of the old doctrines about air power and new ideas that had been developed during the strategic debates earlier in 1962. This paper visualized war "in terms of the well-known 'spectrum of conflict,' with cold war at one extreme, general war at the opposite extreme, and limited war, with its numerous gradations, in between." It postulated: "The military base for successful deterrence at any level is overall force superiority; that is, a capability to fight successfully at whatever level of intensity necessary to win our objectives. Overall force superiority means maintaining control of the conflict by fighting on our terms, and its sine qua non is a war-winning ability to disarm the enemy even if the highest threshold of war is crossed. . . . Since limited war against Communist forces is not a separate entity from general war, our strategy and forces for limited war should not be separated from our overall strategy and force structure. The artificial distinction of limited war forces for this war and general war forces for that war destroys the inter-acting strength of our forces that will provide force superiority and continuous deterrence at any level of conflict." The paper provided a set of maxims and offered them as a guide for national strategy, military force posture, and for planning "in the real world of the 1960's and 70's." These maxims were as follows:

1. The deterrence of limited war is directly proportional to the risk assessed by the potential aggressor. Policies which appear to lower the risk in the eyes of the aggressor will encourage his aggressive acts.
2. One risk that is always unacceptable to any Communist state is the threatened loss or neutralization of its military capabilities.
3. If deterrence has failed and the U.S. is involved in a limited war, the primary objective will be to attain the political ends for which the U.S. entered the conflict--

normally involving the ending of hostilities as soon as possible, on favorable terms and at the lowest practicable level of intensity.

4. Success in limited war is contingent upon maintaining a superior general war capability.

5. Escalation must be feared most by the power with the weaker general war capability.

6. With general war superiority, a nation should respond to limited war aggression with the timely application of whatever forces are necessary, but no more, to achieve its objectives.

7. A nation's resources for defense are not unlimited. Within these resources the required general war forces demand the highest priority; expenditures for forces capable of fighting less than general war must not infringe on the maintenance of a superior general war capability.

8. A nation with technological superiority should use this asset to produce the most effective weapons and delivery systems, and thereby offset any deficiencies in defense resources, such as total manpower, conventional armaments, etc.

9. In limited war, control of the course of the conflict is paramount. The conflict should be conducted to take advantage of our best capabilities, to provide us with maximum choices rather than have the choices forced upon us by the enemy.

10. Insofar as practicable, military forces should be designed with the range, mobility, flexibility, speed, penetrative ability, and firepower delivery that can perform in cold, limited and general war situations.[232]

In his explanations of the program package budgeting approach, Secretary McNamara carefully pointed out that "we could use certain elements of the strategic retaliatory forces and continental air and missile defense forces for particular limited war tasks and, of course, all our forces would be employed in a general war."[233] Mindful that the Air Force possessed bomb-rack kits that enabled the B-47's and B-52's to be converted into conventional bomb carriers, McNamara was willing to admit that these planes had a limited capability for conventional bombing in small wars, but he remarked that the RB-70 would have no conventional bomb carrying capability. When considering a conventional-bomb war, moreover, McNamara thought it important to remember that the new F-4 tactical fighters and the experimental TFX would have "very substantial conventional bombing capabilities."[234]

* * * *

Since the Kennedy-McNamara administration was unwilling to provide a neat package description of national strategy, the full dimensions of the new United States defense policy and strategic outlook emerged only gradually during 1962. McNamara accepted a part of the Air Force counterforce strategy that called for the maintenance of particularized weapons, hardened weapons deployment, and secure command and control systems that would permit measured attacks against hostile military forces rather than all-out "spasm" strikes against cities and population centers. Speaking at Ann Arbor, Michigan, on 16 June 1962, McNamara stated: "The United States has come to the conclusion that to the extent feasible basic military strategy in a possible nuclear war should be approached in much the same way that more conventional military operations have been regarded in the past. That is to say, principal military objectives, in the event of a nuclear war stemming from a major attack on the Alliance, should be the destruction of the enemy's military forces, not of his civilian population. . . . In other words, we are giving a possible opponent the strongest incentive to refrain from striking our cities." Apparently discounting minimum deterrence in this same address, McNamara judged that "relatively weak national nuclear forces with enemy cities as their targets are not likely to be sufficient to perform even the function of deterrence. If they are small, and perhaps vulnerable on the ground or in the air, or inaccurate, a major antagonist can take a variety of measures to counter them. Indeed, if a major antagonist came to believe there was a substantial likelihood of it being used independently, this force would be inviting a pre-emptive first strike against it."[235]

Even though Secretary McNamara favored a counterforce posture as presenting a favorable option, he was not entirely sure that the posture would divert initial Soviet attacks away from American cities. Asked whether he could imagine a situation where the Soviets might attempt to spare American cities, he replied: "I can imagine such a situation, yes. I am not suggesting that I think it highly probable but I think that this higher requirement for survivability is a requirement that we should consider."[236] After an interview late in 1962, McNamara was directly quoted as saying: "I believe myself that a counterforce strategy is most likely to apply in circumstances in which <u>both</u> sides have the capability of surviving a first strike and retaliating selectively. This is a highly unpredictable business, of course. But today, following a surprise attack on us, we would still have the power to respond with overwhelming force, and they would not then have the capability of a further strike. In this situation, given the highly irrational act of an attempted first strike against us, such a strike seems most likely to take the form of an all-out attack on both military targets and population centers. This is why a nuclear exchange confined to military targets seems more possible, not less, when both sides have a sure second-strike capability. Then you might have a more stable 'balance of terror.' This may seem a rather

subtle point, but from where I'm sitting it seems a point worth thinking about."[237]

Many commentators interpreted McNamara's address at Ann Arbor as a conceptual acceptance of the doctrine of counterforce which seemed logically to demand "acceptance of its sine qua non--the ability to locate, seek out, and destroy enemy forces wherever and in whatever manner they may be deployed."[238] To correct this misinterpretation, McNamara explained that he had carefully refrained from using the word "counterforce" because it meant different things to different people. He meant to say no more than "that our total force requirement is determined on an assumption that we must have sufficient strategic forces to absorb a full Soviet strike, and survive with sufficient strength to absolutely destroy the Soviet Union. We consider the possibility, but it is only a possibility, that we may wish to launch that force in waves, if you will. Now the fact that it is launched in waves means that certain portions of it are exposed to potential further destruction during the period it is withheld prior to launch. This, in turn, increases our requirement for secure communications, secure command and control centers, and invulnerable forces."[239] Far from posing a requirement for a first-strike preemptive force, McNamara explained: "One point I was making in the Ann Arbor speech is that our second-strike capability is so sure that there would be no rational basis on which to launch a preemptive strike."[240] "The points I emphasized at Ann Arbor," he told a press conference, "included the point that weak nuclear forces operating individually under the control of a single nation were dangerous, obsolete, and costly. It has been the policy of this government, and will continue to be the policy, to deter the proliferation of national nuclear forces."[241]

As time passed the commentators who had believed that McNamara had endorsed a transcendent counterforce at Ann Arbor began to report that he had instead visualized a "stalemate" in the employment of nuclear weapons. When General Taylor was questioned on this matter on 9 August 1962--the day that the Senate confirmed his appointment as Chairman of the Joint Chiefs of Staff, he responded: "I am not sure what is meant by 'stalemate.' If that means a reluctance to resort to general atomic war, of course that is the mutual deterrence we are talking about, that is what we are seeking now. We are in a stalemate in that sense."[242] Early in 1962 Secretary McNamara pointed out that the destruction of Soviet missile forces would be further complicated as the Soviets hardened and dispersed their missiles and acquired missile launching submarines. During 1962 there was evidence that the Soviets followed both courses. "A very large increase in the number of fully hard Soviet ICBM's and nuclear-powered ballistic missile launching submarines," McNamara now observed, "would considerably detract from our ability to destroy completely the Soviet strategic nuclear forces. It would become increasingly difficult, regardless of the form of the attack, to destroy a sufficiently large proportion of the Soviet's

strategic nuclear forces to preclude major damage to the United States, regardless of how large or what kind of strategic forces we build. Even if we were to double and triple our forces we would not be able to destroy quickly all or almost all of the hardened ICBM sites. And even if we could do that, we know no way to destroy the enemy's missile launching submarines at the same time. We do not anticipate that either the United States or the Soviet Union will acquire that capability in the foreseeable future."[243]

At the same time that the prospects of a stable strategic balance of nuclear terror and a fear that the employment of tactical nuclear weapons could well lead to an escalation of a small conflict affected the defense strategy of the United States, the same factors--plus a new appreciation of Western Europe's growing economic strength and a desire to prevent a proliferation of nuclear weapons--caused the Kennedy administration to reassess the strategy of the North Atlantic Treaty Organization. Looking for a follow-on to the tactical Matador and Mace missiles, the Air Force had issued a special operational requirement for a mobile medium range ballistic missile (MMRBM) which would be small enough to be deployed on a mobile van or truck but would have a high degree of accuracy. While nuclear weapons for employment on Allied tactical fighters were increasingly augmented in Europe after 1958, General Norstad was fearful of the vulnerability of NATO aircraft to Soviet IRBM attack and pressed strongly for the development of the MMRBM and its assignment to American forces.[244] Following the Department of Defense approval of the development of the GAM-77 Skybolt in February 1960, arrangements were made in June 1960 permitting the British to participate in the development of this air-launched ballistic missile. It was also agreed that the British would be able to procure the developed missile for employment by the Royal Air Force V-bomber force.[245] By fitting a British nuclear warhead on the Skybolt, the Royal Air Force would be able to prolong the usefulness of its Vulcan bombers, and the British would also have an independence of action that was not possible with the Thor intermediate range missiles, which were jointly controlled by United States and British personnel.

Under President Kennedy's administration, United States defense policy began to shift away from the assumption that nuclear weapons would be almost automatically employed in a defense of Western Europe. "I, for one," Deputy Secretary of Defense Gilpatric told a press conference on 6 June 1961, "have never believed in a so-called limited nuclear war. I just don't know how you build a limit into it once you start using any kind of nuclear bang."[246] The United States also began to fear the consequences of proliferations of nuclear capabilities within national forces. Under President Charles DeGaulle the French were creating their own nuclear capability. At Ottawa on 17 May 1961, President Kennedy offered to "commit to NATO . . . five--and subsequently still more--Polaris submarines . . . subject to any agreed NATO guidelines on their control and use" and

also expressed willingness to consider the development of "a NATO sea-borne force, which would be truly multilateral in ownership and control."[247] At Chicago in February 1962, Secretary McNamara insisted that in a general war the United States strategic forces would be sufficient to perform any needed nuclear mission. "Allowing for losses from an initial enemy attack," he pointed out, "we calculate that our forces would destroy virtually all Soviet targets without any help from deployed tactical air units or carrier task forces which, of course, have the capability of attacking these targets with nuclear weapons."[248] In view of the sufficiency of United States strategic forces, independent nuclear forces in Europe appeared to be superfluous and wasteful. McNamara developed this theme in an address to the NATO Ministerial Meeting at Athens, Greece, on 6 May 1962 and repeated it in his Ann Arbor address the following month. In his Athens speech McNamara reminded his audience that the United States had committed five Polaris submarines to NATO, with more to come, and he suggested that "if the French and British [nuclear air] forces were used independently of other Western forces. . . they would have to be deployed against Soviet population centers, and this certainly would invite retaliation, immediate retaliation." At both Athens and Ann Arbor McNamara called upon the NATO allies to strengthen their non-nuclear general purpose forces, thereby complementing the United States nuclear deterrent.[249]

In his initial survey of defense projects after he took office, Secretary McNamara gave attention to the Skybolt missile, and this survey convinced him that the "cost history" of Skybolt was "particularly poor." Early in 1960 the Air Force had estimated that Skybolt would cost $214 million to develop and $679 million to procure, but in its July 1962 program submission the Air Force increased the estimated procurement cost to $1,771 million. Hoping to give the Skybolt system a fair chance to establish its worth, McNamara supported an additional $50 million for Skybolt in the fiscal year 1962 budget, and the fiscal year 1963 budget carried funds for the first procurement of the air-to-ground missile. By late 1962, however, the Air Force was estimating that the cost to develop and procure Skybolt would run to $2,263.6 million, and McNamara accordingly ordered an extensive Department of Defense review of the whole program which was conducted between September and November 1962. In this review, the Air Force strongly supported the air-to-ground ballistic missile. "It has been our view," LeMay stated, "that this was a good weapons system, and it would have enhanced the capability of the manned force considerably, and in all probability would have extended the life of the B-52 beyond what we see now."[250] Lieutenant General James Ferguson, Air Force Deputy Chief of Staff for Research and Development, considered that no special technical problems were outstanding in the Skybolt development effort. "I would go further to say," Ferguson continued, "that in the opinion of people who have gone through many of these growing pains of introducing some new weapon, that this program was at least as

healthy if not healthier than some others that reached fruition and that went into inventory."[251] In Joint Chiefs of Staff deliberations, Generals Wheeler and LeMay and Admiral Anderson recommended the continuation of Skybolt in the defense program. "I favored the Skybolt," Anderson explained, "because, first of all, we are in a period of transition, of technical change, and I have some doubts as to the reliability of missiles in the period we are talking about. I do not have the same confidence in any of the missile systems as do some of the technicians who attest to the performance of the missiles." General David M. Shoup, Commandant of the Marine Corps, apparently did not formally act with the Joint Chiefs on the Skybolt matter, but he agreed with Admiral Anderson. "I feel," Shoup said, "we should never, never eliminate the possibilities that our bombers have until we are absolutely sure of the reliability of missiles."[252]

After considering the guidance laid before him, Secretary McNamara made his own decision to cancel the development of the Skybolt missile. Dr. Brown offered the technical advice that the Skybolt "could be made to work" but that it would cost well over the amounts estimated and that, even when perfected, Skybolt's accuracy would be "considerably worse than fixed missiles or missiles on Polaris submarines." McNamara himself believed that "the Skybolt would very likely have become nearly a $3 billion program, not counting the additional costs of warheads. And even then, there was no assurance that the Skybolt development would result in a reliable and accurate missile." He also reasoned that Skybolt would also "combine the disadvantages of being soft and concentrated and relatively vulnerable on the ground and the bomber's slow time to the target." "On the one hand," he continued, "Skybolt would not have been a good weapon to use against Soviet strategic airbases, missile sites, or other high priority military targets because it would take hours to reach its target, while a Minuteman could reach it in 30 minutes. On the other hand, Skybolt would not have been a good weapon for controlled, countercity retaliation. Aside from its relative vulnerability to antiballistic missile defense, it has the important disadvantage that its carrier, the B-52, must be committed to its targets, if at all, early in the war because it would be vulnerable on the ground to enemy missile attack. Common sense requires that we not let ourselves be inflexibly locked in on such a matter. And being 'locked in' is unnecessary when we have systems like Polaris whose missiles can be withheld for days, if desired, and used at times and against targets chosen by the President."[253] In lieu of the capability that would have been provided by the 1,012 Skybolt missiles which the Air Force had expected to procure, Secretary McNamara added 100 Minuteman missiles to the Air Force program, with the understanding that these missiles and already existing Hound Dog missiles would be used for the suppression of hostile defense targets.[254] "I am perfectly happy," McNamara said, "with abandoning the Skybolt. As a matter of fact, I think it is very much in our national interest to do so, and I do not

believe it has any effect whatsoever on the life of the B-52."[255]

Since the United Kingdom had expected to purchase 100 Skybolt missiles in order to extend the usefulness of their Vulcan bombers into the late 1960's and early 1970's, the Kennedy administration's decision to cancel development of the missile had important repercussions within the NATO alliance. As the decision to cancel Skybolt was being made in the late autumn of 1962, the maturing Department of Defense study of Soviet ground capabilities indicated that there was a good possibility for a conventional NATO response to Soviet aggression on the central front in Western Europe.[256] In an address before the NATO Parliamentarians Conference on 16 November, Under Secretary of State George W. Ball emphasized that there was no reason why NATO could not maintain conventional forces that were at least equal to those in Eastern Europe.[257] In the following month while enroute to the NATO Ministers Conference, Secretary McNamara conferred about Skybolt in London with Defense Minister Peter Thorneycroft, who reportedly stated that a U.S. abandonment of the missile would lead to an agonizing reappraisal of Anglo-American defense plans. In order to reach a common understanding, President Kennedy and Prime Minister Harold MacMillan met at Nassau between 18-21 December. Here President Kennedy offered either to continue Skybolt, with the British to bear half of the cost of completing its development, or to make Hound Dog missiles available for British procurement. It was finally agreed, however, that the United States would permit the British to purchase Polaris missiles. The British would build their own submarines and would provide warheads for the missiles. These British submarines and other similar American forces would be assigned to a NATO nuclear force and targeted in accordance with NATO plans. Except where supreme national interests were at stake, these forces would be used solely for international defense. Kennedy and MacMillan also agreed that the ultimate purpose was to develop a NATO multilateral nuclear force and that the United States would invite France to participate in the force on terms similar to those offered Great Britain. In the final paragraph of the Nassau communique, the two leaders announced a reversal of the atomic "Sword" and conventional "Shield" strategy that had prevailed in Europe. They agreed that "in addition to having a nuclear shield it is important to have a non-nuclear sword. For this purpose they agreed on the importance of increasing the effectiveness of their conventional forces on a world-wide basis."[258]

In the late autumn of 1962 the decisions made on the strategic systems--including the prototype development of the B-70 and the cancellation of the Skybolt missile--tended to be obscured by public concern about the Cuban missile crisis. In February 1963, however, a writer in Air Force magazine bluntly charged: "Skybolt was killed because it did not conform to the new defense policy. . . . Much the same can be said for the RS-70 Mach 3 airplane."[259] General LeMay viewed the changing strategy with more reserve. "I am concerned . . . about the trend," he said, "about phasing out bombers and

depending too much on missiles. . . . I have spent a lot of my time . . . trying to convince the Secretary of Defense on the subject of manned bombers. I have not been able to convince him or the President. I think I have convinced a lot of other people, but they make the decisions. And I have no other choice except to be a good soldier and carry them out and that is what I am doing."[260]

CHAPTER 12

THE NEW FRONTIER: MATURITY OF DEFENSE STRATEGY

1. The Cuban Missile Crisis of 1962

The confrontation between the United States and the Soviet Union arising from the emplacement of Soviet missiles in Cuba in October 1962 appeared to many knowledgeable Americans to mark the turning of a corner in history. Writing in the aftermath of the missile crisis, Walter Lippman observed: "It had become plain by the summer of 1963 . . . that the postwar period had ended. Europe had recovered and the danger of a great war in Europe had subsided with the Kremlin's acceptance of a balance of power in which it acknowledged American superiority and we acknowledged that we were not supreme and omnipotent."[1] Although the complete record of the Cuban missile crisis remained closed to the public, participants in the confrontation freely published their experiences and reported the lessons they had learned. These "lessons" soon became determinants of the maturing defense strategy of the Kennedy-McNamara administration.

Shortly after the ill-fated Bay of Pigs invasion the Soviet Union began to supply Premier Fidel Castro's revolutionary government on Cuba with large quantities of conventional local-defense weapons, including MIG-15, -17, and -19 aircraft, motor torpedo boats, and coastal patrol vessels. In July and August 1962 an unusually large number of Soviet vessels landed cargo and passengers at Cuban ports, and the cargoes were unloaded by Soviet military personnel. On 29 August a high-altitude U-2 reconnaissance pilot took photographs which revealed that SA-2 surface-to-air antiaircraft missiles had been installed at several locations. Successive flights disclosed additional SA-2 emplacements, as well as a growing number of short-range coastal defense cruise missile installations. Citing the need of the United States for an ability to respond to challenges in any part of the free world, President Kennedy asked Congress on 7 September to renew his authority to order units and individuals of the Ready Reserve to not more than twelve months' active duty. This legislation was voted and approved on 3 October.[2] In an official statement the Soviet government asserted on 11 September that armaments and military equipment being sent to Cuba were "designed extensively for defensive purposes" and that the Soviet Union had "no need . . . to shift its weapons . . . for a retaliatory blow, to any other country, for instance Cuba."[3] Speaking of the movement of Soviet arms to Cuba at a news conference on 13 September, President Kennedy stated a belief that the "new shipments do not constitute a threat to any other part of this hemisphere." If continuing surveillance indicated that Cuba "should possess a capacity to carry out offensive actions against the United States," Kennedy promised that "the United States would act."[4]

According to later evidence the first Soviet medium range ballistic missiles began to arrive in Cuba about 10 September. A reconnaissance photograph taken on 28 September showed crates on a freighter's deck that could have held fuselages of twin-jet Ilyushin-28 bombers. Early on the morning of 14 October, after cloud cover from Hurricane Ella had delayed aerial surveillance for a week, photographs taken by a U-2 aircraft of the 4080th Strategic Reconnaissance Wing revealed Soviet medium range ballistic missile units being deployed in the San Cristobal area. Three days later other high-altitude photography postively disclosed intermediate range ballistic missile installation near Guanajay, and other such installations were soon located near Remedios.[5] Quite unlike the local defense weapons that had been sent to Cuba earlier, the Soviet missiles and the IL-28 bombers were clearly offensive weapons.

In a televised interview a few weeks after the missile crisis, President Kennedy suggested that neither the United States nor Khrushchev had made correct evaluations during the period leading up to the confrontation. "I don't think," he said, "that we expected that he would put the missiles in Cuba, because it would have seemed such an imprudent action for him to take. . . . Now, he obviously must have thought that he could do it in secret and that the United States would accept it." Kennedy speculated that the Soviets had intended to establish the missiles in Cuba secretly and were planning to disclose during November that they were there. Since the Soviets had ICBM's based in Russia, Kennedy did not conceive that the Soviets needed other missiles in Cuba to redress the military balance of power, but he observed that the Cuban missiles nevertheless "would have politically changed the balance of power."[6] While admitting that his opinion was speculation, Secretary McNamara suggested that Khrushchev intended to disclose "the introduction of offensive weapons systems directed against the Nation at some time appropriate to him, perhaps in conjunction with the renewed pressure upon Berlin, and endeavor, thereby, to weaken the negotiating position of the Western World."[7] In an official explanation to the Supreme Soviet on 12 December 1962, Khrushchev stated that the Soviet strategic weapons were deployed to Cuba solely to defend Cuba against United States attack and that once President Kennedy had removed the threat of such an attack the weapons had served their purpose and could be removed. On 28 October the official Soviet newspaper Izvestiya positively denied that the Soviets had undertaken the Cuban venture preparatory to a trade whereby they would remove their missiles from Cuba in exchange for the removal of NATO missiles from Turkey.[8] At the height of the crisis on 27 October, however, Khrushchev did propose that the Soviet Union would agree to remove its missiles and that the United States would "evacuate its analogous weapons from Turkey."[9]

Even though Kennedy and McNamara emphasized the political rather than the military effect of the Soviet missiles in Cuba, RAND analyst Arnold L. Horelick advanced the hypothesis that the deployment of strategic weapons in Cuba "may have recommended itself to the Soviet

leaders as a 'quick fix' measure to achieve a substantial, though far from optimal improvement in Soviet strike capabilities against the United States."[10] The American fear of a missile gap had dissipated, and the Soviets rather than the United States had a deficit in intercontinental ballistic missiles. According to the British Institute for Strategic Studies, the Soviets had 75 ICBM's and 700 MRBM's operational in October 1962. The medium range missiles hazarded NATO, but only the intercontinental missiles threatened the United States. In this same month the United States had eight Polaris submarines with 128 missiles at sea, and it would appear from later Congressional testimony that 170 Air Force ICBM's were also operational. The U.S. strategic missile order of battle was rapidly increasing: according to Secretary McNamara, the United States would have 144 Polaris and 210 Atlas, Titan, and Minuteman missiles operational on 30 January 1963.[11] By establishing a missile base in Cuba the Communists would be able to employ cheaper and more plentiful medium range missiles against the United States. Even though their deployment was cut short (five large-hatch ships turned back after the American quarantine began) the Soviets had 42 medium and intermediate range missiles in Cuba, and they were deploying them at six MRBM and three IRBM sites.[12] When added to the estimated 75 ICBM's that the Soviets possessed, the Cuban missiles might well have provided an immediate counter-population capability against the 130 American cities with populations in excess of 100,000.

Without seeking to know Khrushchev's exact motives, President Kennedy assembled a selected group of his advisors at 1145 hours on the morning of 16 October to determine a course of action relative to the emplacement of offensive Soviet weapons in Cuba. The group elected to intensify air reconnaissance, to preserve the tightest secrecy, and not to disclose knowledge of the bases until the United States was prepared to act. As the crisis continued, the small group of men, variously referring to themselves as the "Think Tank," the "War Council," and the "Excom," provided a steady flow of advice to President Kennedy. This group included Secretaries Rusk and McNamara, Attorney General Robert F. Kennedy, Under Secretary Ball, and Deputy Under Secretary of State U. Alexis Johnson. There appeared to be three possible courses of action: the destruction of the missile sites by air attack, the surface invasion of Cuba, or a blockade or quarantine of the island. The practicability of surface invasion was soon ruled out: it would take too long to mount, would negate surprise, and might alienate world opinion. The group ultimately accepted what Under Secretary Ball described as "the wisdom--indeed the necessity--of the measured response." The Presidential Assistant, Theodore C. Sorenson, described the executive reasoning process as being: "An air strike on military installations in Cuba, without any advance warning, was rejected as a 'Pearl Harbor in reverse'--and no one could devise a form of advance warning (other than the quarantine itself, which was a type of warning) that would not leave this nation vulnerable to either endless discussion and

delay (while work on the missiles went forward) or to harsh indictment in the opinion and history of the world."[13]

After 16 October high altitude air surveillance flown by the Strategic Air Command was greatly intensified by Presidential order, and the entire Department of Defense was ordered "to prepare for any eventualities." As finally developed, command of the general purpose forces readied for employment in the Cuban crisis was assigned to the Commander-in-Chief, Atlantic, and under the unified commander the Continental Army Forces were designated as Army Forces, Atlantic, and the Tactical Air Command was designated as Air Forces, Atlantic. The commander of the XVIII Army Airborne Corps was designated Joint Task Force Commander to plan any joint operations that might become necessary. The President and the Secretary of Defense exercised over-all control through the Joint Chiefs of Staff, who named the Chief of Naval Operations as their representative for the quarantine. Under the operational control of the North American Air Defense Command, fighter interceptors and Hawk and Nike-Hercules antiaircraft battalions were moved to the southeastern United States to support local air defense forces. Starting on 20 October, the Strategic Air Command began dispersing its bombers to continental and oversea bases and placed all aircraft on an ungraded alert--ready to take of off, fully-equipped, within 15 minutes. ICBM crews assumed a comparable alert posture, and Polaris submarines went to preassigned stations at sea.[14]

President Kennedy first informed the American people of the Soviet offensive arms buildup in Cuba and of the steps that would be taken to counter it in a radio and television address early on the evening of 22 October. Kennedy explained that the United States would initiate a strict quarantine on the movement of all offensive military equipment to Cuba. It would increase close surveillance of Cuba and its military buildup. The U.S. naval base at Guantanamo, Cuba, had been reinforced and all dependents were being evacuated. Kennedy also stated that the United States was calling an immediate meeting of the Organ of Consultation under the Organization of American States and of the Security Council of the United Nations. "It shall be the policy of this Nation," he announced, "to regard any nuclear missile launched from Cuba against any nation in the Western Hemisphere as an attack by the Soviet Union on the United States, requiring a full retaliatory response upon the Soviet Union." Finally Kennedy called upon Khrushchev to withdraw the missiles from Cuba.[15] Coincident with the President's address, NORAD air defense interceptor units went either on patrol missions or on a 5-to-15 minute alert, and the Strategic Air Command started its B-52 bombers on a continuous air alert. Some 67 B-52's carrying a total of about 300 thermonuclear bombs or missiles appear to have been continuously airborne within striking distance of the Soviet Union between 22 October and 21 November 1962.[16]

As the crisis unfolded President Kennedy's strategy of providing a spectrum of possible graduated responses became clear. At each

threshold of action, possibilities for negotiation were provided. Announced as impending on the evening of 22 October, implementation of the quarantine against further shipment of offensive arms--bombers as well as missiles--awaited approval of the Organization of American States on 23 October, and later that day Kennedy announced that it would begin at 1400 hours Greenwich time on 24 October.[17] While Khrushchev protested the illegality of the quarantine, he had the option of either attempting to force through it or to order the vessels carrying war materials to return to the Soviet Union. Work on the missile sites continued at a very rapid rate, but 16 dry cargo ships en route to Cuba returned to the Soviet Union.[18] In his policy statement Kennedy studiously ignored Castro and informed the Soviet Union that "full retaliatory response" would be visited upon Russia if a Cuban-based missile were fired (thus eliminating the possibility of the Soviets using Castro as a proxy), but United States news releases underplayed the strategic nuclear response and emphasized the concentration of general purpose forces in a position of readiness to invade Cuba.[19] Khrushchev was nevertheless keenly aware of the danger of nuclear war. In an unusual letter to Lord Bertrand Russell on 25 October, Khrushchev stated: "We are fully aware that if this war is unleashed, from the very first hour it will become a thermonuclear and world war."[20] On the evening of 26 October (27 October in Moscow), President Kennedy received a personal message from Khrushchev that was not released to the public but was described in general terms. "It contained no specific proposal or conditions," stated Roger Hilsman, then Director of Intelligence and Research in the State Department, "but showed throughout an appreciation of the risk of nuclear war and the need for reaching an agreement."[21] Khrushchev's personal message greatly relieved the anxiety of Washington officials. "Remember when you report this--," Secretary Rusk told a newspaper reporter, "that, eyeball to eyeball, they blinked first."[22]

In an explanation to the Supreme Soviet on 12 December, Khrushchev pointed out the danger posed by the concentration of United States general purpose forces in Florida. He stated that "several paratroop, infantry, tank, and armored divisions--numbering about 100,000 men--were detailed for an attack on Cuba alone." In the morning of October 27," he continued, "we received information from our Cuban comrades and from other sources which directly stated that this attack would be carried out within the next two or three days. We regarded the telegrams received as a signal of utmost alarm, and this alarm was justified. Immediate actions were required in order to prevent an attack against Cuba and preserve peace."[23] Putting himself in Khrushchev's position at this critical juncture, Secretary McNamara rationalized that "we had a force of several hundred thousand men ready to invade Cuba . . . had we invaded Cuba, we would have been confronted with the Soviets . . . had we been confronted with the Soviets we would have killed thousands of them . . . had we killed thousands of them the Soviets would probably have had to respond . . . they might have had nuclear delivery

weapons . . . and they might have been launched. . . ." [I]n any event," McNamara concluded, "Khrushchev knew without any question whatsoever that he faced the full military power of the United States, including its nuclear weapons. That might be difficult to understand for some, but it is not difficult for me to understand, because we faced . . . the possibility of launching nuclear weapons and Khrushchev knew it, and that is the reason, and the only reason, why he withdrew those weapons."[24]

While Khrushchev's nerve appears to have broken during the night of 26/27 October a second Soviet letter to President Kennedy--signed by Khrushchev but not written in his personal style--received in Washington during the day on 27 October indicated that Soviet policy might be hardening. This communication proposed that NATO missiles would be removed from Turkey in exchange for the removal of Soviet missiles from Cuba.[25] On 27 October, work at the Cuban missile sites continued, and while on a high altitude U-2 flight over the island Major Rudolph Anderson, Jr., was shot down and killed. During the afternoon of 27 October (28 October in Siberia) another U-2 pilot, who was flying a routine upper air sampling mission from Alaska, wandered 800 miles deep into the Chukotski peninsula of Siberia. The Soviets scrambled interceptors, but American planes moved out of Alaska and escorted the U-2 to safety.[26] In a statement to the press issued during the day, the White House postponed any consideration of the Soviet proposal to remove NATO missiles from Turkey,* and on the evening of 27 October Secretary McNamara ordered 24 Air Force Reserve troop carrier squadrons to active duty. That same evening, Kennedy and his advisers composed and dispatched a letter to Khrushchev which informed him that his proposals of 26 October seemed generally acceptable. These proposals included removal of offensive weapon systems from Cuba under United Nations supervision, and a Soviet agreement to halt further introduction of such weapons into Cuba. Following establishment of adequate United Nations safeguards, the United States would remove its quarantine and give assurances against invasion of Cuba.[27]

When he was told about the wandering U-2 pilot on the afternoon of 27 October, President Kennedy was reported to have laughed and said: "There is always some so-and-so, who dosen't get the word."[28] The Soviet leaders, however, manifested extreme apprehension about the Strategic Air Command's airborne alert and the danger that some

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*In a conversation with Soviet Ambassador Anatoly Dobrynin on the evening of 27 October, Attorney General Robert Kennedy explained that President Kennedy had wanted to remove the missiles from Turkey and Italy for a long time. While the United States would not remove the missiles under pressure or without NATO's consent, Robert Kennedy told Dobrynin that in his judgment the missiles "would be gone" within a short time after the crisis was over. (Robert F. Kennedy, "Thirteen Days, the Story About How the World Almost Ended," McCalls, Nov. 1968, p. 170.)

accident might set off a general war. In his speech to the Supreme Soviet on 12 December Khrushchev emphasized "the direct menace of a world thermonuclear war, a menace that arose in connection with the crisis in the Caribbean." He specifically mentioned the Strategic Air Command airborne alert. "About 20 percent of all U.S. Strategic Air Command planes, carrying atomic and hydrogen bombs," he said, "were kept aloft around the clock."[29] On the morning of 28 October, when Khrushchev accepted Kennedy's propositions for resolving the conflict, the Soviet Premier apparently referred to the previous day's U-2 overflight with great apprehension. "Is it not a fact," he asked, "that an intruding American plane could be easily taken for a nuclear bomber, which might push us to a fateful step; all the more since the U.S. Government and Pentagon long ago declared that you are maintaining a continuous nuclear bomber patrol?" In the main portion of this message, Khrushchev accepted Kennedy's assurance that the United States would not invade Cuba as a sufficient reason to remove the arms which had been described as offensive. Khrushchev revealed that he had instructed the Soviet officers in Cuba to discontinue construction of sites, to dismantle the weapons, and to return them to the Soviet Union. He was prepared to accept a United Nations verification of the removal of the weapons.[30]

During the crisis Fidel Castro had been virtually ignored by both the Soviet Union and the United States, and he would refuse in the end to permit a United Nations inspection and verification of the removal of the Soviet offensive weapons from Cuba, thus technically relieving President Kennedy of his pledge not to invade Cuba. As far as could be determined from aerial inspection, however, the Soviets lived up to their agreement to remove the missiles and the IL-28 bombers from Cuba. They also dismantled and destroyed the missile installations. In view of the Soviet actions, Kennedy instructed Secretary McNamara on 20 November to lift the quarantine, and shortly afterward the special alert activities of the armed forces were gradually reduced.[31] Secretary McNamara emphasized "without any qualifications whatsoever there was absolutely no deal . . . between the Soviet Union and the United States regarding the removal of the Jupiter weapons from either Italy or Turkey."[32] But in the aftermath of Cuba, the United States took immediate steps to remove its vulnerable IRBM's from Europe and to replace them with Polaris submarines. According to General LeMay, the British had never been very enthusiastic about the Thor as a weapon system, and they readily agreed to dispense with such missiles. The first Thor squadron was taken out of operation early in 1963 and the last was apparently dismantled in August 1963.[33] During the NATO Ministerial Meeting in December 1962 McNamara discussed the removal of the Jupiter missiles with the Ministers of Defense of Italy and Turkey. Aside from the vulnerability of the Jupiters, McNamara remarked: "It costs us roughly $1 million per year per missile simply to maintain the missile in Turkey . . . and we see no need to continue that expenditure for such an ineffective weapon."[34] The Jupiters were taken out of operation and dismantled by April 1963, and an

equivalent number of Polaris submarines was assigned to the Supreme Allied Commander Europe to replace the land-based missiles.[35]

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Efforts to assess the meaning of the Cuban missile crisis and to determine its lessons closely followed the successful resolution of the confrontation. "I think, looking back on Cuba," President Kennedy observed on 17 December 1962, "what is of concern is the fact that both governments were so far out of contact, really." Extending his remarks, Kennedy suggested that World War I, World War II, and the Korean War had been brought on by "misjudgments" that in many ways were similar to the Soviet misjudgment of the effect that the installation of the offensive missiles in Cuba would have on the United States.[36] Although it was only a part of the problem, Kennedy noted that slow diplomatic communications had hampered the resolution of the Cuban crisis. He accordingly welcomed the Soviet acceptance on 20 June 1963 of his proposal to establish a direct telecommunications link between Washington and Moscow. "This age of fast-moving events," he said, "requires quick dependable communications for use in time of emergency."[37]

At the NATO Parliamentarians Conference held in Paris early in November 1962, Under Secretary of State Ball used the Cuban crisis as an illustration of the requirement for conventional military forces. Ball observed: "Why were we able to modulate and attune our responses so closely to the degree of our need? Surely it was because we had the ability to deploy as required a very large variety of land, sea, and air forces in the fashion necessary to accomplish the task at hand. Because we had clear superiority of conventional forces, we were never confronted with the awful dilemma of having to utilize major nuclear weapons or to retreat from our objective."[38] In another State Department assessment, Secretary Rusk emphasized that a major lesson to be drawn from Cuba was a requirement for international arms limitations. "There are many things," he said, "which can and will, in due course, be said about the Cuban crisis. One of them is that Cuba has provided a dramatic example of the deadly dangers of a spiraling arms race. It is not easy to see how far-reaching disarmament can occur. . . . Nevertheless, it is also obvious, as we have seen in recent weeks, that modern weapons systems are themselves a source of high tension and that we must take an urgent and earnest effort to bring the arms race under control and to try to turn it downward if we possibly can."[39]

In his public assessments of the lessons of the Cuban crisis, Secretary McNamara usually prefaced his remarks with the conclusion that Khrushchev had been confronted and defeated. "I think that throughout the world today, both in the Communist bloc and in the non-Communist bloc," he noted, "there is a clear recognition that Khrushchev capitulated. . . . My own strong personal belief is that we did not sucker for a play by Khrushchev, that he has been defeated, and that our position in the world today is far stronger as

a result of the action. . . ." On another occasion, he said: "The Soviets suffered a serious defeat when they attempted to introduce ballistic missiles into Cuba . . . and were forced to reverse their plans by the threat of the application of military pressure by this country. It was one of the most serious defeats of this decade."[40]

In assessing the reasons why Khrushchev had capitulated in the Cuban crisis, McNamara believed that "he backed down . . . because we had both a nuclear superiority and a conventional superiority in that particular instance. . . . If there was a single decisive factor, it was the U.S. determination to use force on the Cuban issue, if necessary. The improvement in our general purpose forces was an element which helped make that determination credible to the Soviets."[41] At the NATO Ministerial meeting in December 1962, McNamara referred to the Cuban crisis and pointed out that "perhaps most significantly, the forces that were the cutting edge of the action were the nonnuclear ones. Nuclear force was not irrelevant but it was in the background. Nonnuclear forces were our sword, our nuclear forces were our shield." As has been seen, this same idea found its way into the Kennedy-MacMillan communique that closed the Nassau conference. Speaking for the Army, General Wheeler agreed "wholeheartedly" with McNamara's conclusions. "In my opinion," Wheeler said, "the major lesson for the Army in the Cuban situation lies in the demonstrated value of maintaining ready Army forces at a high state of alert in order to equip national security policy with the military power to make a direct confrontation of Soviet power."[42] When asked about the role of the Strategic Air Command in the Cuban crisis, McNamara responded: "SAC's principal role during the crisis was to help to lend credibility to our determination to take whatever actions were necessary to achieve the removal of Soviet offensive weapons from Cuba."[43] General Wheeler also apparently agreed with this finding. "SAC . . .," he said, "was put on an airborne alert, and this served, I believe, a very useful purpose. It put the Soviets on notice that we were serious, and it put them on notice we were ready to carry through, prepared to carry through."[44]

While Secretary McNamara was unwilling to draw "just one single lesson from Cuba," he nevertheless stated that the improvements made in general purpose forces during the first two years of the Kennedy administration had been "an important determinant when the showdown came."[45] But he nevertheless found deficiencies in the general purpose forces during the crisis that needed correction. In order to effect the quarantine, the United States had to employ Air Force and Navy planes to locate every Soviet ship moving toward the Western Hemisphere, and there were not enough planes available to accomplish this objective. McNamara also noted that the Navy was short in needed patrol craft and escort vessels. There had been shortages in transport aircraft. "We needed transport aircraft," McNamara recalled, "because of the invasion that we were prepared for and were ready to undertake. We were so short of transport aircraft that . . . I called up 14,000 citizens and put them into the Air Force and brought 400 transport aircraft that were obsolete into

active duty in order that they might be used to fly over Cuba 36 hours later." McNamara also disclosed that the Cuban crisis had revealed a shortage of Air Force fighter aircraft. "We were terribly short of fighter aircraft," he said. "We moved them from all over the country into the southeast area and we were still short. . . . We needed air defense for the southern area. We stripped air defense from other parts of the country to put down there."[46] The Air Force agreed with McNamara's findings regarding the shortage of tactical air capabilities. During the crisis it was compelled to cancel rotation of Tactical Air Command squadrons to NATO, and it was compelled to draw upon supply stocks as far away as the Philippines to get materiel needed in the southeastern United States. In the process of laying down limited-war contingency supplies overseas, the Air Force had shorted itself in the zone of interior. As a result of the events in Cuba, the Air Force also emphasized the need for the development of more modern tactical air reconnaissance systems, especially systems that could pierce cloud cover and detect hostile activities by sensing emitted or reflected energy.[47]

Although the Air Force agreed that the Cuban crisis had disclosed deficiencies in tactical air capabilities that required correction, General LeMay was unwilling to accept many of the other conclusions that were offered about the experience. To LeMay the Cuban crisis demonstrated that the Soviet Union would "take advantage of any technical breakthrough or make any strategic move which they believe might swing the balance of power in their favor without undue risk."[48] In assessing why Khrushchev had capitulated, LeMay asserted: "I am convinced that superior U.S. strategic power, coupled with the obvious will and ability to apply this power, was the major factor that forced the Soviets to back down. Under the shelter of strategic power, which the Soviets did not dare challenge, the other elements of military power were free to exercise their full potential."[49] LeMay believed that Khrushchev had gone into Cuba with the full knowledge that he could not support conventional action in such a remote spot. "It was," he said, "a matter of bluff then, whether we would stand up to this or not. We did stand up. It was the strategic power that ran the ball. When we indicated we were willing to use that [strategic power], he lost the game."[50]

On the philosophical level the Cuban crisis provided General LeMay with another example of the capabilities of superior strategic power, coupled with a manifest willingness to employ it, to deter both general and limited war--an idea which he developed in 1963-64. "Certainly. . .," he argued in February 1963, "we had the conventional forces to go in and take care of the missiles in Cuba or any other conventional Russian forces that were there. Our strategic superiority gave us the option of whether we would go or not. The choice was made that it was not necessary to go because the Russians removed the missiles."[51] Recalling the often-repeated assertion that superior United States strategic power had not prevented limited war in Korea, LeMay pointed out: "As far as strategic superiority

not preventing limited wars, it did not prevent the limited war in Korea because we did not exercise it like we did in Cuba. In Korea we did not say there will be no limited war. We just said there will be no general war or we will use our nuclear weapons. I think if we had said that there will be no limited war or there will be no war in Korea or we will use our nuclear weapons, there would not have been any." In February 1964, LeMay suggested additional thoughts on Korea, saying: "Korea, I think, was brought on because we practically publicly stated we were getting out of Korea and were no longer interested. So they came in and then they felt they were doublecrossed because we then changed our minds and went into Korea and fought under artifical restrictions with their having a sanctuary north of the Yalu. We fought this with conventional weapons, TNT only, no nuclear weapons considered. . . . Furthermore, with artificial barriers, we had to wait until the enemy came into Korea before we could do anything about them. We could not destroy the Chinese and the North Korean strength at its source, which was on the other side of the Yalu." In concluding his 1963 summary, LeMay had said: "It was not until the armistice period at the end of the Korean war that we stated, if it ever started up again, then we would use whatever weapons were necessary in places of our own choosing." In summary, LeMay concluded that the Korean war had resulted from the failure of the United States to announce in advance a policy of employing strategic superiority to prevent such a type of conflict. "Once a war starts and we are attacked, as in the case of Korea, where we were in there fighting," he added, "I think that could have been stopped by the threat of using nuclear weapons."[52]

In a continuation of his discussion of the capability of strategic power to deter limited war, LeMay suggested that President Eisenhower's statement that ground forces would not be relied upon to defend Berlin had deterred the Soviets from action in 1958. He described the Lebanon experience as "another classic example of what you can do if you have strategic superiority and then are able to exploit any situation with your conventional force without interference. Without nuclear and strategic superiority, I do not think we would have dared go into Lebanon." In the Cuban crisis, LeMay considered that the United States had shown "a will to use all our power to force the Russians to move their missiles." He was confident that the same lesson would apply in the future: "If you have the power to stop a big war, certainly the same power ought to be capable of stopping a small war."[53]

In a summary of his views, General LeMay pointed out that the nation's investment in air power "positively proved its worth in the . . . Cuban crisis." Manned systems had demonstrated an ability "to make swift and clearly recognizable moves to evidence U.S. resolve in the face of provocation." While ballistic missiles had remained fixed in their silos, the movement of tactical aircraft to the southeastern United States, the worldwide deployment of other aircraft, and the Strategic Air Command's airborne alert had provided visible evidence of the national resolution and determination

to prevail in Cuba. "Admittedly I suffer from some bias," he observed, "but I believe the investment in airpower is the best dollar value on the market today." To LeMay the Cuban operation "once more proved the value of military airpower, designed and operated by dedicated professionals who are experienced in operating airpower as an entity."[54]

* * * *

In the United States and also in the Soviet Union the enormity of the possibilities that the Cuban crisis might escalate into all-out war had a sobering effect upon national leaders. In an impromptu toast at a Kremlin reception on 7 November 1962, Premier Khrushchev declared that during the Cuban crisis "we were very close--very, very close--to a thermonuclear war . . . if there had not been reason, then we would not be here tonight, and there might not have been elections in the United States."[55] Speaking of the Cuban confrontation Secretary Rusk thought it important to remember "that something new in history happened . . . and that is that nuclear powers had to look actually and operationally at what nuclear exchange could mean, and . . . this was an experience that those who carried responsibility on all sides recognized that one does not go through as a weekend avocation."[56]

At the top level of United States leadership one of the most important results of the Cuban crisis was the emphasis given to a need for ever closer political and military relationships in the determination of national strategy. Shortly after he had assumed office, President Kennedy had told the Joint Chiefs of Staff that he expected them to take both military and political factors into consideration in the solution of their problems.[57] This instruction required a reorientation in the frame of reference of the Joint Chiefs of Staff since under the Eisenhower administration they had regarded themselves as the military advisers to the President and had attempted to give advice to him based upon military factors, with what Admiral Arleigh Burke had described as "a minimum of economic and political factors."[58] Under the Kennedy mandate, General LeMay noted that the Joint Chiefs felt compelled to give political considerations to the problems they approached but that they nevertheless attached primary importance to the military considerations affecting the problems. In other words, the Joint Chiefs undertook to weigh the political aspects of problems in the same manner that the State Department could not avoid considering the military aspects of problems although it was primarily concerned with the political aspect.[59] After Cuba, however, Secretary McNamara observed: "To the best of my knowledge there has never been since World War II a closer relationship between the State Department, the Defense Department at all echelons than exists today."[60] McNamara believed that strategy must be made by the State Department and the Defense Department working in close association

and must represent a proper appreciation of the national objectives of the United States, the nature of the hostile challenge, and the real and potential capabilities of military forces.[61]

2. Strategic Debates of 1963

Since he conceived that national strategic policies had a direct impact upon the Congressional constitutional mandate to raise and maintain military forces, Secretary McNamara attempted, beginning in January 1963, to discuss strategy with Congress even more fully than he had done in the past. In his appearances before Congressional committees, he prefaced his discussion of military strategy with a new assessment of the capabilities and threats presented by Communist nations. He pointed out that during 1962 the Soviet Union had attempted to extend its offensive military power into Cuba, had continued to exert pressure on Berlin, and had sought to make inroads into the Arabian peninsula and the Congo. The Chinese Communists were the point of origin in the drive to subvert Southeast Asia and had launched overt military aggression against India. "All these crises or probing actions," he concluded, "are simply the more obvious manifestations of the Communist drive toward their basic objective of world domination." Although the basic Communist objective did not change, McNamara noted that the Soviet Union was becoming a "have" nation which would have a great deal to lose in a nuclear war--material wealth as well as human life. The Red Chinese, on the other hand, were economically impoverished, held human life in little value, and appeared more willing to run the risk of nuclear war. From these observations, McNamara concluded that "the apparent monolithic structure of world communism has been fractured, perhaps irreparably."[62]

When he again assessed the Communist menace for the benefit of Congress early in 1964, Secretary McNamara believed that the basic trends he had anticipated early the preceding year had materialized. "Indeed," he said, "as far as the Soviet Union is concerned, the Cuban crisis of October 1962 seems to have marked the crest of the latest in the series of crisis cycles. . . . We now appear to be on the downward slope of this latest cycle and tensions in our relations with the Soviet Union are easing." He believed that the substantial increase in the military strength of the United States, its demonstrated willingness to use the force in defense of its vital interests, its continuing efforts to assist free nations, together with economic difficulties and agricultural failures within the Communist nations, had caused the Soviet Union and Communist China to abstain from military provocations during 1963. While the Reds had changed their tactics, McNamara nevertheless warned that Communist objectives had not changed. "I do not believe," he said, "we can reasonably assume that these manifestations of a change in policy reflect a change in the ultimate objective of the Soviet leadership, which is to extend the sway of communism over the rest

of the world. . . . Expansionism is so deeply engrained in Communist doctrine that it would be naive for us to expect any Communist leadership to repudiate it."[63]

Early in 1963 Secretary McNamara considered that national strategic intelligence estimates of Soviet forces and force capabilities bore out his commentary on the changing nature of Soviet tactics. In February 1963, McNamara emphasized that the Soviets actually possessed a "very limited . . . manned bomber capability."[64] The Soviet intercontinental and submarine-based ballistic missile force was the principal danger to the United States. The Soviets were continuing to harden their ICBM sites, and they had kept submarines "a fair distance off the coast" of the United States during the Cuban crisis.[65] The Soviets had the option to produce ICBM's in sufficient numbers to support a counterforce strategy or they could procure only enough of the missiles to destroy population centers. Since intelligence indicated that the Soviets would have far fewer intercontinental missiles than the 1,000 land-based missiles that the United States would possess by 1 July 1965, McNamara could only conclude that the Soviet strategy was what Khrushchev said it was--"a strategy directed primarily against our cities and our urban society."[66]

Nothing occurred during 1963 to make Secretary McNamara revise his force estimates. On the contrary in December 1963, Khrushchev announced another 4 percent reduction in the Soviet defense budget and a slowdown in foreign aid and space programs. Where McNamara had earlier concluded that NATO possessed ground forces equivalent to those of the Soviets, he stated in January 1964 that "in total terms, NATO forces have more ground forces than the Soviet bloc." The major difficulty confronting NATO was no longer one of numbers, but the fact that the "NATO forces are not located, in certain cases, as effectively as the Soviet bloc forces, and can't be reinforced as quickly as the Soviet bloc forces."[67] McNamara now considered Red China to be the most aggressive Communist nation and "a threat to the security of the Asian land mass." He thought that there was a "very substantial" possibility that Communist China could become a "military threat" to the United States, but such an eventuality was "years away" in the normal sense of the term.[68]

In speaking about nuclear war in an interview published in December 1962, McNamara referred to a "balance of terror."[69] In his prepared statement presented to Congressional committees in January 1963, he stated: "More armaments, whether offensive or defensive, cannot solve this dilemma. 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."[70] Although the United States would continue to invest large sums of money in research and development in the fields of air-sea warfare and antiballistic missile defense, McNamara reported that the "best minds and best brains" in the Department of Defense and in the scientific community had assured him that neither

the United States nor the Soviet Union would score a breakthrough in these areas in the next several years.[71] "I don't believe," he summarized, "that either the Soviets or we could take action to so protect our population that a nuclear strike would result in a low level of fatalities."[72] Under such circumstances, McNamara urged that the United States could not "win a nuclear war, a strategic nuclear war in the normal meaning of the word 'win.'" Even if the United States did "win" over the Soviets, McNamara visualized: "We would win in the sense that their way of life would change more than ours because we would destroy a greater percentage of their industrial potential and probably destroy a greater percentage of their population than they destroyed of ours." But the United States would sustain such severe damage "that our way of life would change, and change in an undesirable direction. Therefore, I would say that we had not won."[73]

Even though the transcendence of nuclear missile offense over defense ruled out the utility of military force in terms of the old Clausewitzian theory that war was the continuation of state policy by different means, Secretary McNamara nevertheless maintained that the United States, in any reasonable sense of the word, was "winning" because its "program to win was broader than the application of strategic military forces."[74] Speaking of the over-all objectives of the United States, McNamara said: "The basic objective is to . . . protect our national security and our vital interests . . . . to be more explicit, it is to prevent, in association with other Government policies, the advancement of communism to the control of areas not now controlled by it. . . . the long-range objective is . . . the spread of freedom throughout the world."[75] Still on the relationship of military force to the national objectives, McNamara observed: "As to our objective, I think . . . that it is to advance the cause of freedom throughout the world and to do this in a way that protects our own national security, which means we are not to destroy our Nation in the process of attempting to advance freedom elsewhere in the world. . . . I do not believe we should embark on a course that is almost certain to destroy our Nation when that course of action can be avoided without substantial penalty to us." As a matter of fact, McNamara did not believe that the objective of spreading freedom throughout the world could "be achieved primarily through the development of military forces or the application of military forces," but he thought that "it is quite clear that we as a nation . . . have standards of values, standards of behavior, economic power, and a record of accomplishment such that, given the opportunity to exist in a peaceful world, the advancement of our forms of society is almost certain to occur over a long period of time."[76]

Because of his belief that the Communist nations must not be allowed to mistake the military capabilities of the United States, Secretary McNamara outlined the force requirements represented in the Department of Defense budget for fiscal year 1964 in precise

detail.[77] In the strategic retaliatory program package, McNamara proposed to continue to keep half of the 650 B-52 bomber force on 15-minute ground alert and to retain a capability for flying one-eighth of the force on air alert for one year. Two wings of B-58 bombers would continue to be programed, but the B-47 bombers would be gradually phased out. The three aircraft B-70 program would be completed at a cost of $1.3 billion, and an additional $50 million of the extra $190 million voted by Congress would be expended for the development of selected sensor components. In the Air Force, 13 Atlas squadrons with 126 missiles were already operational and would continue in place pending a decision to phase out some of the older, softer missiles. All 6 squadrons of Titan I missiles, aggregating 54 missiles, were in place, and 6 additional squadrons of improved Titan II's (54 missiles) were expected to be operational by December 1963. The 1964 budget included funds for 150 Minuteman II missiles, raising the total force of Minuteman to 950. It also funded the completion of the 41 Polaris submarine force, which would have a total of 656 missiles.[78]

In the continental air and missile defense forces package, the 1964 national defense budget planned to install a semiautomatic backup intercept control system to supplement SAGE, to keep existing all-weather fighter, Bomarc, and Nike-Hercules units operating, and to reserve decisions about the modernization of the weapon systems. The major defense problem was to develop systems effective against intercontinental and submarine-launched ballistic missiles. Tests had shown that the Nike-Zeus would not be effective against a sophisticated threat in the late 1960's; accordingly, over $450 million was included in the 1964 budget to initiate development of an improved Nike X and to continue tests with Nike-Zeus. The budget also provided increased developmental funds for systems that would provide possible defense against submarine-launched missiles.[79]

In the general purpose forces package the fiscal year 1964 budget recognized that the Army had reached its proposed 5-year strength, but it was to be allowed to expand its active strength to 975,000, thus adding 15,000 men which would permit the testing of an air mobility concept. A total of $3.3 billion was allocated to the procurement of Army weapons and materiel. The Air Force general purpose forces would continue at 21 wings of tactical fighters which would be reequipped by increased procurement of F-4C fighters. The tactical reconnaissance forces would be expanded and would be equipped with RF-4C's. In the airlift and sealift forces category the 1964 budget proposed to acquire several additional squadrons of C-130E aircraft and to phase out the old C-124's. Substantial funds were also committed to the purchase of new C-141's. Originally scheduled to be phased out in fiscal year 1964, the C-123 assault transport had proved useful in support of counterinsurgency operations in Vietnam and would be continued in the force program for the time being.[80]

In presenting the fiscal 1964 budget request, Secretary McNamara pointed out that total obligational authority in the amount of $7.3 billion was committed to strategic retaliatory forces, $2 billion to continental air and missile defense forces, $19 billion to general purpose forces, and $1.4 billion to airlift and sealift forces. Looking backward at the trend in obligational authority in the Kennedy years the amounts committed to strategic retaliatory forces had declined each year, the funds for the continental air and missile defense forces had held steady, while the funding for general purpose and airlift and sealift forces had increased sharply.[81] In explaining the force levels, Secretary McNamara pointedly refused to be "tied down to any rigid doctrine about when and how the different types of forces should be employed."[82] He preferred to say that the primary objective of the Department of Defense was national security--not economy--and he saw no reason why the nation could not indefinitely continue the larger levels of military spending of the Kennedy administration. Having determined military force requirements without any regard to arbitrary or predetermined force levels, he meant to procure and operate those forces at the lowest possible cost.[83] In arguments in the spring of 1963, however, McNamara nevertheless revealed his ideas of defense requirements. "He wanted," wrote William W. Kaufmann, "to have the capabilities for all modern types of warfare and, if forced to commit himself, he wanted to place main but not sole reliance on non-nuclear weapons."[84] In essence, the Kennedy administration, confronted by the dilemma of "humiliation or holocaust," wanted to increase its options, hoping that nuclear weapons might not have to be used.

* * * *

Implications--some real and some imagined--of the emerging defense policy of the Kennedy-McNamara administration gravely concerned a number of defense commentators and the leaders of the Air Force. In January 1963, Editor John F. Loosbrock of Air Force and Space Digest charged: "The doctrine of nuclear deterrence is being replaced by a doctrine of nuclear stalemate. The strategic umbrella, under shelter of which major Soviet aggression has been deterred or repulsed at many times and in many places since the end of World War II, is being replaced by a strategic ceiling--rigid, immovable, and possibly brittle." Loosbrock pointed out that possession of strategic superiority had permitted the nation to control the escalation of small wars and had enabled the United States to shelter NATO against Soviet aggression. He suggested that lack of faith in the United States nuclear deterrent was causing President Charles De Gaulle to build an independent French nuclear deterrent. "Today," Loosbrock wrote, "the argument over conentional vs. nuclear weapons may prove to be the reef on which NATO founders."[85]

During the late 1950's Lieutenant General Gavin had maintained a keen interest in preparedness for limited warfare, and President

Kennedy had named him United States Ambassador to France. Despite his interest in limited war, Gavin had been careful to point out in his writing that "a limited-war theory is only valid when one has a massive strategic strike capability, and it is only within the framework of a significant strategic capability that one may indulge in the solution of problems involving lesser force." After reading Loosbrock's analysis, Gavin wrote that he was "just about in complete agreement" with it. Gavin agreed with the assertion that there was no "absolute" weapon system, and he suggested that an alert enemy might achieve technological surprise in such areas as antisubmarine warfare, ballistic missile defense, space, or in biological and chemical warfare.[86]

In justifying his action relative to the RS-70 and Skybolt, Secretary McNamara cited considerations of cost effectiveness of manned systems as compared with intercontinental missiles in performing the strategic mission. Other officials developed an additional concept that hardened intercontinental missiles were better suited to the maintenance of a stable strategic deterrence than were aircraft. While attending an International Conference of Scientists held in Moscow from 27 November to 5 December 1960, Dr. Jerome B. Wiesner, who would become Presidential Scientific Advisor, and Walt W. Rostow, who would head the State Department Policy Planning Council, found highranking Soviet delegates gravely concerned with the prospect that an unwanted nuclear war between the United States and the Soviet Union might be set off by accident. Such an accident might occur through misjudgments of radar warning, through a frustrated great power's escalation of a small war, or through the spread of nuclear weapons to smaller and perhaps less responsible nations that might be allied with either the United States or the Soviet Union. At the conference, Dr. Wiesner presented a paper in which he suggested that "a limited deterrent force might be used as a basis for comprehensive disarmament." He also pointed out that the development of highly secure deterrent forces by both sides--desirably as small as feasible, since larger forces increased dangers of accidental war--would relieve much of the incentive for an unlimited arms race, which if undertaken could not result in either side attaining an overwhelming military position in the foreseeable future. While in Moscow, Wiesner and Rostow were invited to discuss security matters with Soviet Deputy Foreign Minister Vasilyevich Kuznetsov, who expressed apprehension that a major U.S. missile buildup would force the Soviet Union to respond, thus setting off a highly competitive missile race. Wiesner and Rostow emphasized in reply that the Kennedy rearmament program would be designed to provide a more secure deterrent posture, thus contributing to the cause of world peace. In an article published in 1961, Wiesner offered a short analysis of manned bombers as viewed from the new calculus of stable deterrence: "Because of the vulnerability to missile attack of bomber bases and because air defense systems make the effectiveness of manned bombers somewhat uncertain, they may not be an attractive component of a stable

deterrent system. It is hard to visualize building a bomber force as secure from attack as missile forces can become (unless it is kept in the air)."[87]

In the United States during 1961 and 1962 more than 300 books and articles were published on the subject of arms control, and many of the arms control advocates described manned strategic weapon systems as first-strike, destabilizing weapons. Writing of the Soviet, for example, civilian strategist Thomas C. Schelling, reasoned: "Too great a capacity to strike him by surprise may induce him to strike first." In December 1962, Major General Dale O. Smith, Special Assistant for Arms Control to the Joint Chiefs of Staff, suggested that the arms control rationale might have been responsible for the curtailment of the B-70 and of Air Force space programs. Smith opposed the arms control argument that bombers were first-strike surprise weapons rather than second-strike retaliatory weapons. "Wars," he wrote, "do not occur like magic or from a whim. There must be some sort of strategic buildup, and many bombers would be launched when war seems probable." Launched on the basis of reliable warning and held on air alert, bombers would be "well nigh invulnerable." They could reach and destroy enemy launching pads long before a second enemy missile could be wheeled into place; and "fail safe" controls that regulated the actions of bomber crews were fully as secure as those that governed missile crews. Smith also warned that the explosion of a 100-megaton Soviet warhead could do incalculable damage to Minuteman emplacement, but would not affect airborne bombers that were being held on air alert.[88]

In his presentations to Congressional committees in the spring of 1963, General LeMay viewed the Soviet threat to the peace as changing in character and aspect but unchanging in its objectives. He pointed out that the Soviet Union was proceeding with great determination in areas of space, missiles, and high-yield nuclear weapons. It was continuing to apply science and technology to military purposes with impressive research and development programs, the result being a rapid progression of military systems from invention to operational inventory.[89] LeMay was willing to concede that a condition which could be described as "mutual deterrence" could conceptually exist for a short period of time, but the status of deterrence would change from day to day. He definitely did not consider that the United States and the Soviet Union had reached a period of mutual deterrence.[90] "If we accept mutual deterrence, this will, I think," he added, "inevitably lead to defeat. In other words, if we stop trying, we certainly are not going to succeed in defending ourselves."[91]

Secretary Zuckert generally agreed with LeMay on the subject of mutual deterrence and chose to emphasize its transitory duration in an era of rapid technological change.[92] Speaking more openly than either Zuckert or LeMay, General Power described the United States as being in an arms race with the Soviet Union. "We are running," Power said, "at a certain speed and he is running at a certain

speed. If we slow our pace down or stop, it is obvious that he is going to get as strong as we are some day and get stronger. So this depends on how fast we run. You are in an arms race. And the name of the game is to stay ahead of him. . . ."[93] Power continued his remarks in another off-the-cuff summation: "I just feel," he said, "that the surest way to prevent war--and that is my goal, and I feel very strongly about it--is to have overwhelming strength so that it is ridiculous for anybody to even think of attacking the United States. That is what it has been in the past, and that is what it is today. . . . I think our science, our economy, and everything else can help us win this race. . . . But it takes the will to do it."[94]

In a summary of his general position, General LeMay believed that the United States faced an enemy that would take advantage of any real or apparent technical development. In this situation, LeMay thought: "There are certain precautions we can take. . . . we must retain our flexibility of action in the event of an enemy technological breakthrough. . . . by exploring every feasible weapon system. . . . We must also continue this exploration because we cannot accept the premise that since there is no known counter to a particular threat there is nothing we can do. If we accept this premise . . . we invite the Soviets to vigorously probe our determination to resist."[95] LeMay rejected any notion that the United States could accept parity with the Soviet Union in a dynamic situation, and he argued that the United States had to possess strategic superiority in order to remain secure. He pointed out that since World War II, the United States had allowed "the Russians to catch up in some fields and perhaps even surpass us in some."[96] LeMay was unwilling to "accept the principle that it now appears impossible to build enough weapons . . . or the kind of weapons that could knock out every single one of the Russian weapons. . . . This is an idealistic goal, and I doubt that it can ever be achieved. But that is no reason for not trying to achieve it. At least, let us get as close to it as we can, so if war should descend upon us, we will be in the best possible position."[97]

As the final comment preliminary to a discussion of exact Air Force requirements in his Congressional presentations, General LeMay stated the capabilities that a deterrent force had to possess in order to be credible to an enemy. These were:

> First, a capability to acquire that information necessary to attack effectively selected elements of enemy strength. For this, we rely on reconnaissance and comprehensive intelligence efforts.
>
> Secondly, a capability to survive. For this, we rely on diversity, numbers, hardening, dispersal, ground and airborne alerts, early warning systems, and constant training.

Third, rapid response to an order to execute operational plans. For this, we rely on a high state of alert; and rapid, dependable, and survivable command and control.

Fourth, immediate response in full strength or with selectivity under continuous control. Alert manned aircraft and missile forces provide this capability.

Fifth, sustained effectiveness in portions of the force which may be withheld from initial attacks as uncommitted reserve, or for contingencies. Missiles which are dispersed, hardened, and mobile and manned systems which are dispersable on the ground and in the air--as well as recoverable and reusable--give these capabilities.

Sixth, the ability in a portion of our forces to make swift and clearly recognizable moves to evidence U.S. resolve in the face of provocation. Manned systems provide this capability.[98]

Following this statement of capabilities, General LeMay described several other characteristics of a deterrent force:

To maintain an effective deterrent, the posture of the strategic force must be updated continuously. At the same time, we must have the capability to meet requirements for conflicts of lesser magnitude than general war. In this portion of the conflict spectrum, military force is required for show of force, counter-insurgency and conventional war. As these needs are met, we broaden the available options of response so that escalation up to the most serious threat--general war--is but one of many options, and one which we, not the enemy, must control.

Development and maintenance of the 'many option' strategy requires forces to support the options. In acquiring these forces, we must maintain a credible general war force so that lesser options may be exercised under the protection of this general war deterrent. It is the general war strength of aircraft and missile forces which place an upper limit on the risks an aggressor is willing to take, and which deter escalation into all-out conflict.[99]

When they explained Air Force budgetary requests for fiscal year 1964, Secretary Zuckert and General LeMay disclosed to Congressional committees that the Air Force had submitted requests of $25,521.9 million to the Department of Defense, had sustained an initial downward adjustment of $4,989.7 million, and had subsequently received a restoration of $119.1 million, making a total recommended Air Force program of $20,651.3 million. In response to

Air Force reclama, President Kennedy had restored funds to provide for the procurement of additional C-130E transports, but two other desired items had been turned down. The first of these was the Air Force requirement for a long-range fighter interceptor with at least mach 3 speed, an airborne radar capability, and a capability to intercept hostile targets from the surface to 100,000 feet without any assistance from a ground radar station. Secretary McNamara had refused this request because the declining Soviet bomber thrust did not justify initiation of a $3 to $5 billion program. He was also doubtful as to the effectiveness of such an interceptor and wanted additional time to study potential candidates among aircraft that seemed likely prospects for the function. Believing that the tactical fighter force ought to be expanded from 21 to 25 wings and rapidly modernized, the Air Force had asked for a second production source for F/RF-4C aircraft. While McNamara had conceded that 25 tactical fighter wings might be required in the late 1960's, he wished to postpone the decision since his cost effectiveness analyses indicated that modernization of the existing 21 tactical fighter wings would give the greatest increase in combat effectiveness and that an expansion of the single F/RF-4C production source could obviate the need for a second source.[100]

At the same time that he was concerned about the fact that the last manned interceptor for the Air Defense Command had been delivered in March 1961 and about the indefinite response to the requirement for a long-range interceptor,[101] General LeMay was even more disturbed about deficiencies in projected strategic forces. In brief, General LeMay reported that he had "asked for more missiles by far than the Secretary of Defense had seen fit to give me." He also noted: "I want the best manned system I can get. . . . I want the RS-70 very badly. . . . When something faster comes along I want it."[102] LeMay thought that one of his basic differences with Secretary McNamara was on the size of an effective strategic deterrent force. "He thinks," LeMay said, "it can be done with something less than I think it can be done." When he viewed strategic superiority over the Soviet enemy, LeMay wanted "sufficient military power to knock out all of the targets that we know he has, or all the weapons that we know he has, and . . . a little cushion to take care of some that we might not know he has."[103] LeMay wanted "clear superiority and flexibility" in the strategic force because he could not visualize the set of conditions under which a future war might begin. "I want to get a force and a combat capability," he said, "that will cover anything you can think of, because I don't believe you can forecast how the next war is going to start and what conditions are going to be."[104] "I firmly believe," he said, "that it is the duty of all of us who have responsibility for defending the United States to take whatever measures may be necessary under the circumstances, to do the best possible job of defending the country."[105]

Once the United States was committed to war General LeMay recognized that there were many tasks that could be performed better

by missiles than by a manned weapon system, but Air Force war gaming had nevertheless demonstrated to him that "the most efficient campaign can be fought with a mixture of the two, so you can use the strong points of each of the weapon systems and get a net result greater than the sum of each one of them if you use them separately."[106] In arguing the case for an advanced manned strategic weapon system in the spring of 1963, LeMay emphasized the value of such a system for show of force, as a safeguard against the uncertain reliability and unexplored vulnerability of missiles, and as insurance against the possibility that the Soviets might develop effective antimissile defenses. He additionally pointed out that it would cost the Soviet Union far more to defend against a mixed-force strategic capability than it would cost the United States to produce the weapon systems. This would be to the advantage of the United States. "If we don't diversify and don't force them to spend those resources on defense," he said, "then they would probably put a substantial portion of them on offensive weapon systems that would be an additional danger to us."[107]

In his discussions of a manned strategic weapon system, LeMay expressed confidence that with proper tactics and proper penetration aids attack aircraft would be able to reach their assigned targets. "I do not think," he said, "that we can predict the outcome of future engagements before we have the engagement. But based on my past experience and my knowledge of the defenses and how we have operated against them--and we have operated against all of the defenses of the world--I believe we will penetrate." Speaking of the future, LeMay noted that aircrews were going to fight hostile defenses rather than ignore them. "We now have the capability," he explained, "of taking a portion of the penetrating force and putting it on the defense system and destroying it so you can go in without opposition. We have the weapons to do this. And we plan on doing it. I sometimes think that we have given the defense system too much credit. And we are taking too great a percentage of our force and putting it on this task. But there is no doubt in my mind that proper tactics--proper execution of the mission--will produce the results we are looking for." In sum, LeMay noted: "Experience, I think, is more important than some of the assumptions that you make."[108]

The Air Force was positively committed to the urgent need to develop and maintain a mixed strategic force, to include both missiles and a manned reconnaissance-strike capability, but there was beginning to be less agreement on what the follow-on manned aircraft should be. LeMay still wanted the RS-70; he believed that it would continue in active inventory up until 1980 when it would probably be replaced by an aerospace plane. The RS-70 program, however, had encountered many delays, leading LeMay to comment that "even if we get a favorable decision . . . you cannot buy back that time."[109] Established in 1962 in response to Secretary McNamara's request for a look at alternate possibilities to the RS-70, the

USAF Manned Aircraft Systems Steering Group headed by Lieutenant General James Ferguson, the Air Force Deputy Chief of Staff for Research and Development, examined the prospects for the development of three different types of aircraft that could be had without straining the state of the art and would be a replacement for the old B-52's. Because it was especially interesting to McNamara, the Ferguson group carefully examined a plane that was variously called "Camel," "Dromedary," or the "multi-purpose long-endurance airplane" (MPLE). This was conceived to be a large, low-speed, turboprop airplane that would have long endurance and would keep well outside enemy defenses and launch missiles into target areas. Although it would not have reconnaissance-strike capabilities, the long-endurance plane might additionally serve as an airborne weapon system for air defense, as a very large transport, or as a tactical command and control vehicle that could be used by tactical air units in advanced areas.[110] The second prospect was to develop a low-altitude manned penetrator (LAMP) which would enter defended areas at high speed and at low altitudes, where hostile defenses would be ineffective. The third potential candidate was a mach 3, very high altitude, advanced manned precision strike system (AMPSS). Similar in concept to the RS-70 this plane would take advantage of the state of the art developments and would probably be only half the size of the RS-70.[111]

While the Air Force thus began in-house studies of alternate follow-on strategic aircraft programs, it still hoped that the RS-70 might win approval for weapon system development since it could enter the operating inventory three to four years before any of the alternate systems. The Ferguson group accordingly did not begin detailed studies of the advanced manned strategic system until April 1963.[112] Noting that he might well have a "parochial viewpoint" as commander of the Strategic Air Command, General Power informed the House Committee on Armed Services in May 1963 that some arrangements positively ought to be made to keep SAC's future strength up. He favored the maintenance of a proper ratio that would weigh proven aircraft against unproven missiles.[113] Power wanted the RS-70, but if it was not to be had he was willing to accept "the premise that anything is better than nothing." Thus he indicated in August 1963 that he would be willing to get more B-52's if production lines could be rebuilt, and he seriously recommended procurement of additional B-58's to serve as interim bombers until a follow-on aircraft could be developed. Speaking of the need for an advanced manned strategic weapon system, Power called for rapid decisions: "I think time is a matter of great urgency. I would say that this fall or before this year is over they should make up our minds, because we have waited too long."[114]

* * * *

Although General LeMay and other senior Air Force officers presented the case for counterforce as a war-winning, damage-limiting strategy to generally sympathetic Congressional committees during the spring of 1963, they were unable to sway either President Kennedy or the Department of Defense. On 17 December 1962, Kennedy had already stated: "There is just a limit to how much we need, as well as how much we can afford to have a successful deterrent. . . . I would say when we start to talk about the megatonnage we could bring into a nuclear war, we are talking about annihilation."[115] In an address to the American people on 26 July 1963, he noted: "A full-scale nuclear exchange, lasting less than 60 minutes, with weapor now in existence, could wipe out more than 300 million Americans, Europeans, and Russians, as well as untold numbers elsewhere."[116] In remarks to a press conference in January 1963, President Kennedy was willing to agree that there might "be a good many struggles in the globe in the late sixties or early seventies which are not subject to solution by missiles . . . where manned bombers may be very useful," but it was perhaps significant that he visualized a utility of manned bombers in what he described as "more limited war."[117]

Almost in rebuttal to Air Force positions offered in the strategic debates of 1963, Secretaries Rusk and McNamara presented a concept of strategic aerospace power as being essential but much less versatile throughout a spectrum of conflict than Air Force leaders conceived. "I believe," stated Rusk, "that the United States must maintain in its own security interests a very large overall nuclear superiority with respect to the Soviet Union," but he immediately added: "This involves primarily the capacity to demonstrate that regardless of who strikes first, the United States will be in a position effectively to destroy an aggressor."[118] Secretary McNamara wanted a strategic nuclear force large enough and secure enough to give the United States an option to attack hostile forces rather than enemy cities, but he placed himself on the record in agreement with the President's statements that the United States had almost reached the point in the strategic level where "enough is enough." "I am," McNamara said, "not a believer in unlimited arms spending, not in the 'more the better' school of thinking."[119] At the same time that he described a "cities only" strategic retaliatory posture as being "dangerously inadequate," McNamara wrote off the theory of a "full first strike force" as being "simply unattainable." Such a "full first strike" capability would have to be accompanied by vast programs of antimissile, antibomber, and civil defense, and even then fatalities would run into tens of millions. McNamara therefore concluded: "Thus a 'damage limiting' strategy appears to be the most practical and effective course for us to follow. Such a strategy requires a force considerably larger than would be needed for a limited 'cities only' strategy. While there are still some differences of judgment on just how large such a force should be there is general agreement that it should be large enough to ensure

the destruction, singly or in combination, of the Soviet Union, Communist China, and the Communist satellites as national societies, under the worst possible circumstances of war outbreak that can reasonably be postulated, and, in addition, to destroy their war-making capability so as to limit, to the extent practicable, damage to this country and to our allies."[120]

When closely questioned by members of the House and Senate Armed Services Committees early in 1963, Secretary McNamara revealed little patience with many of the charges that had been made against the so-called "McNamara strategy." His program provided for maintaining nuclear superiority, including the capability utterly to destroy any aggressor. Speaking with some heat, he described journalist charges that a nuclear deterrent strategy required manned bombers and that a nuclear stalemate strategy was predicated upon missiles as being "irresponsible" and "irrational" and said that it was "a disgrace that the American public was being fed this type of material."[121] He did not agree that the situation which he described as "mutual deterrence" comprised a "nuclear stalemate." Quite the contrary, he considered that the United States would emphasize research and development in order to ensure that it maintained a full deterrent capability and superiority in numbers and effectiveness of weapons.[122] He did not agree that nuclear superiority could be "a universal deterrent" against Soviet aggression; nuclear superiority, for example, had not prevented the Korean conflict.[123] He was unwilling to accept unreservedly the Air Force concept that a nation that possessed superior strategic power could control the escalation of conflict. Escalation had to do with the mental attitude of belligerents. "I think," he said, "in many cases an inferior power acting in desperation has escalated the conflict."[124]

While McNamara was in favor of maintaining "a mix of strategic systems," he did not necessarily believe that such a force would include a mix of missiles and gravity bombers. A future strategic-system mix could well include surface-based and air-launched missile systems. "As a matter of fact," he added, "I believe it will have to be a mix of missile systems . . . each system with characteristics different from the other systems and, therefore, adding in total to the problem of defense."[125] McNamara answered fears that missiles might not be reliable: "If the missiles do not come through," he pointed out, "we will presume for the minute that the Soviets have the same problems we do, and in that sense we will not be at any competitive disadvantage. At any rate, it would be impossible for the United States to continue to rely upon free-fall strategic bombing since by the end of the 1960's Soviet air defenses would make it nearly impossible for an aircraft to penetrate into the Soviet Union and launch its weapons over a target."[126] In final analysis, the manned strategic weapon system that McNamara could visualize for the 1970's would be "an aircraft that is used to launch a very complicated missile system, a missile system more complex, more costly, less reliable, probably less accurate, than the missile systems we are now planning to have on hand at that time."[127]

* * * *

Sympathetic to the Air Force statement of requirements for a manned strategic weapon system, Chairman Carl Vinson and the House Armed Services Committee in February 1963 added $363.7 million to the fiscal 1964 defense budget to be used solely for research, development, and test of the RS-70 After additional hearings, the Senate Armed Services Committee concurred in the increased appropriation.[128] While these powerful Congressional committees endorsed the requirement for manned weapons, various technological factors began to work against the manned system and in favor of missiles.

Funded from prior year appropriations substantial numbers of intercontinental missiles became operational in the winter of 1962-63 and the missile programs progressed rapidly throughout 1963. The six squadron Titan I missile force became operational in September 1962, and the entire 13 squadron Atlas force was operational by December 1962. Despite a worrisome technical problem, the six squadron Titan II force would be operational on 27 December 1963.[129] By early 1963 a Minuteman missile silo was being completed almost every day. At Malmstrom Air Force Base, Montana, the three squadrons of the 341st Strategic Missile Wing, each with 50 Minuteman missiles, became operational in February, May, and July 1963. At Ellsworth Air Force Base, South Dakota, the 44th Strategic Missile Wing began to occupy its silos: its first Minuteman squadron would become operational in September and its second and third squadrons in October 1963. The 455th Strategic Missile Wing at Minot Air Force Base, North Dakota, would have its first Minuteman squadron in operation in January 1964, and its other two squadrons were expected to be operational shortly thereafter.[130] By the winter of 1963-64 construction of a base for the 351st Strategic Missile Wing would be nearly complete at Whiteman Air Force Base, Missouri, and the Air Force expected to have a total of four wings of Minuteman missiles with 600 of the three-stage, solid-propellant ICBM's in place by 30 June 1964.[131] The Air Force would locate the 90th Strategic Missile Wing with four Minuteman squadrons (200 missiles) at Francis E. Warren Air Force Base, Wyoming, where a contract for necessary construction had been awarded in October 1962 and where the base would be nearing completion by early 1964.[132] In order to accommodate the additional 150 Minuteman II missiles authorized for procurement in fiscal year 1952, the Air Force would commence construction of a sixth Minuteman wing base at Grand Forks Air Force Base, North Dakota, in the spring of 1964.[133]

In the same months that Titan, Atlas, and Minuteman missiles were coming into the Air Force operating inventory, the development of the B-70 ran into a maze of difficulties. In October 1962 the North American Aviation Company ran into a technical problem, having to do with the welding of the plane's stainless steel honeycomb wings (which were hollow inside for use as fuel tanks) to the stainless steel fuselage. The best weld that could be made had small pin holes which allowed some fuel to escape. While such an

amount of escaping fuel would not have been a problem in a subsonic aircraft, the wings of the mach 3 XB-70 would heat to 600° in flight and any escaping fuel would be hazardous. Some new synthetic fuel tank sealant would have to be developed that could withstand very high temperatures. The North American Company promptly contacted sealant manufacturers in the United States and in Europe, but none of these companies wanted to undertake an expensive developmental program when only three aircraft were involved. As a result of these delays, the XB-70A could not meet its initial flight schedule in December 1962 and each month's delay added to the production overrun costs.[134] On 24 April 1963, Secretary McNamara wrote Chairman Vinson that the additional funds authorized by the House and Senate Armed Services Committees for the RS-70 would not be needed, and in a rare revolt against Vinson's leadership the House of Representatives refused to vote additional funds for the RS-70 when it passed the defense appropriation measure in late June 1963. In the Senate, Chairman Russell told his colleagues that it would be a "serious mistake" to forsake manned strategic aircraft and rely upon unproven missiles, but in September 1963 the Senate went along with the House decision not to vote any additional money for a RS-70 weapon system.[135]

Under existing directives the Air Force continued to be responsible for the development and flight testing of three prototype B-70 aircraft at a cost of not more than $1.5 billion (nearly all of which had already been expended), but General LeMay observed that up and down financing and fluctuating interest had killed the B-70 program. "I feel," he said, "the B-70 program is dead."[136] Production overrun costs mounted as the North American Company with assistance from Air Force laboratories developed a new fuel-tank sealant, but as funds ran short the third plane in the program which would have had a bombing and navigation system had to be cancelled on 7 March 1964 when work was limited to two XB-70A's. The sealant problem was solved in February, and the prototype XB-70 would make its maiden flight on 21 September 1964, but by this time no weapon system development for the plane was any longer appropriate.[137] Looking backward at the B-70 program during his tenure as Director of Defense Research and Engineering, Dr. Harold Brown observed that the designers had pressed the state of the art too much and had run into bad luck. "Since I have been here, and I think since before I came," Brown said, "the Department of Defense has taken the attitude that until the technology is developed you shouldn't go into a big system with all the expense that that entails unless you can show an overriding need, unless you can show that the security of the country depends in a real way on having that system."[138]

* * * *

In much the same manner that the Cuban missile crisis affected the military strategy and force composition of the United States,

the nuclear confrontation about Cuba had--in the words of Secretary Rusk--" a very real bearing" on the consummation of a limited nuclear test ban treaty between the United States, Great Britain, and the Soviet Union during the summer of 1963.[139] Specific negotiations looking toward a nuclear test ban treaty traced directly back to 4 April 1958, when the Soviets completed a series of nuclear tests of unprecedented intensity and proposed that the United States and the Soviet Union should immediately suspend nuclear testing. After the United States and the United Kingdom concluded scheduled test programs during the summer, President Eisenhower announced on 31 October 1958 a voluntary suspension of tests pending negotiations of an effectively controlled nuclear test agreement. The United Kingdom and the Soviet Union followed this lead and also suspended testing.[140] According to General Twining the United States held a substantial lead in nuclear technology in 1958, but as the moratorium dragged on without a positive agreement the Joint Chiefs of Staff pointed out many times from a military point of view that continual testing was required.[141] For one thing, the Air Force had commenced its missile hardening program in late 1957, and there had been no time to test the effect of a nuclear explosion atop a missile silo before the moratorium went into effect. While the Air Force used hardness criteria extrapolated by scientific advisors in the design of its hardened missile sites, it was unable to test an installation under actual conditions of earth shock and electromagnetic pulse of an atomic burst.[142] Although the Atomic Energy Commission attempted to maintain its laboratories in a readiness-to-test capability during the moratorium, this capability declined materially since the standby program proved unable to retain competent scientists or to attract new and younger scientists.[143] Summing up the situation, General Twining remarked: "We all but allowed our testing capability to go to seed."[144]

In an effort to provide a military capability in support of the lagging disarmament negotiations at Geneva, the Joint Chiefs of Staff established a Special Assistant for Arms Control outside the Joint Staff in December 1959.[145] The Geneva negotiations progressed poorly, and on 1 September 1961 the Soviet Union suddenly broke the test moratorium and ran off in rapid order a very comprehensive series of tests that involved the detonation of more than 300 megatons in all. The Soviets demonstrated very sophisticated nuclear weapon technology, made very complex high-altitude-effects tests, and detonated one 58 megaton weapon. The nuclear test series begun by the United States on 25 April 1962 and concluded on 4 November 1962 was mostly limited to low-yield devices, and the testing was greatly inhibited by efforts made to minimize fallout.[146] In an effort to get an understanding of nuclear test ban proposals, General LeMay asked General Twining to return from retirement in December 1961 to head a study group to consider the military effect of a test ban. This group filed a first report on 5 January 1962 and up-dated the report on 4 March 1963. "A test ban," the committee

warned, "would involve greater risks to the national security than perhaps have been realized."[147] After studying the results of United States and Soviet tests, General Taylor said that the Joint Chiefs of Staff concluded that the Soviets were ahead of the United States in high-yield nuclear technology, in weapons effects knowledge derived from high-yield nuclear explosions, in the field of yield/weight ratios of high-yield devices, and in the antiballistic-missile field. The Soviet Union was judged to be about even with the United States in intermediate-range nuclear weapons technology and to be somewhat behind in low-yield weapons. In the field of tactical nuclear weapons, particularly in very-low-yield weapons, the United States appeared to be ahead in the quality and diversity of systems, although the superiority in quality was open to question since the Soviets could have conducted very-low-yield tests that remained unknown to the United States.[148]

The Department of Defense gave close attention to arms control negotiations, especially after 27 August 1962 when the United States and the United Kingdom submitted a proposal to ban nuclear tests in the atmosphere, outer space, and under water to the 18-Nation Disarmament Conference in Geneva. In February 1963, Secretary McNamara announced support for a nuclear test ban treaty that would maintain what he described as "our favorable differential balance of power." "As a nation," McNamara pointed out, "I personally believe we will be far less secure 15 years from now or 10 years from now if nations not now possessing independent nuclear arms do then possess them. One of the major objectives of the test ban in my opinion should be to deter the further proliferation of independent nuclear forces."[149] The Joint Chiefs of Staff recommended three cardinal principles to govern any test ban treaty: that the treaty should incorporate a detection, identification, and inspection system adequate to insure the highest feasible probability of discovering treaty violations; that testing which could not be detected by the control system should not be prohibited by the treaty; and that withdrawal procedures should be simple.[150] General LeMay agreed with the Joint Chief of Staff criteria and he also wanted to run some additional tests before a test ban went into effect. He specifically suggested that the United States ought to explode an antimissile warhead in the vicinity of a live missile warhead to determine the kill radius of an explosion and to detonate a nuclear warhead over an actual Minuteman missile silo to determine the effects of such an explosion on the missile emplacement.[151]

In a speech at the American University on 10 June 1963 President Kennedy expressed a belief that a treaty to outlaw nuclear tests "would place the nuclear powers in a position to deal more effectively with one of the greatest hazards which man faces in 1963, the further spread of nuclear arms." Kennedy revealed that he, Khrushchev, and Macmillan had agreed to make a fresh start on test ban negotiations and to transfer the discussions from Geneva to Moscow.[152] The fresh negotiations began on 15 July, and the three negotiators initialed an agreed draft of a limited nuclear test ban

treaty on 25 July. As officially signed on 5 August 1963, the limited test ban treaty prohibited tests in the atmosphere, under water, or in outer space, but did not prohibit underground nuclear explosions as long as all fallout from them was contained within the country where the test or explosion was conducted. Since the treaty permitted tests which could not be easily detected, no provision was made for control posts, on-site inspections, or an international verification agency. Any signatory nation which decided that its supreme interest had become jeopardized would be permitted to withdraw from the treaty with three months' advance notice.[153]

When he forwarded the text of the nuclear test ban treaty to the Senate on 8 August 1963, President Kennedy declared that its prompt ratification was in the national interest. During hearings before the Senate Committee on Foreign Relations, Secretary Rusk argued that the treaty would slow the spiral toward bigger and more destructive weapons without damaging the relative strength of the United States and the Soviet Union, would help contain the spread of nuclear weapons by making it more difficult and expensive for nations to develop them, and would reduce radioactive pollution of the planet.[154] Secretary McNamara testified: "The Soviet Union's acceptance of the U.S. proposal for a three-environment test ban offers some evidence . . . that its leadership has at last grasped an essential fact--that the sheer multiplication of a nation's destructive nuclear capability does not necessarily produce a net increase in its security." Speaking to a question as to the military advantages of the limited test ban treaty, McNamara said: "I believe that the effect of the treaty to retard . . . the proliferation of nuclear weapons is very much in our interest, and increases our national security. Furthermore . . . I believe that the treaty will delay the Soviet developments in certain areas in which we presently have . . . a technological advantage, and that this will be to our interest as well."[155]

In a conference with General LeMay on 19 July and in a meeting with all of the Joint Chiefs of Staff on 24 July, President Kennedy urged the military leaders to take all factors into consideration as they examined the limited test ban treaty. He asked them to examine the political aspects of the matter as well as the military aspects. Setting aside all of their previous positions, the Joint Chiefs made a new assessment of the new treaty. They determined that the Soviet Union was ahead in high-yield nuclear technology, that the United States and the Soviet Union were about even in intermediate range yields, and that while the United States was ahead in low-yield technology the Soviet Union could easily conduct underground tests to develop low-yield weapons, LeMay thought that the United States should develop a 100-megaton bomb, but he was willing to accept the assurance that the Atomic Energy Commission could develop a 50-megaton weapon without testing. Under the treaty, the Joint Chiefs believed that the United States and the Soviet Union could make about the same rate of progress in

developing an antiballistic missile, but they agreed that the Soviets possessed nuclear blackout information that was not available to the United States. The chief fear of the Joint Chiefs was that the treaty might breed euphoria, and they urged that the United States must maintain an active underground testing program, facilities and resources necessary to institute atmospheric testing without delay in case the Soviets abrogated the treaty, and capabilities to monitor compliance with the treaty. General Lemay believed that the treaty contained military disadvantages, but he was willing to accept it because of the political advantages it appeared to offer. "I think it might be to our political disadvantage," he said, "if we did not ratify it."[156]

Well before the Moscow conference drafted the limited nuclear test ban treaty, Dr. Edward Teller, the nuclear physicist who had developed the American H-bomb, had voiced his belief that a nuclear war ought not to be considered "unthinkable." While such a war might be catastrophic, Teller urged that the United States could save up to 90 percent of its people by implementing a proper shelter program. Teller was also confident that an effective antimissile defense could be developed. "If we listen to those who wrongly state that a next war will necessarily be lost," he warned, "we might easily end up living on our knees and perhaps later dying in a war that others fight over our impotent bodies."[157] In appearances before the Senate Preparedness Investigating Subcommittee and the Senate Foreign Relations Committee during August 1963, Teller offered numerous reasons why the limited test ban treaty should not be ratified, his most telling argument being his belief that the treaty would hinder United States antimissile development programs while the Soviets might already have acquired the information they needed to develop antimissile defenses.[158] General Power also opposed the ratification of the treaty. Based on his own interpretation of history, Power believed that "disarmament is a proven concept to get you into a war. . . . In other words, you have an aggressor, and he never attacks unless he has a victim, somebody whom he can attack and get a profit out of it. He looks for a weak nation, a nation that disarms itself. And the surest way to cause a war, nuclear war or any war is to disarm."[159] Both General Twining and Admiral Burke also agreed that the nuclear test ban treaty had such serious military defects that it should not be ratified. Twining warned that the Soviets might have made a breakthrough in nuclear technology that was unknown to the United States. He added the thought that the treaty "creates an artificial restriction on our ability to acquire and use increased knowledge of nuclear weaponry. Artificial ceilings on man's acquisition of knowledge are unnatural. The uncertainty of not knowing whether or not one is behind or losing superiority could create great international instability."[160] While he conceded that the treaty would probably be ratified, Admiral Burke recorded his opposition to any test ban arrangement that did not permit some positive inspection authority.[161]

At a press conference on 20 August, President Kennedy noted Dr. Teller's opposition to the limited nuclear test ban treaty and released the information that his own Scientific Advisory Committee assured him that the test ban "is a source of strength to us." Four days later, the White House released an exact statement from the President's Science Advisory Committee, which read: "The Committee believes that the continued unrestricted development and exploitation of military technology by both the Soviet Union and the United States would in time lead to a net decrease in our real security." After weighing all the evidence, the Senate approved the limited nuclear test ban treaty on 24 September. It was formally signed by President Kennedy on 7 October, and was formally proclaimed by the United States government on 10 October 1963.[162]

During the winter of 1962-63 disarmament efforts of the United States focused about the limited nuclear test ban negotiations, while another activity that would be described as "arms restraint" or "nonnegotiated arms control" technique drew much less public notice. In an address on 5 September 1962, Under Secretary of Defense Gilpatric was reported to have said that the United States had not placed any weapons of mass destruction in orbit and had no program to do so.[163] At a disarmament symposium at the University of Michigan in mid-December, Assistant Secretary of Defense John T. McNaughton stated that decisions looking toward the improvement of national security through the use of "nonnegotiated techniques" were "being made today, and every day, to a large extent by the Defense Department in the fields of strategic doctrine, force structure and research and development."[164] When asked to explain the meaning of "nonnegotiated arms control techniques," Dr. Harold Brown said that he considered this to be "mostly hypothetical" but added that "there are situations in which tacit agreements, maybe not expressed even privately but just signaled by actions, can improve our security and improve Soviet security at the same time." time."[165]

When asked about the matter of orbiting nuclear weapons in February 1963, Secretary McNamara noted: "We haven't found any requirements for such weapons yet. We might find them, but we haven't found any weapons to put into space that offer greater potential than a weapon that is land-based, sea-based, or airborne."[166] Later that month the commander of the Soviet missile forces stated that the Russians could launch rockets from satellites at a command from earth, and this statement produced careful evaluation in the Department of Defense.[167] Dr. Brown thought that there was no doubt that it was technically feasible for the Soviets and for the United States to place satellites in orbit and to launch missiles from them at earth targets, but he did not consider that this would be militarily useful. The cost in thrust of launching a large missile-carrier into orbit would be far in excess of the cost of launching a payload from surface to surface; moreover, the accuracy of a space-based missile against an earth target would be even less than the accuracy that the Skybolt missile would have possessed.[168]

In a statement in March 1963 President Kennedy not only questioned the military necessity of placing nuclear weapons in orbit, but he also observed "it is a good thing to keep them out of the atmosphere." Rather than to attempt to get a bilateral agreement with the Soviets, Kennedy preferred that the United Nations General Assembly should handle the problem, because "other countries may someday have the same capability, and I think every country should declare that they are not going to put atomic weapons in the atmosphere."[169] In subsequent actions in the General Assembly both the United States and the Soviet Union individually stated that they would not put nuclear weapons into outer space, and on 17 October 1963 the General Assembly adopted a resolution by acclamation that welcomed the intent of the United States and the Soviet Union not to station objects carrying nuclear or other mass-destruction weapons in outer space. The resolution additionally called upon all nations to refrain from orbiting weapons of mass destruction, from installing them on celestial bodies, or from stationing them in outer space, and to refrain from causing, encouraging, or in any way participating in the conduct of such activities.[170]

In the spring of 1963 Dr. Brown described the decision of the United States and the Soviet Union not to place nuclear weapons in orbiting space vehicles as a prime illustration of nonnegotiated arms restraint.[171] In a later continuation of the discussion of "the arms restraint philosophy," Brown pointed out that "unilateral restraint really has to have a quid pro quo. We do not do something and they must respond by not doing something, even though it was not explicitly arranged. Otherwise, we do not proceed and not do the next thing." Brown considered that the decision by the Department of Defense not to procure as many Minuteman missiles as the Air Force recommended recognized that there would be no advantage in deploying more missiles. He added that this might be considered to be an arms restraint decision which sought to prevent a Soviet reaction that would negate the United States action. He described arms restraint as being "the difference between a rational arms race and an irrational arms race."[172]

3. Maturity of the Strategy of "Controlled Flexible Response"

During the summer of 1963, while the United States was--in Secretary McNamara's words--presenting the Soviet Union "an alternative to the cold war . . . holding the door wide open to proposals for lessening world tensions, for reaching agreements on nuclear tests, and for bringing the armaments race to a halt,"[173] the Department of Defense was engaged in studies which were necessary background to the preparation of the fiscal year 1965 defense budget which President Lyndon B. Johnson would submit to Congress in January 1964. Within the Air Force a good many of these background studies would not be complete by January 1964, and as a result Air Force requirements and force levels would be actively debated outside the Department of Defense in Congressional subcommittee hearings.

To Secretary Zuckert one of the major meanings of the strategic debates and the arms limitation agreements of 1963 was that: "Arms control is now a military requirement in itself." Zuckert believed that the nations of the world had found themselves "caught in the bind of feeling on the one hand that they must have military power to defend themselves and enforce peace, while on the other, they recognize that uncontrolled use of that power totally defeats its purposes." He conceived that: "Current military planning must provide for forces not dependent upon nuclear testing or any other type of restrictions to which nations may agree. They must be forces which are stabilizing in effect and not provocative either through vulnerability or other characteristics. These forces must have built-in assurance against accidental, unauthorized, or premature employment, and the force structure must be adaptable to monitoring and inspection roles as they may emerge." A quality which Zuckert described as "crisis management" was closely related to arms control, and Zuckert described it as "the ability to keep even an intense and long lasting international crisis from exploding into war, or a low intensity conflict from escalating into higher dimensions of war."[174]

In putting together Air Force force requirements, Secretary Zuckert considered deterrence of war, general or otherwise, to be the primary national objective. He thought that the importance of the deterrent capability at any level of intensity was directly proportional to the damage to be expected at that level. Thus, the deterrence of general war was of primary importance, but the Air Force nevertheless had to avoid being "caught with no choice but all-out nuclear response." "This," he said, "is what was wrong with the massive retaliation theory." Other capabilities or qualities had to be built into the deterrent force in order to defend and to preserve the United States. These were: flexibility, controlled response, multiple options, survivability, damage limitation, maintenance of a threshold of negotiation, and a war termination capability. The maintenance of a threshold of negotiation reflected a determination to stop war at the lowest point of intensity on favorable terms, a clear understanding of what those terms should be, acknowledgement that destruction of an enemy was not an objective, and recognition of the fact that unrestrained warfare would necessarily be unfavorable to all belligerents. The war termination capability implied a need for forces that could return to an attack in a degraded environment, for an ability to counter escalation with increased power at each higher level of intensity, for full control of forces at all times, and for an intelligence capability which would permit an initiative in timing. Secretary Zuckert stated that the ten characteristics that he enumerated would be the objective criteria for designing the most economical Air Force structure for the future.[175]

* * * *

In his initial look at the planned and existing status of the nation's strategic retaliatory forces preliminary to the making of the fiscal year 1965 budget requests, Secretary McNamara was almost willing to admit that the planned composite total of Air Force bombers and intercontinental missiles and of the Navy's Polaris missiles had almost reached a point of overkill, although, of course, it was practically impossible to be certain.[176] Where earlier thinking had visualized a continuing expansion of Minuteman missiles and the Air Force recommended further expansions of the Minuteman force level, the prospects of the Minuteman II missile for force modernization caused major revisions in the Minuteman program. Essentially the choice in the fiscal year 1965 program was whether to make a faster Minuteman buildup with a slower rate of retrofit of the older Minuteman I models or to follow a slower rate of buildup with the more powerful and more accurate Minuteman II missiles. McNamara accepted the latter alternative, and the fiscal year 1965 budget request proposed to add only one additional Minuteman squadron (50 missiles) to the existing force levels. This brought Minuteman authorizations to a force of 1,000 missiles and McNamara indicated that, while Minuteman II retrofitting modernizations would continue, any further increases in the size of the force would depend upon world conditions.[177] With the increase in the Minuteman force it was increasingly inefficient to retain first-generation liquid-fueled Atlas and Titan I missiles in the Air Force's operating inventory. The yearly cost of maintaining the liquid-fueled missiles was about $1 million per missile in comparison with about $100,000 per missile for the Minuteman. The defense program for fiscal 1965 therefore called for phasing out Atlas D missiles at Warren and Offutt Air Force Bases during the year and for phasing out Atlas E and Titan I missiles sometime later.[178]

Except for the fact that the Air Force had recommended the procurement of more Minuteman missiles than the Secretary of Defense was willing to buy, General LeMay was satisfied with the missile program as represented in the fiscal 1965 defense budget requests. Like other new weapon systems, the reliability of the missiles was low, but LeMay considered that enough of them had been scheduled against war plan targets to take care of any unknown low reliability factor. Some unknowns in the missile program nevertheless continued to trouble LeMay. Except for the firing of a single Polaris missile under less than full operating conditions, no ICBM replete with its nuclear warhead had ever been tested. Missiles could not be test-fired from their operational silos, even without their warheads. Any missile to be test fired had to be removed from its silo, transported to Vandenberg Air Force Base, placed in another silo, and fired on the Pacific range. LeMay did not believe that such a test program provided a realistic and adequate operational test. General Power was additionally concerned as to whether the Minuteman silos were as resistant to a hostile nuclear blast as the scientists had predicted; because of the limited nuclear test ban treaty no actual test of the matter could be undertaken.[179]

Despite these uncertainties General LeMay was willing to accept missiles as a component of the strategic retaliatory forces, but he was unwilling to accept them as the sole strategic capability.[180] With the death of the B-70 program no replacement existed for the B-52's. Unlike General Power, LeMay saw no benefit from starting B-52 production up again: it would be too expensive. On the contrary, he felt that as a matter of urgency the Air Force had to get authority to develop an acceptable advanced manned strategic system and drive it on through. "Otherwise," he warned, "I am afraid the B-52 is going to fall apart on us before we can get a replacement for it."[181] In an effort to find an alternative to the B-70, the USAF Manned Aircraft Systems Steering Group had set in motion study contracts that were to be completed in March 1964. In its initial budget recommendations on 3 July 1963, the Air Force anticipated the study contracts and requested that $25 million be included in fiscal 1965 funds to initiate development, including program definition, of an advanced manned strategic system. On 3 September, the Office of the Secretary of Defense approved $15 million for the program definition phase. By October General LeMay believed that there was "a good enough feel" on the problem to warrant submission of a memorandum to the Secretary of Defense stating the general type of system desired. The aircraft proposed was the Advanced Manned Precision Strike System (AMPSS). This plane would be smaller than the B-70, built of aluminum rather than stainless steel, capable of operating from short airfields, and able to fly approximately half of its range at high altitudes and supersonic speeds and then, when it reached the fringe of enemy radar detection, to descend to an altitude just above the terrain from which it would make attacks at high subsonic or low supersonic speeds. The primary armament of the plane would be highly accurate air-to-surface missiles, but it was to have a capability to deliver laydown weapons, both nuclear and conventional, of all types.[182]

Since he had approved a strategic retaliatory force level including 1,000 Minuteman missiles, 656 Polaris missiles, 630 B-52's, and 80 B-58's, Secretary McNamara could see no pressing requirement for an advanced manned strategic system. "Now what is the role of a bomber," he asked, "after you place 1,000 to 2,000 missiles on the Soviet Union? What have you left to mop up? . . . If it is not a mop up operation what is the role of the bomber?" He urged that missiles were advantageous because: "First, there is the matter of time to target. The quicker our retaliatory force can reach the opponent, the more chance we have of catching a substantial part of his force on the ground . . . and the more difficult we make it for him to plan and mount a full surprise attack. . . . Secondly, the missile has, because of the possibility of hardening it, a much greater potential for surviving an enemy attack and surviving with a capability to apply force against enemy targets. And thirdly, at least for the foreseeable future, the missile has much greater penetration capability."[183] Until the Air Force could make a case

for the AMPSS, McNamara was unwilling to program money for a project definition phase. Instead of the $15 million originally approved by the Office of Secretary of Defense, $5 million was put in the fiscal 1965 budget request so that the Air Force could carry out studies which would define an operational role for the plane which would be acceptable to the Joint Chiefs of Staff.[184] In an immediate reclama the Air Force offered to fund the 1965 AMPSS effort by reducing some other part of its activity. When the Joint Chiefs had discussed the proposed 1965 budget with President Johnson in December 1963, LeMay had again stated that he felt such a strong need for the AMPSS that he would be willing to reprogram Air Force money to do the job.[185]

As the Air Force studies on the advanced manned precision strike system progressed, the Air Force was able to specify that it required $52 million for the project in fiscal year 1965, $15 million for Program definition and the remainder to begin development of propulsion and avionics subsystems. On 20 January 1964, service members of the Joint Chiefs of Staff recommended approval of the Air Force proposal, but the Chairman recommended funding of only the program definition phase and withheld approval of any subsystem development until more data was available. As soon as it could get three studies from Boeing, North American, and General Dynamics, the Air Force submitted the additional data on 15 February. After viewing this data, the Joint Chiefs of Staff, less the Chairman, reaffirmed their previous recommendations. The Chairman held to his previous view in support of only the program definition phase.[186] At the same time that the studies went forward to the Joint Chiefs of Staff, copies of them were also submitted to Secretary Zuckert for his study, conclusions, and submission to Secretary McNamara with his recommendations. After a preliminary review, Zuckert had a number of serious questions about the operational concept for the system. He specifically questioned what he described as General LeMay's tendency to downgrade the effect of hostile defenses on the ability of the proposed aircraft to penetrate to a target.[187]

Although he apparently did not share the full support of the Secretary of the Air Force, General LeMay nevertheless believed that it was vital for the Air Force to go ahead with the advanced manned precision strike system--"to leapfrog a bit" and avoid having to wait on the 1966 budget cycle. He accordingly asked Congress to raise the appropriation request for a follow-on strategic aircraft from the $5 million specified in the fiscal 1965 budget to the $52 million needed for program definition and advanced development. As presented to the House Military Appropriations Subcommittee, LeMay's expanded views on the need for a strategic manned weapon system left little more to be said on the subject:

> The environment in which future war may be initiated, the method of opening hostilities, the basic character

of war, the length and scope of war, and the conditions and procedures by which the war may be terminated are all factors which will determine the weapons systems actually needed in a future conflict. But forecasts of war, or of the events constituting a preamble to war, have rarely proven to be accurate. Accordingly, any analysis of the potential contributions of a weapon system which is based upon a single concept of war is far from reliable. When a large number of possible circumstances indicate the necessity for a follow-on strategic aircraft system, as is the case in our studies, I consider that timely action is warranted to provide the required capability. Otherwise we will be placing our sole reliance upon ballistic missile forces that have never reacted to the conditions of actual war or even to conditions which constitute a peacetime simulation to the wartime environment.

I am in complete agreement with the need for a modern, effective ballistic missile force as an important element of our deterrent posture. Additionally, a secure ballistic missile force, in concert with other survivable strategic forces provides the strongest possible incentives to the U.S.S.R. to abstain from attacks on the population centers of the United States, either in an initial attack or as a rational option during conflicts of lower intensity.

It is important to recognize, however, that the ICBM and SLBM [submarine launched ballistic missile] forces represent both the United States and Soviet potential for strategic nuclear warfare at the highest, most indiscriminate level. The employment of such weapons in a crisis or lower level conflict would be an inappropriate response and would immediately escalate the situation uncontrollably, to an intensity which could be vastly disproportionate to the original aggravation.

In my judgment, a strategic force posture which placed sole or principal reliance on ballistic missiles would deny to the future national leadership the ability to respond in a flexible yet unambiguous manner to a wide range of lesser provocations. To the extent that in fact it would not be credible for the United States to employ a total ballistic missile response to peripheral aggression, such enemy calculations and subsequent aggressions ultimately could result in Communist domination of major segments of the free world. On the other hand, a strategic aircraft would provide the national leadership with a capability to retain the initiative at all levels of confrontation of conflict, thereby

decreasing the dangers of enemy miscalculation and insuring that we can in fact control or contest a given situation without high risk of a missile exchange and the unnecessary losses in American lives which would result. This ability to respond under closely controlled conditions by use of discriminate force in a fashion which clearly transmits with it our intent to prevail requires characteristics available only in a mixed force. For this reason, I consider that a mix of ballistic missiles and manned strategic aircraft, in numbers appropriate to their respective tasks, will remain the only appropriate basis for general war planning for the foreseeable future.

A complementary mix of manned aircraft and ballistic missiles will continue to be essential to the national security for other important reasons as well. In any future conflict, we will need forces which can respond quickly under careful national direction to a wide variety of unforeseen and rapidly changing circumstances. Ballistic missiles inherently were designed to be--and remain--a single shot, irrevocably committed weapon system. In this regard, the manned element of the force, with its unique capability to react immediately to redirection, to exploit fleeting advantages, and to execute a broad range of missions, provides an effective complement to the ballistic missile forces.

While we are reasonably confident that we will demonstrate satisfactory reliability with our ballistic missile force, at best this will be based on relatively small statistical samples, without any substantial opportunity to test the force in its operational environment.

Manned aircraft and ballistic missiles also complement one another in the manner in which they compound the offensive and defensive problems of the enemy. Since the alert aircraft can be launched under the positive control in conditions of ambiguous warning, the enemy is unable to achieve a high confidence that he can attack successfully a major portion of our strategic force. Similarly, so long as he is faced by a mixed strategic force, the enemy cannot concentrate his resources either on ABM [Antiballistic Missile] or Air Defense; he must dilute and divide his efforts between the two. Thus, a mix of U.S. strategic forces and attack options provides strong incentive for the enemy to spend a large portion of his military budget on the defensive environment, thereby reducing the funds which otherwise would be available for offensive systems to be employed against the United States.

As a final point, I consider it important that the Nation have a long range, strategic system which can support war operations against the Soviet Union or engage in lesser conflicts at our determination without the necessity for forward basing. In addition, this capability can be exploited over and over again; it is not a single shot weapon system. The flexibility inherent in a manned aircraft system gives us the opportunity to provide visible evidence of national resolve and determination--as we did in the case of Cuba--to employ such forces in initial or follow-on operations which are designed to achieve an early conflict termination at the lowest practicable level of conflict, and to provide a means of policing or enforcing the truce, once it has been achieved.[188]

In his appearances before Congressional committees in discussion of the fiscal 1965 budget, Secretary McNamara was willing to allocate $5 million so that the Air Force could study an advanced bomber which he rather thought would never be built, but he strongly recommended against the addition of any more funds to the project. When the House Armed Services Committee recommended that approximately $50 million be added for study and development of a manned strategic weapon system, McNamara asked the House Appropriations Committee not to authorize the money. He emphasized that the Air Force had not presented him any statement of concept, or operational plan, or specifications of such a bomber which would indicate a need for it. In a future war, missiles would have to be employed against "time sensitive" targets; other types of targets--troop concentrations, transportation centers, battlefield targets--could be handled by new aircraft under development such as the TFX fighter-bomber.[189] In rebuttal to the suggestion that the TFX might serve as an advanced strategic system, LeMay argued that the advanced fighter was designed to be a tactical weapon, which meant that it would not be able to penetrate sophisticated defenses. It did not have enough space within it to carry the electronic countermeasures and other things that had to be employed by a strategic aircraft.[190] LeMay's reasoning was accepted in Congress. "I believe," stated Representative George H. Mahon, Chairman of the House Defense Appropriations Subcommittee, "most members of Congress feel as I, that we cannot with prudence abandon strategic manned systems in the foreseeable future. This is a risk we are not willing to take at this time."[191]

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In stating requirements for continental air and missile defense forces during fiscal year 1965, the Department of Defense assumed that the weight of the hostile strategic threat to the United States

would continue to shift from manned aircraft to intercontinental and submarine launched ballistic missiles and that, as Secretary McNamara said, "the main thrust of . . . defensive efforts in the years ahead should be directed to meet this rising threat." As long as the Soviet Union continued to possess bombers that could reach the United States, however, McNamara believed that the United States must continue to maintain some air defenses. He also reasoned that the Soviet Union would make initial attacks with missiles and then follow up with manned bombers.[192]

Despite Khrushchev's boast that bombers were good only for museums, General LeMay and other Air Force officers doubted that the Soviets would abandon long-range strategic aircraft. Published in 1962 under the editorship of Marshal V. D. Sokolovsky, an open review of Soviet military thinking entitled Military Strategy indicated that the Communists saw values in aviation for military operations. This book acknowledged that long-range bombers were "rapidly giving way" to intercontinental and intermediate range ballistic missiles, but it noted: "Of course, this replacement process can take a long time, and in the event of war, bombers and rockets will be used simultaneously for attacking objectives located in the enemy zone of interior and in theaters of military operations. It is all the more likely that aviation has still not lost its combat possibilities. The arming of bombers with various classes of missiles, which are able to strike blows at great distances, makes it possible, in a number of cases for them to operate beyond the range of air-defense weapons and to perform combat missions with reasonable effectiveness. In addition, certain specific missions (for example, attacks against moving targets) can be performed more successfully by the air force than by missiles."[193] During their 1963 air show, the Soviets displayed four new aircraft, and General LeMay urged that the United States must recognize that the Russians "are now building good airplanes, good strategic airplanes" and that they had "the capability of going forward with a strong aeronautical program." The Soviet Long Range Air Force was also equipping its bombers with stand-off missiles. "Our predictions," LeMay concluded, "are that the Russians are going to continue on with a mixed force. We can be wrong, but we just believe that they will continue on."[194]

At the direction of Secretary McNamara, an Air Force Continental Air Defense Study Group made a comprehensive survey of the problem of modernizing the Air Defense Command's interceptor force and submitted its final report on 10 May 1963. This study examined the possibility of developing a new improved manned interceptor (IMI) and of adapting other aircraft to an interceptor role, including the F-111 (TFX), and the C-135B, the latter to be an air-to-air missile platform. According to Secretary McNamara the study showed that any one of the alternative systems would provide roughly comparable defenses against a fairly wide range of possible bomber threats for about the same total program costs. Confident that there were a number of good choices for a follow-on interceptor if it proved to

be needed, McNamara ruled that the Department of Defense would proceed with the production and improvement of existing fighters, the development of the F-111, and the development of a number of subsystems which might be needed for a new interceptor. He approved a commitment of $5 million in the fiscal 1965 budget for studies of an improved manned interceptor, but he considered that it would be "premature to make the choice" in air defense fighters until the character of the hostile manned bomber threat became more apparent. Having provided the funds that would permit a dispersal of Air Defense Command fighter interceptors during 1964, McNamara planned no change in the manned interceptor force. "We believe," he said, "that this force is appropriate for defense against what we presently foresee as a declining Soviet manned bomber threat. However, if the Soviets should deploy a new long-range bomber, which does not seem likely, we would have to reevaluate the size and character of our interceptor force, and particularly the need for modernization."[195]

Other air and missile defense requirements were also affected by the changing nature of the hostile threat. Where SAGE had included 12 direction centers at its maximum planned development, 2 SAGE centers, 16 heavy radars, and 40 gap-filler radars were to be closed in October 1963. In fiscal 1965, it was planned to close still more SAGE centers in favor of an expansion of semiautomatic backup interceptor control centers at prime radar stations. Where the Air Force possessed 195 Bomarc A and 183 Bomarc B missiles on launchers, Secretary McNamara proposed to phase out all the "A" missiles during 1965, thus effecting a saving of $10 million in annual operating costs. Since Nike-Hercules antiaircraft missiles could operate independently of SAGE, the Defense Department planned to continue them but to transfer some of the batteries to the Army National Guard to replace older Nike-Ajax missiles manned by the Guard. The program for fiscal 1965 generally emphasized antimissile warning facilities, including BMEWS, over-the-horizon radars, and a more sophisticated bomb alarm system to be called NUDETS (nuclear detonation detection and reporting system). McNamara planned to keep the Nike-X antimissile system under development, but he suggested once again that an antimissile defense deployment would be meaningless without a strong civil defense fallout shelter program.[196] Because of the changed nature of the Soviet aircraft threat to one of supersonic aircraft armed with stand-off missiles, the Air Force agreed that the short range Bomarc A missiles should be deleted from the Air Defense Command inventory. It wished to retain the Bomarc B until some decision was made on an improved manned interceptor, but even the Bomarc B, which had seemed to have so many advantages a few years earlier, now was seen to be less desirable than a new manned interceptor. With the advantage of hindsight, Major General R. J. Friedman, Air Force Director of Aerospace Programs, remarked that if the Air Force had to do it over again it would seek a more flexible manned interceptor rather than the relatively inflexible unmanned missile interceptors that had been developed during the 1950's.[197]

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At the time that the Department of Defense budget estimates for fiscal year 1965 were nearing completion, Secretary Zuckert wrote a letter to Secretary McNamara informing him that progress was being made with the studies of an improved manned interceptor and that the Air Force would need a sizable sum of money in addition to the $5 million study appropriation request if it was to proceed with the development of an improved manned interceptor. Since Zuckert did not consider that the Air Force had provided an adequate substantiation of the need for and operating concept of a new interceptor, he was not willing to approve an official program change request in favor of it. General LeMay, however, felt much more strongly on the subject. When he appeared before Secretary McNamara to ask authority to readjust Air Force research and development funds so as to include a follow-on manned strategic aircraft, LeMay also proposed to use $40 million of research and development money for the development of an improved manned interceptor. This proposal was also submitted to the Joint Chiefs of Staff, who agreed that the Air Force should proceed to develop the improved manned interceptor aircraft.[198] In his appearances before Congressional committees in February 1964, LeMay testified that the second most important requirement of the Air Force after the manned strategic aircraft was the development of a manned interceptor of greatly increased speed and range. He stated that neither the F4C nor the TFX would be as good an interceptor as an especially-designed MII, and he asked for about $40 million to be used for engine development and to continue development of fire-control system work that had been continued when the F-108 had been cancelled. "The improved manned interceptor," LeMay said, "has dominated possible weapon systems in recent comprehensive studies of air defense against the aerodynamic threat through the early seventies. The flexibility afforded an air battle commander by this weapon, as opposed to current systems, is greatly enhanced because of the MII's inherent speed, range, and weapon capabilities."[199] When they appeared together before the House Armed Service Committee, Secretary Zuckert did not support LeMay's request for the improved manned interceptor but instead agreed with Secretary McNamara's position that there was not yet enough evidence that the Russians were building a supersonic bomber to warrant the immediate development of the new interceptor.[200]

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When the House Armed Services Committee reported out the military authorization bill for fiscal year 1965 it included funds which General LeMay had requested for beginning the follow-on strategic weapon system and for starting the development of the improved manned interceptor.[201] In a surprise announcement on 29 February 1964, however, President Johnson for the first time revealed the existence of the long-range, mach-3 aircraft being developed by the Lockheed Aircraft Corporation under Lockheed's designation

as the A-11. He said that the A-11 was already undergoing tests to determine its capabilities for use as a very-long-range, 2,000-mile-an-hour manned interceptor. According to later aviation reports, Lockheed had secretly begun to develop the A-11 at Burbank, California, in 1959 for the Central Intelligence Agency. Profiting from X-15 technology, the A-11 was ready to begin secret flight tests at an airfield in Nevada in 1961. Members of the House Armed Services Committee revealed that they had known about the A-11 when they had authorized funds for the IMI, but late in February the Senate Armed Services Committee accepted the assurance that the A-11 would meet Air Force requirements for an improved interceptor and refused to authorize development of the IMI. At a press conference on 5 March, Secretary McNamara said that "the A-11 is an interceptor, it is being developed as such, and beyond that I have nothing further to say on its use." Accepting such assurance, a Senate-House joint conference committee eliminated the House recommendation for $40 million for the development of an improved interceptor aircraft from the fiscal 1965 military authorization bill.[202] As secrecy gradually cleared away the new plane was officially designated as the YF-12A interceptor weapon system, and comprehensive Air Force test programs during 1964-65 showed that the prototype YF-12A was "an air defense interceptor of the first order." Whether the plan would be procured and taken into the Air Defense Command active operating inventory awaited the possibility that the Soviet Union might deploy a force of new supersonic aircraft.[203]

While cuts were made in the appropriation bills for defense which they passed, both the House and Senate included the $52 million which LeMay requested for beginning the follow-on strategic weapon system in their bills. As the House-Senate joint conference committee was beginning to resolve differences in the two versions of the Defense Appropriations Act for fiscal year 1965, President Johnson in another surprise announcement made on 24 July 1964 revealed the successful development of a major new strategic aircraft system, which he said would be employed by the Strategic Air Command. He described the system as the SR-71, stated that the development program had begun in February 1963, and predicted that flight testing of the first operational aircraft would begin early in 1965. He said that the SR-71 would "provide the strategic forces of the United States with an outstanding long range reconnaissance capability" that would be "used during periods of military hostilities and in other situations in which military forces may be confronting foreign military forces." Once again it was subsequently revealed that the SR-71 was an outgrowth of the Lockheed A-11 aircraft. It would include a reconnaissance pod and would incorporate aerodynamic and powerplant improvements. The first test flight of the SR-71 was made at Palmadale, California, in December 1964.[204]

President Johnson's announcement concerning the SR-71 apparently reduced Congressional pressure on the administration to proceed with the development of an advanced manned strategic system. As passed

by Congress on 4 August, the Department of Defense Appropriation Act for Fiscal Year 1965 contained the $52 million appropriation for a manned strategic aircraft, but the matter of using the money was left to the discretion of the Secretary of Defense.[205] Late in August the Department of Defense issued a statement noting that its forward planning intended to keep substantial numbers of bombers in operation as far as 1972. Beyond 1972 decisions had not been made, but the Department was making advance provisions for possible extensions of the life of the B-52, for research on new manned strategic systems, and for possible strategic uses of manned systems already in production. "We will have manned bombers, and plenty of them," the statement reported, "just as long as they are needed."[206] After a meeting with President Johnson, Secretary McNamara announced on 10 November 1964 that the President had agreed that there was no immediate requirement to begin the development of a strategic system to follow the B-52 but that the Department of Defense would continue to pursue research projects which would, if the need arose, permit the United States to follow any one of three designs in producing a new manned strategic weapon system.[207]

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With a few exceptions the augmentation of United States general purpose forces--including most of the Army's combat and support units, virtually all Navy units, all Marine Corps units, and the tactical wings of the Air Force--appeared to be reaching maturity during 1963. In view of the expansion of United States general purpose forces, the build-up of forces by the NATO allies, and the announced reductions in Soviet ground forces, Secretary McNamara could conclude in early 1964 that "the forces envisioned in NATO plans for the end of 1966, fully manned, trained, equipped, and properly positioned, could hold an initial Soviet attack on the central front, using nonnuclear means alone." Until the 1966 planning goals were realized, however, the defense of Europe against an all-out Soviet attack, even if the attacking forces used nonnuclear weapons, would require NATO forces to respond with tactical nuclear weapons. "In summary," McNamara said, "our requirements studies indicate that except in the case of a massive attack by the Soviet Union or Communist China, we, together with our allies, have sufficient active forces for the initial stages of a conflict, without immediately resorting to nuclear weapons. It would, however, be necessary to mobilize Reserve component units rapidly at the start of a conflict in order to provide the additional forces needed to sustain combat and to reconstitute the strategic reserve. And, in all cases, it is clear that ultimate allied success would be heavily dependent upon achieving early air superiority and upon having adequate air and sea lift."[208]

While McNamara believed that United States general purpose forces had to be designed to support allied nations around the

world, he also held the policy that it was "in the interest of the entire free world for nations threatened by Communist attack or subversion to defend themselves insofar as possible without direct intervention by U.S. military forces."[209] At the NATO Council of Ministers meeting in December 1963 he pointedly stated that the United States contribution of five M-day divisions and three separate regiments was a fair share of the total western Europe defense requirement, considering the responsibilities of the United States "for furnishing the strategic nuclear forces for NATO and for supporting allies in other parts of the world."[210] At Nassau the United States had agreed to support and participate in a NATO multilateral nuclear force, but McNamara indicated that "we are not trying to sell it." Since the strategic forces of the United States provided essential amounts of deterrent force, he said that there was "no urgent military requirement" for the multilateral force. "The force, as it is conceived of and being discussed," he noted on 29 January 1964, "would have a clear military utility but its purpose would be primarily, in my mind, to increase the political unity among the members of NATO."[211]

In discussion of the fiscal year 1965 budget from the point of view of the Army Chief of Staff, General Wheeler stated that limited war contingency planning studies demonstrated that 18 divisions--rather than the existing 16--would be the optimum figure for the strength of the Army. But while Wheeler made it clear to his superiors that with only 16 divisions the Army would have to call up reserves sooner than would otherwise be the case, he was willing to accept the 16 active division and 6 reserve division force level, with standby equipment sufficient to supply the reserve divisions and with enough consumables to maintain 16 divisions and their supporting forces in combat between D-day and the time when production lines would be able to catch up with the rate of combat consumption.[212] In addition to this Army strength, the Department of Defense appropriation request for fiscal year 1965 envisioned that the Marine Corps would continue to maintain three combat division-air wings.[213]

In putting together the defense budget for fiscal 1965 Secretary McNamara took a hard look at the future of the Navy's attack aircraft carriers. After July 1965 a sufficient number of strategic missiles would be in place to permit the carriers to be relieved of responsibilities for strategic alert retaliatory missions. Since some carrier aircraft could not operate at night, others could not get off in bad weather, and none of them could reach their targets unless their carriers were in a precise operating location, McNamara believed that removal of carrier aircraft from the single integrated operation plan would be beneficial. When the carriers were relieved from strategic retaliatory responsibilities, they would augment the limited war forces. There was little doubt about the utility of aircraft carriers in a limited war mission, but on the other hand carrier task forces were enormously expensive. Four carrier task forces were required to keep two on station, one in the Mediterranean

and one in the Far East. A task force comprising two attack carriers with about 200 aircraft aboard required protection and support by more than 50 ships, the whole initial cost of the force running as high as $6 billion and the operating costs amounting to about $1 billion a year. At the same time that carrier task forces were very expensive, the increasing range of land-based tactical aircraft promised to reduce requirements for forward-based air power. Thus with inflight refueling F-4's and F-105's could be flown from the United States to Europe and to the Western Pacific. The F-111 (TFX) would be able to deploy to Europe without any inflight refueling.[214]

Based upon the consideration of the increasing ranges of land-based tactical aircraft and their ability to operate from relatively unprepared airstrips, as well as the increased effectiveness of Forrestal class carriers and of modern naval aircraft, Secretary McNamara informed Congress in January 1964 that Navy programs were going to be readjusted to reflect some reduction in the total number of attack aircraft carriers that would be in operation in the early 1970's. While the Navy would continue to operate 15 attack carriers for the next several years, it would begin to readjust its aircraft procurement to emphasize a non-nuclear limited war mission.[215] McNamara accordingly eliminated the attack aircraft carrier that the Navy had requested funding for in fiscal year 1965 at a cost of $410 million, and he added seven escort ships and four attack cargo ships to the Navy budget at a cost of $340 million.[216]

In a candid discussion of the Department of Defense projection for reducing the strength of attack aircraft carriers, Admiral David L. McDonald, the new Chief of Naval Operations, stated early in 1964 that such "might be the Secretary of Defense's plan" but that it was "not the Navy plan today."[217] McDonald judged that a force of 15 attack carriers--with nine in the Pacific and six in the Atlantic--was a "best estimate of naval requirements for force deployments in support of limited war contingency plans." While McDonald was willing that the attack carriers should be released from a general war alert, he urged that carrier aircraft should continue to possess general war capabilities for employment in a possible emergency. "The post-initial strike potential of the carrier," he asserted, "is of vital national importance in general war. Follow-on precision air strikes, based on reconnaissance, requests for support from beleaguered ground forces, and prevention of third force usurpation following an initial exchange in general war are the types of general war tasks for which the attack carrier is suited. Survivability considerations indicate that carrier decks may be the most secure means of providing for follow-on general war offensive and reconnaissance requirements."[218]

While the Navy apparently questioned the Department of Defense plan to reduce its number of attack aircraft carriers, it began to make plans to revamp the aircraft carrier complement to accomplish a limited war role. A Navy study completed in May 1963 indicated that existing attack aircraft that had been conceived in the late

1940's and designed to carry single nuclear weapons would not meet the demands of limited non-nuclear war. It accordingly recommended the development of a new visual light-attack (VAL) aircraft, which would be subsonic but would have a long loiter time and would carry a large conventional bomb load. Since the VAL would cost only about one-third as much as the TFX it could be purchased in larger numbers. It would not be able to penetrate strong enemy defenses, but the Navy concept of operations visualized that a task force would move in on an objective area and roll back hostile defenses with preliminary air strikes.[219] Requests for proposals on the development of the VAL were released to contractors on 29 June 1963, and, without addressing the Joint Chiefs of Staff on the matter, the Navy secured approval from the Department of Defense for a reprograming action for the development of the VAL (which would subsequently be designated as the A-7 Corsair II) with fiscal year 1965 budget funds.[220] At the start of the VAL project, when Secretary McNamara asked if the Air Force wished to participate in it, General LeMay examined the concept of the specialized aircraft and concluded that the Air Force would not advance its capabilities by buying a new aircraft with reduced performance characteristics. "We feel," LeMay said, "the TFX is the best airplane to buy in this category in this time period by far; by any criteria you want to measure, cost effectiveness, performance, capability, everything, it is a better airplane."[221] General Wheeler also initially announced that he could not support the VAL, or "a specitic and optimized close support aircraft." While the VAL would doubtless cost less per individual item and would be a better close air support vehicle, it would not be versatile for the performance of air superiority and long-range interdiction missions. According to General Wheeler, an Army staff study showed that, in terms of specialized tactical air squadrons, the employment of an optimized close support aircraft would be extremely costly. Wheeler therefore held "the position that the Army would stick with the Air Force as regards using high performance aircraft in the Tactical Air Command."[222] In a justification of the Department of Defense position on the VAL, however, Dr. Brown pointed out: "One will always want a large number of cheaper aircraft, as well as a small number of expensive aircraft to do more difficult roles. The TFX could do more difficult things than the VAL, but in many cases one will not want to use it, because the requirement doesn't demand either that high a performance aircraft or that expensive an aircraft."[223] With the passing of time, the Air Force accepted this logic. It began to participate in the development of the Ling-Tempo-Vought A-7A in 1965, and the aircraft would be programmed for procurement as a Tactical Air Command replacement.

As foreshadowed by planning for the fiscal year 1965 budget, the shape of the future tactical air forces was related to the characteristics of new tactical fighters, the basing concepts to be used by tactical air units, and the capabilities of airlift forces

to support rapid worldwide deployments. Concerned with building adequate air support if the Army was to engage in a sustained non-nuclear conflict, the Air Force pressed during interdepartmental hearings on the fiscal 1965 budget for an expansion from 21 to 25 tactical air wings. McNamara authorized 24 tactical air wings, but he indicated that there would be no over-all expansion of tactical air strength. Thus the Air Force would have to use personnel from inactivated B-57 and KB-50 squadrons and from F-102 air defense squadrons that would be withdrawn from Japan and Europe to build up its tactical fighter resources. As for aircraft the tactical fighter wing expansion would be initially managed by retaining F-100 fighters in the active force longer than had been planned. The Air Force had already bought all the F-105's it would procure, and orders of F-4 aircraft in fiscal 1965 would be stretched out in order to attain the most modern modifications of this plane. Given initial procurement of the F-111A during fiscal year 1965, the Air Force eventually planned to convert the squadrons equipped with F-100, F-101, and F-105 aircraft to F-111A units. Although the planned conversion of the 14-squadron RF-101 and RB-66 tactical reconnaissance force to RF-4C's had lagged, the Air Force planned to continue this program and to expand the tactical reconnaissance force as it might be authorized by acquiring RF-111's.[224] The tactical air force level also included five Mace A and one Mace B tactical missile squadrons in Europe and two Mace B squadrons on Okinawa: these squadrons were admittedly vulnerable to surprise attack, but they would continue in the tactical air inventory.[225]

In a study entitled "Jet Age" published in November 1956, the Tactical Air Command had proposed that all tactical air wings be returned from oversea bases to stations in the United States and that rotational squadrons from the redeployed wings should serve six-month tours at oversea bases. This forward-looking concept had been only partly accepted because it placed heavy demands upon scarce air refueling capabilities and because some tactical aircraft were not suited for aerial refueling. The F-102 interceptors, for example, had to be stationed overseas because they lacked aerial refueling capabilities.[226] Early in 1963 the Air Force was better able to update its oversea deployment planning. All-purpose F-105 tactical fighters could rapidly be deployed overseas, and conversion of other wings to versatile F-4C aircraft would begin during the year. Both because of increasing allied air defense capabilities and of the growing ability of the Tactical Air Command rapidly to reinforce threatened areas it would be possible to redeploy F-102 interceptor squadrons from Japan and Europe during 1964. In February 1963, General LeMay directed the preparation of a study designated "Clearwater," which envisioned a dual forward- and rear-basing concept for tactical air wings. Rotational tactical fighter squadrons would operate from dispersed and moderately-hardened airfields in Europe and in the Far East, while rear bases in the United States would accommodate the main bodies of the wings. The

consolidation of expensive and vulnerable heavy maintenance facilities at rearward bases would add to security, and Secretary McNamara also hoped that the concept would "result in manpower, spare parts, and foreign exchange savings."[227]

The feasibility of the Clearwater concept, and the possibility that both Army and Air Force units might be held in the United States and rapidly deployed overseas, was closely related to the capabilities of the airlift and sealift program package. In a test of the United States Strike Command's ability rapidly to reinforce NATO with an armored division and tactical air units, the Military Air Transport Command lifted the 2d Armored Division from Texas to Rhein-Main Air Base, West Germany, in a period of 63 hours beginning on the morning of 22 October 1963. As a part of the same "Big Lift" exercise, the Tactical Air Command deployed three squadrons of fighter aircraft and a composite tactical air reconnaissance force to Europe with an average deployment time of 7 hours per aircraft.[228] In an informal comment on "Big Lift," General LeMay pointed out: "Our ability to deploy such forces rapidly will permit us to reduce some of our oversea tactical units without lessening our ability to meet our commitments in those areas."[229] In an implementation of the Clearwater concept during 1964 the Air Force redeployed F-102 interceptor squadrons from Japan and from Europe, and it also applied the concept to troop carrier activity in Europe. Effective on 1 April 1964, the United States Air Force in Europe transferred its 322d Air Division and the management of the theater tactical airlift force to the Military Air Transport Service. Concurrently the 317th Troop Carrier Wing and its three C-130 squadrons were reassigned to the Tactical Air Command and were redeployed from Europe to Lockbourne Air Force Base, Ohio, during May and June 1964.[230]

At the same time that "Big Lift" provided a test for the Clearwater concept it also provided a check upon the progress being made in modernizing the airlift portion of the Department of Defense airlift and sealift forces. Within the Military Air Transport Service the major development during 1963 was the factory roll-out of the first turbofan-powered C141A in August and its successful maiden flight on 17 December 1963. Able to span any ocean non-stop at high subsonic cruise speeds, this heavy cargo plane promised to be a great enhancement of the MATS capability. Thus in flying Big Lift, MATS employed 202 transport aircraft, and even though the accomplishment of the deployment was substantial Major General Glenn R. Birchard, Vice Commander of MATS, pointed out that with new C-141 Star Lifters a movement comparable to Big Lift could have been accomplished with 100 aircraft in only 20 hours.[231] In an airlift program change reflecting the successful development of the C-141, decisions were made in the fiscal year 1965 defense budget to cut off two late program C-130 squadrons committed to MATS, to divert the 40 C-135's that MATS had been given for interim modernization to other uses, and to add C-141's to the MATS inventory. When MATS

was equipped with C-141's, all C-130 aircraft would be transferred to the Tactical Air Command, thus providing the Tactical Air Command with a modern four-engine troop carrier aircraft that would have ocean-spanning abilities. In order to compensate for the loss of airlift capacity resulting from the cancellation of the two squadrons of C-130's and the phase-out of the C-135's, old C-124 aircraft would be held in the MATS inventory longer than had been previously planned.[232]

In its design phase the C-141 had been well conceived, but with the passing of time it was evident that a still larger "outsize" cargo transport would have to be developed. When the Army and the Air Force had laid out the design criteria for the C-141, the Army had been planning on limiting most of its requirements for air mobility to the characteristics of the equipment possessed by an airborne division. By 1963 the Army wished to be able to transport all types of divisions by air, and this meant that a large proportion of Army equipment would not fit within the cargo hatch of the C-141. By 1970, moreover, the Air Force would also require an outsize cargo plane that could replace the old C-124's and C-133's. In order to meet both requirements the Air Force posed the need for the development of a new cargo experimental heavy logistics support (CX-HLS) aircraft, but in the winter of 1963-64 Secretary McNamara was unwilling to endorse the project until all possible solutions for the problem had been explored. He wished to examine various alternative actions such as a modification of the C-141, the dismantling of large cargo items, the prepositioning of equipment, or the redesign of items of equipment that would have to be transported by air. By February 1964 the Air Force had about convinced McNamara that none of the alternatives were practical, but he still wanted more study. He therefore committed about $10 million from his fiscal year 1964 emergency fund to a CX-HLS study project.[233] After a very complete program definition study the Department of Defense would accept the case for a very large transport aircraft, and in 1965 the Lockheed-Georgia Company would win the C-5A development contract. The C-5A would have about three times the work capacity of the C-141, and it would be able to move heavy mechanized infantry and armored divisions, complete with tanks, trucks, artillery and combat supplies.[234]

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With the completion of the fiscal year 1965 National Defense budget, the Kennedy-Johnson-McNamara administration had effected the fourth successive revision of the military force levels of the United States, and the shape of these force levels was indicative of the kind of military strategy that the New Fronter meant to continue into the future. Writing unofficially in Foreign Affairs in April 1964 shortly after he had left the post of Deputy Secretary of Defense, Roswell L. Gilpatrick outlined the proportions and characteristics of the military program that he conceived would meet the

defense needs of the United States in the decade of the 1970's. Based upon the assumption that the detente between the United States and the Soviet Union would continue, Gilpatric predicted that the military forces of the United States would be shaped as follows by 1970:

> Strategic retaliatory forces. A deterrent force, consisting only of hardened and dispersed land-based and sea-based missiles, with all of the vulnerable, earlier-generation missiles deactivated and all manned bombers retired from active deployment. Such a force, comprised of weapons systems invulnerable to surprise attack, would be capable of destroying the centers of Soviet and Chinese Communist society.
>
> Continental air and missile defense forces. Only warning systems, such as the big ballistic missile detection and tracking radars in Alaska, Greenland and Scotland, and the current generation of surface-to-air missiles systems for tactical deployment would be maintained. Manned interceptors with their ground-control counterparts and all other bomber defense and warning systems would be phased out unless the Soviets changed their presently indicated intention of concentrating their strategic power in missiles. There would be no production or deployment of anti-ballistic-missile systems in the absence of Soviet moves to proceed beyond experimental installations of such systems.
>
> Reconnaissance forces. Both aircraft and satellite-based reconnaissance systems would be retained and improved to take full advantage of state-of-the-art developments, so as to provide the United States at all times with a world-wide capability for the collection of both strategic and tactical intelligence.
>
> General-purpose forces. No significant changes would take place in this category except for a reduction of Army divisions that might be withdrawn at some stage from Korea or from Europe (if a decline in the Soviet threat allowed). The remaining Army ground forces and the existing Marine divisions, with presently planned air support and airlift (consisting of all the Tactical Air and Military Air Transport units, plus the Marine Air Wings), would be needed to deter or counter threats of aggression not directly inspired or supported by the U.S.S.R. The bulk of the U.S. forces now assigned to the Pacific Command are there primarily to meet the threat from Communist China and her satellites, plus Indonesia. Hence, in the event of a detente with the Soviet Union alone, it would not be safe to reduce U.S. force levels in the Pacific.[235]

Although Gilpatric had played an important role in the reshaping of United States defense posture after 1961, his views in April 1964 could not fairly be said to be precisely synonymous with the forward planning within the Department of Defense. In August 1964, however, Secretary McNamara looked backward at the record of the Kennedy-Johnson administration and provided a brief analysis of the defense strategy which had come into being. "We believed," McNamara said, "in a strategy of controlled flexible response, where the military force of the United States would become a finely tuned instrument of national policy, versatile enough to meet with appropriate force the full spectrum of possible threats to our national security from guerrilla subversion to all out nuclear war. . . . Development of the greatest military power in human history--with a capability to respond to every level of conflict--is beyond question the most significant achievement in the defense establishment during our years in office."[236]

CHAPTER 13

THE AIR FORCE IN A CHANGING DEFENSE ENVIRONMENT

1. Centralization of National Security Management

"We must improve the administration of our defense agencies, and we must do so without delay," stated Senator John F. Kennedy on 14 September 1960.[1] During his successful presidential campaign, Senator Kennedy and the men who would occupy key positions in his administration voiced concern about delays in missile and space programs which were attributable to an inability of the existing organizational structure of the national government to provide quick and definite decisions on matters of critical importance. "Over a period of time. . .," Secretary Dean Rusk would later explain, "we had felt that much of the committee machinery left dangling and hidden vetoes all over town and that this tended to slow down operations rather considerably."[2] While the presidential campaign was still underway, Senator Kennedy asked Senator Stuart Symington to organize a committee to report to him regarding legislative and executive measures that should be taken to obtain an adequate national defense, and a few days after his election Kennedy requested Dr. Jerome B. Wiesner to head an *ad hoc* study committee on national space requirements.[3] Shortly after assuming office in January 1961, President Kennedy's administration undertook changes in the National Security Council, in the national organization for space exploitation, and within the Department of Defense.

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Even though it was established by the National Security Act of 1947 the National Security Council was, in the words of Robert Cutler, "a vehicle for the President to use in accordance with its suitability to his plans for conducting his great office." Brought into being by Cutler while he served as Special Assistant to President Eisenhower for National Security Affairs, the NSC Planning Board was composed of representatives of the members of the National Security Council and served as the principal body for formulating and transmitting policy recommendations to the Council. Established by executive order in September 1953 the NSC Operations Coordinating Board was composed of deputies to the principal members of the National Security Council and had the responsibility of translating approved NSC policies into operational directives.[4]

In the late 1950's the institutional framework of the National Security Council was the subject of criticism. As has been seen, General Taylor charged: "The National Security Council has not come to grips with the fundamental defense problems and has failed to produce clear-cut guidance for the armed forces."[5] Speaking as

a defense analyst in September 1959, Paul H. Nitze suggested that President Eisenhower's dependence upon the National Security Council for policy formulation as well as for advice in making decisions may have been "wrong in theory and abortive in practice." Nitze urged that the NSC Planning Board worked under the "full pressures of interservice and interdepartmental rivalries" and made compromises even in the gathering of information. The concentration of responsibility for formulating new national policy ideas in the National Security Council, moreover, relieved the executive departments of a full sense of their responsibility for such work and tended "to cut off cross-fertilization of ideas between the departments and the services."[6] On 12 December 1960, Senator Henry M. Jackson's Subcommittee on National Policy Machinery of the Senate Committee on Government Operations recommended that steps be taken to "deinstitutionalize" and "humanize" the National Security Council process. It criticized the NSC Planning Board as an agency that tended to overshadow the National Security Council but nevertheless usually provided a means only for negotiating "agreed positions." The subcommittee found good reason for abolishing the NSC Operations Coordinating Board and assigning the responsibility for implementing policies cutting across departmental lines to a particular department or to particular action officer, possibly assisted by an informal interdepartmental group.[7]

In conversations before they took office, Secretaries McNamara and Rusk agreed to foster and sponsor a close relationship of all echelons within the Departments of Defense and State. While the program was not intended to replace informal day-to-day contacts at working levels, Rusk and McNamara soon expanded a State-Defense exchange program whereby Foreign Service officers were detailed to politico-military offices in the Defense Department and an equal number of military officers and Defense civilians were assigned to tours in various offices of the State Department. "There are no curtains, iron curtains, paper curtains, or any other kind of curtains," McNamara announced in August 1961, "between the Departments on any echelon. On a day-to-day basis, this results in expeditious action, and I believe an entirely satisfactory working relationship at all echelons."[8]

Acting within his executive prerogative, President Kennedy named McGeorge Bundy as his Special Assistant for National Security Affairs, but he preferred to rely mainly upon personal contacts with his cabinet officers and upon task forces to accomplish interdepartmental policy planning and coordinating. In order to rid the National Security Council of its formalized institutionalism, Kennedy abolished the NSC Planning Board and the NSC Operations Coordinating Board effective on 19 February 1961. Where the National Security Council had held weekly meetings under President Eisenhower, President Kennedy preferred to call NSC meetings only after determining that a particular issue was ready for discussion in such a forum. Much of the policy business that formerly flowed through the

weekly NSC meetings was settled in other ways--by separate meetings with the President, by letters of memoranda, and at levels below that of the President. A weekly meeting in the Executive Office of the President, attended by the Under Secretary of State and the Deputy Secretary of Defense among others, served as a regular point of contact which kept officials of the two departments in close touch. When specific national security problems arose, the President assigned the responsibility for preparing a plan of action to a particular department or individual, who became responsible for obtaining the views of all interested agencies. When common views were not forthcoming, no effort was made to find a common denominator but the divergent positions were submitted to the President. When Kennedy approved policy guidance he also assigned responsibility for its implementation to a specific department or individual and used the NSC staff or the White House staff to check the follow-up action. Most frequently, the departments or individuals vested with responsibility for handling problems assembled intergovernmental teams or task forces, usually on a short-term basis. Both McNamara and Rusk considered that the new procedures were advantageous. Speaking of the President, McNamara said: "It is my belief, under this new system, he is confronted with more alternatives and more differences in point of view than under the old." Rusk pointed out: "Since the authority for the task force stems directly from the President or other high officials, there usually results added urgency and a more thorough consideration of the problem than would otherwise have been possible."[9]

When he took office Secretary McNamara considered that one of his "first objectives was to establish a close relationship both personally with Secretary Rusk, and also formally and officially at all levels of the Defense Department, with corresponding levels in the State Department," but he emphasized that: "I feel that my channel of authority runs directly to the President. And I wouldn't accept from the State Department. . . advice which I didn't feel was good advice."[10] The new policy-making procedures nevertheless met the criteria that McNamara believed essential for national defense decisions. "Secretary McNamara and I believe," stated Deputy Secretary of Defense Gilpatric, "That it is imperative, if we are to have a defense adequate to meet the needs of this nuclear and space age, that decisions be made as promptly as possible. We do not feel that important decisions affecting the national security of the United States can be deferred pending attempts to work out a modus vivendi which will be satisfactory to everyone. Once you try to compromise the positions of competing interests, you water down the solution to a point where we believe it cannot be as effective as it should be."[11] Speaking for himself, Secretary McNamara described his basic management philosophy. "It is a philosophy," he said, "based on a decision pyramid and a system of administration in which all possible decisions are pushed to the bottom of that pyramid. But for intelligent decisions to be made at the bottom of the

pyramid there must be a framework within which those decisions can be made. Basic policies must be established against which a decision-maker in the lower levels can compare his decision and gain some confidence that he is acting in accordance with a pattern of decisions elsewhere in the organization. This will lead to unity and strength, rather than an imbalance, which can only lead to weakness. And it is the establishment of these policies that can only be done at the top."[12]

The reorientation of the machinery for making national security decisions promised closer relationships between the foreign and military policies of the United States, but it caused some concern. Thus some Senators questioned the wisdom of President Kennedy's personal instruction that the members of the Joint Chiefs of Staff would consider political as well as military aspects of national problems. The Joint Chiefs, however, apparently accepted the realism of the instruction. "It is impossible," Admiral Anderson noted, "for us in the world in which we live, the environment in which the Joint Chiefs of Staff live, completely to divorce themselves from the political and the psychological factors."[13] In the spring of 1961, Fortune magazine editorially feared the influence that was being exercised by the cross-department group within the New Frontier: the magazine was alarmed at the prospect that this group--which it called the "Technipols"--would fix strategy and monopolize the direction of military concepts, thereby reducing the influence of the Joint Chiefs of Staff.[14]

The fear that the National Security Council and the Joint Chiefs of Staff would lose their influence over national military policy was further aggravated on 26 June 1961, when President Kennedy, in the wake of the Bay of Pigs incident, announced that he was recalling General Maxwell Taylor to active duty as Military Representative of the President. A White House statement emphasized that General Taylor would have no command authority but would advise the President on military and intelligence matters. Speaking of his relationships with the Joint Chiefs of Staff and of his duties, Taylor subsequently said: "I am definitely not over the Chairman, I am not over any of the Chiefs. I am an individual adviser to the President outside of the channel of command, and so far as I know, the only person I can issue orders to is the aide who sits outside of my office."[15] Both Secretary McNamara and Secretary Rusk minimized the effect of the Taylor appointment. "General Taylor," Rusk explained, "is a personal adviser to the President on military and intelligence matters and he effects a close liaison with the two agencies principally engaged in those two fields. . . . The chief role which the advisers in the White House play is that of liaison and assistance in the preparation of papers and agenda of meetings. They do not operate as independent policymakers."[16] Effective on 1 October 1962, President Kennedy named General Taylor to succeed General Lemnitzer as Chairman of the Joint Chiefs of Staff and allowed the position of Military Representative of the

President to lapse. Although it was difficult to question the prerogative of the President to name his own personal advisors, Brigadier General J. D. Hittle, USMC (Ret.) and an expert on military staff procedures, nevertheless challenged the need for a presidential military advisor. "It is conceivable," Hittle thought, "that there is a constructive role for one to perform in the position. . . but I could visualize. . . that. . . it could develop into an agency of defense planning, strategic authority, and military advice, completely outside of and in contradiction to the Joint Chiefs of Staff system which is established, and deliberately so, by Congress in law."[17]

Under the Eisenhower administration the annually-issued Basic National Security Policy paper provided the basic guidance for the preparation of national defense budgets, but the Kennedy administration reportedly arrived in office with the belief that these papers had represented such generalized and compromised viewpoints as to be inadequate as statements of strategic concept.[18] Secretary Rusk also questioned the worth of generalized planning. "We felt," he said, "that general planning was not of too great utility. It was important in terms of the education of those who were to make policy decisions, and for the background, alternatives, and general orientation of policy. The most effective planning, however, is that focused rather particularly on a situation or on a developing crisis or any idea on foreign policy."[19] In May 1961 the Department of Defense indicated that a basic national security policy paper would be prepared for guidance in the preparation of the 5-year force package projections, but the paper was not completed and, in the end, Department of Defense directives about force structure and the concept of multiple options ultimately provided guidance for forward planning.[20] In the absence of a policy paper, Presidential addresses--particularly Kennedy's message to Congress on 28 March 1961--and other statements by key administration officials provided guidance on national security policy.[21]

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During his campaigns for the presidency in 1960, Senator Kennedy promised to move the United States into a position of preeminence in space, but he urged that the immediate national objective in space was to achieve an adequate deterrent missile force. He expressed the belief that at least a part of the difficulty in the management of defense missile programs stemmed from distractions caused by vast new space programs, and he accordingly announced that he would make good use of the National Aeronautics and Space Council for advice on the implementation of plans and for coordinating government space activities.[22]

At Kennedy's request the Wiesner Ad Hoc Committee on Space provided an analysis of the national space situation as well as recommendations for the future in a report which President-elect

Kennedy released on 11 January 1961. The Wiesner committee pointed out that the new National Aeronautics and Space Administration wished to establish a potentially-duplicative in-house research establishment and asserted that there was a general belief in aviation circles that NASA's preoccupation with space development had all but halted experimental work in the theory and technology of aerodynamic flight. The Wiesner committee also stated that the Army, Navy, and Air Force were competing in space research and development, since under the Department of Defense directive of 18 September 1959 the services were permitted to undertake study efforts and laboratory experiments at moderate costs without the approval of the Director of Defense Research and Engineering. Thus in December 1960 the Navy made an uncoordinated announcement that it was initiating a series of new communications and reconnaissance satellite programs. Uncoordinated speeches and press releases relating to preliminary study projects generated industry-sponsored activity and frequently caused NASA to believe that the Department of Defense was not keeping faith with existing agreements.[23]

After pointing up the areas of weakness in the national space organization, the Wiesner committee based its recommendations on its belief that there were five principal motivations for a vital, effective, national space program:

> First, there is the factor of national prestige.
>
> Second, we believe that some space developments in addition to missiles, can contribute much to our national security--both in terms of military systems and of arms-limitation inspection and control systems.
>
> Third, the development of space vehicles affords new opportunities for scientific observation and experiment . . . .
>
> Fourth, there are a number of important practical non-military applications of space technology. . . .
>
> Finally, space activities, particularly in the fields of communications and in the exploration of our solar system, offer exciting possibilities for international cooperation with all the nations of the world.

Believing that the United States was lagging in the development of missiles and space technology, the Wiesner committee stated an urgent requirement for more effective management and coordination. It specifically recommended that the National Aeronautics and Space Council should be made an effective agency for managing the national space program; that a single responsibility be established within the Department of Defense for managing the military portion of the space program; that a vigorous, imaginative, and technically competent top management be provided to NASA; that the national space program should be reviewed and redefined in terms of two years of experience in booster programs, manned space flight, the military

uses of space, and the application of space technology to civilian activities; and that organizational machinery should be established within the government to administer an industry-government-civilian space program.[24]

As Secretary McNamara began to examine management organization within the Department of Defense he determined that studies made of broad administrative, organizational, and management problems had generally been accomplished by ad hoc boards. Believing that some single Department of Defense activity ought to be concerned with continuous responsibility for organizational and management planning, McNamara established an Office of Organizational and Management Planning Studies under the General Counsel to conduct systematic research on such problems. This small office was immediately directed to review the military organization for research and development in space, and after consultations with the Director of Defense Research and Engineering and officials in the individual military services it drew up a new defense directive on the subject. Secretary McNamara circulated the draft directive to the military departments and to other interested agencies in the Department of Defense including the Chairman of the Joint Chiefs of Staff. He gave them a week in which to file their comments. This deadline ran out on 2 March 1961, and on 6 March McNamara issued a memorandum on the development of military space systems. Deputy Secretary Gilpatric acknowledged that the decision on the matter was made in "less time than has customarily been the practice," but he considered that he and McNamara had personally evaluated all the points of view that had been presented before they arrived at their final decision.[25]

In the Department of Defense directive of 6 March, Secretary McNamara authorized each military department to conduct preliminary research looking toward the development of new ways of using space technology to accomplish assigned functions. All proposals for research and development beyond preliminary research were to be submitted to the Director of Defense Research and Engineering for review and then to the Secretary of Defense for approval. Research, development, test, and engineering of approved Department of Defense space development programs or projects would be (except in unusual circumstances when the Secretary or Deputy Secretary of Defense made a specific exception) the responsibility of the Department of the Air Force.[26] In explaining the directive, Gilpatric pointed out that the Wiesner committee had recommended that a single military space program manager be designated, that the Air Force was already responsible for over 90 percent of the total defense effort in space, and that the directive permitted the Secretary of Defense to make a case-by-case determination of space projects and, if necessary where peculiar talents were involved, to authorize deviations from development by the Air Force.[27] The directive did not affect space research and development projects already assigned to the military departments, such as the Army's Advent communications

satellite program and the Navy's Transit navigation system, but on 28 March McNamara acted under the new directive and assigned to the Air Force the responsibility for research, development, and operation of all defense reconnaissance satellite systems and for research and development of all instrumentation and equipment for processing reconnaissance data from satellite sources.[28]

In considering the establishment of effective relations between the Department of Defense and NASA, Secretary McNamara began with the premise that the President and Congress desired that there would be two agencies developing projects for operations in space but that there ought to be a well-coordinated national space program. At a meeting with NASA Administrator James E. Webb in February 1961, McNamara emphasized that the Department of Defense would expect to develop the techniques and technology that it might require for future military operations in space but that both agencies should insure that their activities did not overlap, duplicate, and cause unnecessary expenditures to the nation.[29] A little later McNamara stated that any defense space program would have to meet two criteria: "First, it must mesh with the efforts of the NASA in all vital areas. . . . Second, projects supported by the Defense Department must promise, insofar as possible, to enhance our military power and effectiveness."[30] In their initial discussions McNamara and Webb agreed to continue to use the Aeronautics and Astronautics Coordinating Board, and on 23 February 1961 Webb and Gilpatric jointly signed a letter of agreement establishing a national launch vehicle program. The AACB was given the responsibility for interagency planning of launch vehicles, and neither NASA nor Defense would initiate the development of a launch vehicle or booster without the written acknowledgement of the other that such a new development would be consistent with proper objectives of the composite space program.[31]

As he had promised in his campaign, President Kennedy undertook to revitalize the National Aeronautics and Space Council. He appointed Dr. Edward C. Welsh as Executive Secretary of the Council on 23 March, and on 10 April he asked Congress to amend existing legislation so as to establish the Council in the Executive Office of the President and to designate the Vice President, the Secretary of State, the Secretary of Defense, the NASA Administrator, and the Chairman of the Atomic Energy Commission as its members. The Vice President would serve as chairman of the Council, and the Council would advise and assist the President with respect to the performance of functions in the aeronautics and space field. This amendment to the National Aeronautics and Space Act was approved by Congress and signed into law on 25 April.[32] On 13 May NASA additionally requested Congress to repeal the statutory requirement for the superseded Civilian-Military Liaison Committee, and in hearings on the proposal both NASA and Defense spokesmen expressed the opinion that the Aeronautics and Astronautics Coordinating Board could serve as an effective interagency coordinating authority without

being established by law. Apparently because the deletion of the Civilian-Military Liaison Committee section of the Space Act would have eliminated the legal admonition that the Department of Defense would have interests in space, Congress refused to approve this requested amendment.[33]

Under the emerging management concept for the national space program, the National Aeronautics and Space Council was charged to advise and assist the President, to fix the responsibilities of government agencies engaged in aeronautical and space activities, and to develop a comprehensive program for such activities. The Aeronautics and Astronautics Coordinating Board, with six working panels, was designed to "facilitate the planning of aeronautical and space activities of NASA and DOD to avoid undesirable duplication and to achieve efficient utilization of available resources; to coordinate activities in areas of common interest; to identify problem areas and exchange information." The AACB was not intended to be a managerial group in a collective sense, and actions based on the board's consideration could be taken by individual members only by using the authority vested in them by their respective agencies.[34] Working under this management structure, Deputy Director of Defense Research and Engineering John H. Rubel told the Senate Aeronautical and Space Committee on 5 March 1962 that "we've been successful in making policy and dividing responsibility, but we have had a little more difficulty coming down to specifics." Most important decisions--such as the national launch vehicle program and the national launch center agreement whereby the Department of Defense undertook to support NASA at the Canaveral and the Pacific Missile Ranges--had to be thrust upward for decisions by Secretary McNamara and Administrator Webb.[35]

By early 1962 NASA and the Department of Defense had achieved a meeting of minds on broad policy matters, but there was a need for specific decisions. "We are coming to the point," Rubel said, "where broad policy is not as important as making detailed decisions and working out arrangements in which the military research capability can be made available to the space agency."[36] General Schriever, now in command of the Air Force Systems Command, additionally pointed out that the space agency would make increasing contributions to national security, where in the past the Department of Defense had largely supported NASA. In conversations with NASA officials, Schriever urged that the time had come to establish interaction arrangements or "interface" between the Air Force Systems Command and NASA, first in Washington and then on down to the working levels of both organizations.[37] In order to insure a closer meshing of military and civilian space programs, Secretary McNamara issued a policy directive on 24 February 1962 declaring: "It is in the national interest for the Department of Defense, to the extent compatible with its primary mission, to make its resources available to NASA, in the form of facilities and organizations, in order to employ effectively the nation's total resources for the achievement

of common civil and military space objectives." Except for such special arrangements as the Secretary of Defense might make, the directive assigned responsibility to the Secretary of the Air Force "for the research, development, test, and engineering of satellites, boosters, space probes, and associated systems necessary to support specific NASA projects and programs arising under basic agreements between NASA and DOD."[38]

While the Department of Defense would continue to exercise close control over space research and development, the McNamara directive of 24 February 1962 was a manifestation of a trend toward the centralization of defense space activities under the Air Force and its subordinate Air Force Systems Command. On 11 June 1962, the Department of Defense cancelled the Army's Advent project and assigned the Air Force responsibility for the development, production, and launching of defense satellite communications devices. The Army was also charged to develop and operate ground communications stations and the Defense Communications Agency to assure the effective integration of ground and space components.[39] Acting under the new directive of 24 February, the Air Force moved into closer cooperation with NASA. On 26 April 1962 General Schriever named Major General O. J. Ritland as Deputy Commander of the Air Force Systems Command for Manned Space Flight, provided him with a staff of 28 officers (5 of whom were physically located with NASA), and charged him to effect a close association and coordination between the Systems Command and NASA. Although the Air Force was not authorized to present military requirements to NASA, Major General Ritland was charged to participate in NASA's programing and planning activities and was able to make the Air Force's requirements known.[40]

By the end of 1962 some fifty arrangements and agreements were outstanding between the Department of Defense and NASA, and during the year the Department of Defense performed more than $550 million worth of work for NASA. Most of the defense effort, however, continued to support NASA, and late in 1962 Secretary McNamara faced the prospect that the Department of Defense should make more use of NASA.[41] He was especially concerned about the prospect that NASA's Gemini program, which had been approved on 7 December 1961 and visualized extended-duration, two-man orbital space flights, had advanced beyond the Air Force's Dynasoar project "in technique and technology and potential." If this were true, Dynasoar could be cancelled, provided Gemini could be made responsive to Air Force technological requirements.[42] While the Air Force did not agree that Dynasoar duplicated Gemini, Assistant Secretary of the Air Force Brockway McMillan expressed the position that "the potential joint value of the NASA and Defense Department programs can be more fully realized by closer collaboration in the early conceptual phases, to insure that the objectives of each agency are clearly recognized at each successive stage of program evolution."[43]

Believing that there was a real danger that two national manned space programs would develop out of Gemini and Dynasoar, Secretary

McNamara and Administrator Webb jointly signed a letter of agreement on 21 January 1963 stating a policy agreement to insure the most effective utilization of the Gemini program in the national interest. The agreement sought to insure that the scientific and operational experiments undertaken during the Gemini program would be directed at objectives and requirements of both the Department of Defense and NASA. To this end, McNamara and Webb established a Gemini program planning board, under the co-chairmanship of the Associate Administrator of NASA and the Assistant Secretary of the Air Force for Research and Development. This board was empowered to delineate requirements and program monitoring procedures in order to ascertain that mutual objectives would be met in planning requirements, in the actual conduct of flight and in-flight tests, and in the analysis and dissemination of the results. NASA would continue to manage Gemini, and the Department of Defense would contribute funds to assist in the attainment of program objectives. As a policy for additional programs of the future, McNamara and Webb concluded: "It is further agreed that the DOD and NASA will initiate major new programs or projects in the field of manned space flight aimed chiefly at the attainment of experimental or other capabilities in near-Earth orbit only by mutual agreement."[44] On 22 January, Webb and McNamara also announced an agreement setting forth the management responsibilities for operations in the Cape Canaveral range area. This agreement specified that the Air Force would continue as the single manager of the Atlantic Missile Range and as host agency at the existing Cape Canaveral launch area. Through its Launch Operations Center, NASA would manage and serve as host agency at the 87,000 acre Merritt Island Launch area which it had purchased and was developing north and west of Cape Canaveral. The Department of Defense and NASA would be responsible for their own logistics and administrative functions in their respective launch areas, but the Department of Defense would continue to be responsible for scheduling launches, flight safety, range search, and sea recovery over the Atlantic Missile Range.[45]

Secretary McNamara considered the precedent of the Gemini program planning board to be a major step forward, and he refused to question the military-civilian space organizational structure that Congress had established. "Without regard to whether or not some other alternative might not be better," he said, "I am satisfied we can operate effectively with the present organization within the Government; that is to say, specifically with NASA and the Defense Department both participating in developments in this field."[46] As a matter of fact, the Gemini program planning board would discover that it had been established too long after the initial stage of the Gemini program and that some military experiments that might have been initially provided for would either be very expensive or impossible to attain at such a late date.[47] For its own part, the Air Force was far from satisfied that NASA's Gemini program and its subsequent Apollo moon-flight program would provide the technological

knowledge needed for future military operations in space. During fiscal year 1964 budget negotiations the Air Force accordingly proposed that about $177 million should be provided for a separate manned military space flight project referred to as Blue Gemini and for the development of a manned space station called MODS, or Military Orbital Development Systems. Secretary McNamara, however, considered that these projects would be duplicative and excluded them from the budget requests submitted to Congress in January 1963.[48]

During 1963 the Department of Defense sought to cooperate harmoniously with NASA in the attainment of national space objectives. At Houston, Texas, where NASA was building its Manned Spacecraft Center, the Air Force temporarily hosted NASA personnel at Ellington Air Force Base, and the Air Force Systems Command opened a field office in Houston to manage military experiments during the Gemini program. In continued support for NASA, the Air Force made Brigadier General Samuel C. Phillips, who had been serving as Vice Commander, Air Force Ballistics Systems Division, available for appointment as Deputy Director of NASA's Apollo project. Prior to his assignment to this position on 31 December 1963, General Schriever emphasized to Phillips that "he was going to work for NASA and be loyal to NASA." During the autumn of 1963, NASA was a partner in the deliberations within the Department of Defense that culminated in December when the Dynasoar program was terminated and a new program for the development of a Manned Orbital Laboratory (MOL) was initiated in the Air Force. Where the Air Force had previously supported NASA, General Schriever now indicated that he intended to ask NASA for personnel to participate in the Manned Orbital Laboratory project.[49] Secretary McNamara indicated that he expected that the joint planning for the Manned Orbital Laboratory would follow the same arrangements that had been established for Gemini but in reverse. The Manned Orbital Laboratory would be under the management of the Air Force, and NASA would provide extensive technical support to the project.[50]

When the Air Force was directed in June 1962 to assume responsibility for military communications satellites (a program that would have to be developed in context with the civil project to be controlled by the Communications Satellite Corporation[51]) the Air Force was in effect charged with all military space research and development effort except for the Navy's Transit navigational satellite system. Management of Department of Defense missile test ranges and flight test facilities, however, continued to be divided between the Air Force and the Navy. In April 1963 Secretary McNamara asked the Director of Defense Research and Engineering to make a study of these range and test facilities looking toward the elimination of duplication and establishment of a national system. This study was completed in June 1963, and after reviewing departmental comments McNamara ordered a number of changes on 16 November 1963. The Air Force was directed to assume responsibility for managing and operating a worldwide satellite tracking and control facility for all defense

space programs except for Transit and a limited number of other projects which might be exempt in the future. It was also directed to provide a central authority for the management of launch-area range instrumentation and on-orbit satellite control facilities at both the Atlantic and Pacific Missile Ranges as well as at remote worldwide control and tracking stations. The Air Force already controlled the Atlantic Missile Range, and it would begin to take over the Navy's installations at Point Arguello and Point Pillar, California, in July 1965. To handle the new tasks, the Air Force established the National Range Division under the Air Force Systems Command at Patrick Air Force Base on 2 January 1964. Becoming fully operational at Andrews Air Force Base on 1 July 1965, the National Range Division began to exercise command over the Air Force Eastern Test Region at Patrick and the Air Force Western Test Region at Vandenberg Air Force Base. With the completion of the reorganization, the Department of Defense would have a centralized control under one service to support the worldwide operation of satellites, the space programs of NASA, and other programs tha tied in with the Atlantic and Pacific ranges.[52] Where the Air Force and the Navy had engaged in an active controversy over the control of California range facilities in 1957-58, Secretary McNamara's decision to transfer the Pacific Missile Range to the Air Force drew only mild comment from a Navy spokesman, who observed: "We were not enthusiastic about it, I would say."[53]

ATR becomes ETR

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The Democratic Party platform of 1960 called for a complete examination of the organization of the Armed Forces of the United States as a first order of business in a new administration, and during the summer of 1960 Senator Kennedy asked Senator Symington to head a study committee which would provide a concrete program with specific proposals for needed national defense reorganization. On 14 September 1960, Kennedy announced that Symington would head this Committee on the Defense Establishment and that the members would be Clark M. Clifford, Thomas K. Finletter, Roswell L. Gilpatric, Fowler Hamilton, and Marx Leva, with Dr. Edward C. Welsh serving as Executive Director. Without conducting "another sweeping investigation," Kennedy expected the committee to study existing informed opinion and to make its recommendations known by 31 December in order that the new administration could take steps "to remedy present basic weaknesses in the administration and management of our national defense establishments."[54]

In preparing a unanimous report which was handed to President-elect Kennedy on 5 December 1960, the Symington committee depended upon existing defense studies for source materials and avoided discussions with members of the defense establishment. The committee found that the existing structure of the Department of Defense was "still patterned primarily on a design conceived in the

light of lessons learned in World War II, which are now largely obsolete." To the committee, time had become an "unprecedented strategic value." In World War II the United States had had 18 months to build and mobilize its forces; in a World War III the United States "would be fortunate to have 18 minutes to react." The crucial element of time also entered into defense preparedness: there was a need for earlier selection among alternative weapon systems and for a shorter time between the conception of weapon systems and their availability for use. Time could not be bought; it could only be saved by reduction in duplication, wasted effort, and elimination of multilayered decisionmaking structures. The committee concluded that three major objectives were to be sought in modernizing the Department of Defense. First, to shorten the time factor in bringing new weapon systems from conception to utilization. This could be handled by eliminating multilayered decisionmaking. In view of the concept of concurrency in weapon systems management, the committee suggested that there was "no longer any validity in separating the development and production cycle into two parts." Second, the predominance of service influence in the Joint Chiefs of Staff, which resulted in defense planning becoming a series of compromised positions, had to be corrected. Third, the defense establishment had to be made a flexible organization under the clear authority of the Secretary of Defense.55

In order to implement the general objectives, the Symington committee made specific recommendations looking toward a strengthening of civilian authority, new procedures for the command of military operations, and a centralization of budgetary controls. In order to strengthen civilian authority, the committee recommended that the Secretary of Defense, the Deputy Secretary of Defense, and two new Under Secretaries of Defense--one for Administration and the other for Weapons Systems--would be made statutory officers; the seven existing Assistant Secretaries of Defense should be abolished and their functions should be absorbed by staff directorates under the new Under Secretaries. The committee proposed a sweeping reorganization of the military services: "The military services would be retained, but the present departmental structure of the Army, Navy, and Air Forces would be eliminated. This in turn would do away with the present positions of Service Secretaries, Under Secretaries and Assistant Secretaries. The Services would remain separate organic units, albeit within a single department (as is the case today with the Marines) and subject to the direction, authority, and control of the Secretary of Defense." For the command of military operations, the committee recommended that the Chairman of the Joint Chiefs of Staff should be redesignated as the Chairman of the Joint Staff and made the principal military adviser to the President and the Secretary of Defense. The Chairman would direct an enlarged Joint Staff and would preside over a Military Advisory Council, comprised of Presidentially-appointed senior officers who would no longer retain service identities. Each of the

military services would continue to have a chief who would report directly to the Secretary of Defense. Three unified commands--Strategic, Tactical, and Defense--plus other regional or area specified commands would report directly to the Chairman of the Joint Staff and would include all personnel, equipment, and weapon systems required for the performance of their respective missions. The committee recommended that all defense funds should be appropriated to the Department of Defense under the control of the Secretary of Defense and that research and development funds and long lead-time procurement appropriations should be voted on multi-year schedules.[56]

The Air Force was already on record in support of increased defense unification. At a conference held by the Secretary of Defense at Quantico on 18 June 1960, General White stated: "Unity is the watchword--unity in concept, in our objectives, in our planning and in our operational effort--unity is the guiding principle for the reorganized defense establishment. In my opinion, our progress in this direction falls short of the technological progress which is being made in the environment in which the Department of Defense must operate."[57] In an interview during July 1960, General White pointed out that the atomic bomb and the advent of missiles had totally changed the science of warfare. He said that scientists had told him "that the rate of advance in space is not going to suddenly reach a plateau and level off, but we're going to keep right on, on this asymptotic curve." Speaking of his philosophy of military organization he said that "the answer to my mind is unification at the top."[58]

What the Army thought about the Symington committee's recommendations was not read into the public record, but the Navy was quite opposed to them. Several weeks before the Symington report was made public, the Navy prepared a 17-point declaration entitled "What the Navy is For." This declaration argued for a continued maintenance of the existing defense organization, at least until the full effect of the Defense Reorganization Act of 1958 could be realized. When the Symington report became available, Admiral Burke directed that packets be made up including the Symington report, the Navy declaration, and a number of press comments on the Symington committee report. These packets were mailed to Navy attaches and other interested persons on 27 December 1960. Speaking to Symington a few weeks later, Burke stated positively: "I do not agree with the conclusions you drew in the report."[59] Key Congressional leaders were also cool to sweeping proposals for defense unification. "I am not," explained Senator Russell, "a rampant advocate of complete unification, a monolithic command, and, as a matter of fact, I am opposed to it." Senator Russell, however, favored unification in fields of activity such as intelligence, communications, and in some phases of training.[60] Congressman Vinson commented: "One of the basic reasons why we have four services and four separate Chiefs who are responsible for their

service and for their viewpoints as members of the Joint Chiefs of Staff is to be very sure that we do not have one single type of thinking. We want, and the law expects, divergent views of defense planning."[61] By April 1961 Senator Symington noted that Congress was of the opinion that new organizational legislation ought not to be considered until the Department of Defense "uses the authority it has to straighten out some of these cans of worms so far as efficient organization is concerned."[62]

As soon as he assumed office on 20 January 1961, Secretary McNamara revealed that he had decided views about his role as the top manager in the Department of Defense. "My strong belief is," he would say, "a manager should be an aggressive leader, an active leader, asking questions, suggesting alternatives, proposing objectives, stimulating progress."[63] As has been seen, McNamara immediately implemented President Kennedy's mandate that he reappraise the adequacy of the entire defense structure and provide preliminary conclusions without delay by demanding answers to 96 sweeping questions. Most of these questions (as well as an additional number of queries added to the list) were assigned for study and report to special task groups, each headed by a senior official. Some 35 of the most important questions were assigned to the Joint Chiefs and the Joint Staff for study and analysis.[64] Secretary Gates had followed a procedure of meeting weekly with the Joint Chiefs, and Secretary McNamara continued the practice. He believed that "by personally raising issues for discussion with the Joint Chiefs of Staff, I have been able to expedite the decision-making process."[65] While McNamara was willing to accord "primary responsibility" to the Joint Chiefs of Staff in the making of normal day-by-day decisions with respect to combat operations, he nevertheless considered that the Secretary of Defense had to play a major role in establishing the future force levels, since these levels had to be established in relation to the total objectives of the nation, particularly its foreign policy objectives.[66]

As McNamara studied the National Security Act of 1947 and its amendments, he was convinced that the Secretary of Defense legally possessed many powers which had never been used, possibly because the organization of national defense had never really been studied under the auspices of the Office of the Secretary of Defense. To handle such studies, McNamara organized the Office of Organizational and Management Planning Studies. While he acted quickly on this office's first recommendation and concentrated space research and development within the Air Force, McNamara stated that any general review of the basic organizational structure of the Department of Defense--which would answer such questions as whether unification of the services was required--would take many months. In the meanwhile he promised that "we should do everything that we can, that is within our legal power to do, to streamline the decisionmaking process, to avoid duplication, to eliminate waste, and to strengthen the lines of authority and responsibility, and this we are doing on

a daily basis as opportunity presents itself."[67] As time passed, the Office of Secretary of Defense continued to pursue the evolutionary approach to defense reorganization. Deputy Secretary Gilpatric further explained the matter in May 1962, when he said: "Whether ultimately a major restructuring of the Defense Department must take place remains to be seen. I thought so once and favored such an approach but as of now the more gradual evolutionary process of change makes more sense to me and that is the approach we are going to take in the coming year."[68]

Under existing legislation the power of appointment and the power of the purse were at the disposal of the Secretary of Defense, and the control of the budget would be a major force for evolutionary change within the Department of Defense. At the beginning of the Kennedy administration, McNamara brought Charles J. Hitch from the RAND Corporation, where he had served as chief of the Economics Division since 1948, to Washington as Assistant Secretary of Defense for Comptroller. While at RAND in 1960, Hitch had co-authored a book entitled The Economics of Defense in the Nuclear Age which had advanced a plan whereby defense budgets would be arranged in categories corresponding to end-product defense missions and whereby defense packages could be costed-out for five years into the future.[69] Working with the Joint Staff and the military departments, Hitch devised nine budget program packages which were categorized as: I. Strategic Retaliatory Forces; II. Continental Air and Missile Defense Forces; III. General Purpose Forces; IV. Airlift and Sealift Forces; V. Reserve and National Guard Forces; VI. Research and Development; VII. Servicewide Support; VIII. Classified Projects; and IX. Department of Defense. In May 1961 Hitch instructed the military departments to submit their 1963 budget requests in terms of these program packages and to project the requests into costs that would run five years into the future. At the completion of the basic 5-year program review, Hitch visualized that annual budgets would be more easily made up in terms of the phased accomplishment of the 5-year program and such program changes as might be approved. As the program package budget was being put into effect, Hitch thought that "the existence of the services. . . raises problems." He also suggested that the functional budget procedure "may add something to the argument for changing the organization in the direction of greater responsibility for specified and unified commands."[70] Speaking tentatively at first, McNamara suggested that the program package budget "can serve as a substitute for a change in the organizational structure."[71] By January 1962 he had begun to see the functional budget as a possible substitute for increased defense unification. "I think," he explained, "it would make it more difficult to prove that a single service was desirable or necessary because some of the advantages attributed to a single service are being accomplished without a single service by this so-called programing approach."[72]

At the time that the Department of Defense program package budget was being set up in August 1961, Secretary McNamara predicted that it would permit the military departments to "play a fuller role" in defense planning.[73] During the preparation of the fiscal year 1963 budget and the initial 5-year projection, the Office of the Assistant Secretary of Defense for Comptroller assembled and organized the data submitted by the military departments and specifically viewed the estimates from a standpoint of cost effectiveness. Other agencies of the Office of the Secretary of Defense were also called upon to review the departmental submissions and to advise the Secretary on aspects of the programs within their areas of functional responsibility.[74] Beginning with the preparation of the fiscal year 1964 budget--which included program changes in the 5-year plan--Secretary McNamara employed a somewhat different review process. Having antitipcated controversial issues among the program changes, he asked the Chairman of the Joint Chiefs of Staff to have a series of special studies prepared on them. Where necessary McNamara also discussed the issues with the Joint Chiefs, and he submitted his recommendations to the President, giving both sides of the arguments bearing on the issues.[75] In a memorandum on 31 May 1963 looking toward the fiscal year 1965 budget, McNamara enumerated major proposed program changes and designated specific individuals within the Office of the Secretary of Defense to prepare coordinated recommendations on them--thus passing major program review from the Office of the Comptroller to Offices of the Assistant Secretaries.[76]

As the Department of Defense program package budgeting became perfected, both McNamara and Gilpatric looked upon the new management practice as an adequate substitute for organizational change. On 16 October 1963, Gilpatric said: "I would not recommend any basic changes in our national security legislation."[77] When asked about interservice rivalry on 19 February 1964, McNamara replied: "I think the answer depends entirely upon the decisiveness of the Secretary of Defense. The Secretary has the power and the authority to recommend to the President, and by that means to the Congress, the budget he considers necessary regardless of service pressure reflecting a more parochial point of view. If the Secretary exercises that power and authority, there need not be waste introduced in the budget by the fact that interservice rivalry may exist."[78] McNamara regarded "careful cost-effectiveness analyses" and the relationship of programs to missions rather than to the military services as being the major contributions to the new system of management. In a prepared statement in February 1964, McNamara used a hypothetical example to illustrate cost-effectiveness analysis. "Suppose," he said, "we have two tactical fighter aircraft which are identical in every important measure of performance, except one--aircraft A can fly 10 miles per hour faster than aircraft B. However, aircraft A costs $10,000 more per unit than aircraft B. Thus, if we need about 1,000 aircraft, the total additional cost would be $10 million. . . . If we approach this problem from the viewpoint

of a given amount of resources, the additional combat effectiveness represented by the greater speed of aircraft A would have to be weighed against the additional combat effectiveness which the same $10 million could produce if applied to other defense purposes--more aircraft B, more or better aircraft munitions, or more ships, or even more military housing. . . . Thus, the fact that aircraft A flies 10 miles per hour faster than aircraft B is not conclusive. We still have to determine whether the greater speed is worth the greater cost. This kind of determination is the heart of the planning-programing-budgeting, or resources allocation problem within the Defense Department."[79]

In order to streamline the upper echelon of the Department of Defense, Secretary McNamara eliminated two of the seven Assistant Secretaries of Defense at the outset of his administration, but he soon established a new Office of Assistant Secretary of Defense for Civil Defense and additional prestige was given to the Office of the Director of Defense Research and Engineering by making its Deputy Director an Assistant Secretary of Defense.[80] Several additional actions consolidated similar-type military departmental activities within the Office of the Secretary of Defense. In 1961 contact between Congress and the military departments was centralized in the Office of the Special Assistant of the Secretary of Defense for Legislative Affairs. Early in 1964 separate service book and magazine branches and community and industrial relations functions were merged under the Assistant Secretary of Defense for Public Affairs.[81] When he first explained the program-package budget procedure, Comptroller Hitch suggested that it would concentrate authority within the Office of the Secretary of Defense. "Program decisions," he said, "will be required. . . . They are the decisions of the sort which can only be made by the Secretary, and, therefore, the role of the Secretary's advisers will be greater."[82] This prediction apparently came true. Thus in 1962 the report of a Special Subcommittee on Defense Agencies of the House Committee on Armed Services noted that the implementation of the program package defense budgets had given the Assistant Secretary of Defense for Comptroller and later the Assistant Secretaries of Defense and the Director of Defense Engineering (when the primary responsibility for program integration was shifted from the Comptroller to appropriate Assistant Secretaries) an enormous control over the military departments. The Special Subcommittee pointed out that the agency that prepared cost analyses of program changes became the primary control mechanism over the program category.[83] On the basis of evidence such as this a student of defense management could conclude in 1964 that: "The Secretary of Defense has chosen to use his civilian staff as his primary agents of policy control within the department."[84]

During its consideration of the Defense Reorganization Act of 1958, Congress approved an amendment offered by Represenative John McCormack which authorized the Secretary of Defense, when he deemed it advantageous in terms of effectiveness, economy, or efficiency,

to arrange to have any supply or service activity common to two or more military departments conducted by a single agency. Acting under authority of the amendment on 12 May 1960, Secretary Gates established the Defense Communications Agency under the direction, authority, and control of the Secretary of Defense through the Joint Chiefs of Staff and charged it to exercise a centralized control over all long-haul and point-to-point communications.[85] Shortly after taking office, Secretary McNamara also began to exercise authority given to him by the McCormack amendment. "One of the most productive fields for the economic application of centralized management," he said, "is in the provision of common supplies and related services to all the military departments." On 31 August 1961 he accordingly announced the establishment of the Defense Supply Agency (DSA), which reported directly to the Secretary of Defense (rather than through the Joint Chiefs of Staff) and gradually assumed management responsibility over eight common supply categories previously exercised by the Secretaries of the Army and Navy--subsistence, clothing-textiles, medical supplies, petroleum, general supplies, industrial supplies, construction supplies, and automotive supplies. The DSA also assumed control of the Military Traffic Management Agency.[86] As he took office McNamara also noted that a number of intelligence agencies had been performing similar or parallel work with no unified direction of the total defense intelligence activity. In order "to obtain unity of effort among all components of the Department of Defense in developing military intelligence and to achieve a strengthened overall capacity in the Department for the collection, production, and dissemination of defense intelligence information," Secretary McNamara accordingly established the Defense Intelligence Agency (DIA) on 2 August 1961 and directed it to report to the Secretary of Defense through the Joint Chiefs of Staff. To the extent that the military services had intelligence requirements unique to their own operations (technical intelligence, for example, was essential for research and development functions) they were permitted to maintain certain limited intelligence activities.[87] Under the new arrangement the Intelligence Directorate (J-2) of the Joint Staff continued in being until 15 May 1963, at which time it was disestablished and its functions and personnel spaces were transferred to the Defense Intelligence Agency.[88]

In his list of study questions directed to the Joint Chiefs of Staff and the Joint Staff, Secretary McNamara asked whether a unified command should be established to control limited war forces. Both General White and General Taylor had earlier recommended such a command, and Senator Symington's Committee on the Defense Establishment had endorsed these recommendations.[89] On 24 July 1961, both General Frank F. Everest, Commander of the Tactical Air Command, and General Herbert B. Powell, Commanding General of the Continental Army Command, jointly recommended the immediate establishment of a Unified Tactical Command as a joint headquarters with Army, Navy, and

Air Force component commands. They visualized that this command would be built around a relatively-small unified command headquarters, which would possess great mobility and would be capable of rapidly deploying fully-effective command elements to areas of crisis.[90] With general agreement that the action should be taken, Secretary McNamara announced the establishment of the U.S. Strike Command (STRICOM) on 19 September 1961 with its headquarters at MacDill Air Force Base, Florida. General Paul D. Adams, who had commanded the U.S. ground forces in the Lebanon operation, was named Commander-in-Chief, STRICOM, and Lieutenant General Bruce K. Holloway, USAF, was designated as Deputy Commander-in-Chief.[91]

According to its mission assignment as a unified command, STRICOM was intended to provide an integrated, mobile, highly combat ready force that would be trained as a unit and would be instantly available to augment existing forces under unified theater commanders or would be prepared to serve as a primary force in the event of conflict in the Middle East or Africa. STRICOM's six specific functional responsibilities required it to provide a general reserve of combat-ready forces, to provide forces to reinforce unified theater commands, to conduct planning for contingency operations, to develop joint doctrine for the employment of assigned forces, and to conduct joint training exercises to insure a high level of combat readiness and effectiveness. The commanders of the Tactical Air Command and the Continental Army Command were additionally designated as Commanders-in-Chief, Air Force Strike and Army Strike, and the two commands were charged to furnish combat-ready forces to serve under the operational control of CinCSTRIKE. At MacDill General Adams established a headquarters with typical joint staff divisions which were manned almost half and half with Army and Air Force personnel. Except for the assignment of one Marine and four Navy officers to the headquarters, no naval forces were assigned to STRICOM. In the event that he was given a contingency mission requiring Navy or Marine forces, Adams envisoned that he would ask the Chief of Naval Operations to assign an appropriate naval component to work with his headquarters. On 28 December 1961, Adams reported to the Joint Chiefs of Staff that STRICOM was operationally ready.[92]

In its mission assignment STRICOM was charged with the principal tasks of reinforcing unified theater commands and of maintaining a preparedness for independent operations in crisis areas that were not within existing unified theater command boundaries. Some 200 contingency plans were drawn up looking toward the reinforcement actions in specific emergencies.[93] In accordance with the supporting mission, STRICOM made combat-ready tactical air wings and ground divisions available to the CinC Atlantic Command during the Cuban missile crisis.[94] In case that STRICOM was directed to deploy to a remote trouble spot, General Adams planned that with the approval of the Joint Chiefs of Staff he would draw boundaries around the crisis area, establish a small theater of operations, and move either Headquarters, STRICOM, or a smaller joint task force headquarters into the area to command necessary operations.[95] In its

initial months of operations STRICOM had no clear mandate as to the area of the world in which it might be required to undertake independent operations, and the U.S. Army was responsible for controlling military assistance to emerging African nations. With dissenting opinions from the Navy and Marine members, the majority of the Joint Chiefs of Staff recommended that the Naval Forces Eastern Atlantic and Mediterranean should be phased out of existence and that CinC-STRIKE should be made responsible for all United States defense activities in the Middle East-Southern Asia-Africa south of the Sahara area. Under the new responsibility CinCSTRIKE would be additionally designated CinCMEAFSA on 1 December 1963.[96] In the subsequent transfer of the responsibility, CinCMEAFSA gained some 1,000 military personnel overseas, mostly in military assistance advisory groups. CinCMEAFSA also assumed operational control over the small naval task force stationed in the Red Sea-Persian Gulf area which was known as the U.S. Middle East Force.[97]

Among the questions which he presented to the Joint Chiefs of Staff early in 1961, Secretary McNamara called for a study and report on national military command and control systems. Subsequently acting on advice from the Joint Chiefs, McNamara appointed General Earle E. Partridge, USAF (Ret.) as the head of a National Command and Control Task Force and directed the force to make a very exhaustive study of such matters. As completed on 14 November 1961, the Partridge report was a highly classified document, but some of the thinking in the report was subjected to public discussion. In order to serve both cold and hot war requirements, a National Military Command System, for example, had to be able to provide indications that a critical situation could occur; to be able to assess and analyze the dangers the situation could present; to develop a spectrum of military alternatives available to comprehend the situation; to arrive at decisions; and to direct the execution of actions implicit in the situation. General Partridge's task force was reported to have recommended the establishment of a Supreme United States Military Commander over the several unified and specified commands. Speaking in reference to the Partridge report, McNamara stated: "Among its recommendations, it did include a recommendation for a certain consolidation of control either within the Joint Chiefs of Staff or relating to the unified commands." He added that he was unwilling to consider this recommendation.[98]

In order to provide continuing study the Joint Command and Control Requirements Group was established under the Joint Chiefs of Staff but outside the Joint Staff in May 1962. Early in the following October, Secretary McNamara issued a directive that established the concepts of operation of the National Military Command System, including the National Military Command Center at the Pentagon, the Alternate National Military Command Center, the National Emergency Airborne Command Post, and the National Emergency Command Post Afloat, together with various survivable communications networks linking the command facilities, the unified and specified

commands, and the military service headquarters. In the directive the Director of Operations (J-3) of the Joint Staff was responsible as the manager of the National Military Command System, but the National Military Command Center was initially established outside the Joint Staff. Such a location was advantageous from the standpoint of personnel spaces since the strength of the Joint Staff was legally established at 400 officers. In 1962, moreover, the Special Subcommittee on Defense Agencies of the House Committee on Armed Services had expressed a fear that the command and control system might be headed by an "Assistant for Operations" in the Department of Defense or a "Director of Operations" on the Joint Staff.[99]

The National Military Command System directive had not been fully implemented at the time of the Cuban crisis, but the National Military Command Center was in operation under the supervision of the Director of the Joint Staff, and it was able to serve the national command authorities--the President, Secretary of Defense, and the Joint Chiefs of Staff. As a result of the experience during the Cuban crisis and of an additional exercise in February 1963 when American forces shadowed a Venezuelan ship that had been hijacked in the South Atlantic, the Director of Operations of the Joint Staff insisted that since he was responsible as the manager of the command and control system he had to exercise a right over the direction of the system resources. Accordingly on 6 June 1963 the Joint Staff Operations Directorate (J-3) was reorganized to include the National Military Command Center under a Deputy Director for the National Military Command System. New Department of Defense directives confirmed the National Military Command Center as the senior military command center, established rules for interaction between key government agencies, and, as described by Brigadier General Paul W. Tibbets, who served as the first Deputy Director for the National Military Command System, "in general, indicated that all political/military matters would be directed to the NMCC where top level judgment could be exercised to determine actions to be taken."[100]

Although the scheduled completion of a fully-automated National Military Command System promised by 1967 to permit top United States leaders to communicate with a front-line infantry commander or a tactical aircraft in flight in some oversea theater,[101] the command and control system did not provide for a unity of military command in Washington short of the President. The line of command over the unified and specified commands continued to run through the Joint Chiefs of Staff collectively to the Secretary of Defense and the President. In March 1964 former-Deputy Secretary of Defense Gilpatric offered an opinion that the Joint Chiefs of Staff ought to be taken out of the military line of command. "Too often, in critical conflict situations," he wrote, "the President and his other policy advisers are confronted with a fractured military position reflecting divergent service positions rather than differing military judgments." Since there was nothing in existing law that required the Joint

Chiefs to be brought into the line of authority over tactical operations, Gilpatric proposed that the chain of command over military operations could extend down from the President through the Secretary of Defense and the Chairman of the Joint Chiefs of Staff to the commanders of the unified and specified commands. "If the United States is to hold or regain initiative in international security affairs, and if its military establishment is to be responsive to the need for almost split-second reaction in crisis situations," Gilpatric urged, "the President and his assistants must be able to receive, clearly and speedily, military advice of a range and depth that will not always be forthcoming under the present J.C.S. system."[102]

* * * *

In hearty agreement with Preisdent Eisenhower's statement that the day of separate ground, sea, and air warfare was gone forever, General White and other Air Force leaders had given strong support for the Defense Reorganization Act of 1958. General White believed that transcendent aerospace weapon systems had rendered the old land, sea, and air media of operations no longer a valid determinant for service roles and missions. Committed traditionally to a doctrine of unity of command, the Air Force leaders appeared to have assumed that a centralization of defense authority would provide unity of command. Viewed in retrospect, the Air Force leaders of the late 1950's wanted a national defense reorganization along the lines that Secretary of War Elihu Root had instituted in the United States Army in 1903. At that time the General Staff Act had provided for an Army Chief of Staff to the President, who, acting under the direction of the President or the Secretary of War and with the assistance of the War Department General Staff, had supervision not only of all troops of the line but also of the special staff and supply departments that had formerly reported directly to the Secretary of War. The Root organization had ended the separate status of the great administrative departments, whose activities outside the line of military command had brought near chaos to the Army during the Spanish-American War.[103] As the McNamara reorganization of the Department of Defense progressed, Air Force thinkers began to discover that centralization of defense authority would not necessarily provide the unity of command that they had desired.

Some change in Air Force attitudes toward national defense organization became apparent when Secretary Zuckert and General LeMay took over Air Force leadership in 1961. "Our problem. . . as I see it," LeMay stated in September 1961, "is that we must maintain our unity of mission and unity as an organization as we approach our operational tasks in space."[104] "I think," Zuckert observed in February 1962, "we do have a sufficiently focused area of activity to keep the Air Force a cohesive organization with a clearly apparent personality and spirit."[105] In the autumn of 1961 when he established

the Defense Supply Agency, Secretary McNamara stated that he would continue to look to the military departments for management of their respective weapon systems, but Air Force spokesmen were nevertheless troubled that the Defense Supply Agency was established outside the line of military command and was additionally authorized to make studies as to whether it should assume responsibilities over the common procurement and distribution of aeronautical spare parts, chemical supplies, and industrial production equipment. During hearings before the Special Subcommittee on Defense Agencies of the House Armed Services Committee in mid-1962, General Frederic H. Smith, Jr., speaking as Air Force Vice Chief of Staff, strongly opposed any addition of authority that would result in the Defense Supply Agency becoming "a fourth service of supply or a Ministry of Supply."[106] As a result of these hearings, the Special Subcommittee on Defense Agencies found that: "The new Department of Defense agencies, although perhaps conceived as coordinating agencies, are in fact operational and directional in nature." The subcommittee warned that "in time of emergencies requiring flexibility, responsiveness, and speedy resolution of issues at hand, the overcentralized system will be largely ineffectual, perhaps to the point of endangering our national security."[107] In an examination of defense organization in the years from 1898 to 1960, the Concepts Division of the Air University's Aerospace Studies Institute concluded in May 1963 that the establishment of the Defense Communications Agency had introduced a possible trend toward the establishment of defense agencies (such as the Defense Supply Agency) composed of functional service elements placed outside fixed military channels and directly responsible to the Secretary of Defense. If located outside of military channels, these defense agencies would bear a striking resemblance to the independent War Department bureaus that had existed prior to the Root reorganization of 1903.[108]

At the same time that the independent defense agencies were under examination, other studies examined the concentration of defense authority within the Office of the Secretary of Defense. Where General White had been outspoken for Armed Service unification, he questioned from retirement in an article published on 11 July 1962 what he described as a concentration of general staff authority in the civilian staff of the Office of Secretary of Defense.[109] After its investigations, the Special Subcommittee on Defense Agencies concluded on 13 August 1962 that, despite the fact that Congress had repeatedly opposed merger of the military services and the establishment of a single Chief of Staff and General Staff, "the groundwork is being laid for the very thing that Congress has repeatedly expressed concern about and attempted to prevent." The subcommittee was "convinced of the rapid growth of a system which moves the decisionmaking process higher and higher on the scale of centralized authority and into the hands of a few people." It warned of the adverse effect of such centralization of authority in the civilian staff of the Office of the Secretary of Defense:

"As time goes on, with all decisions being made at the Secretary of Defense level, lower echelons will develop a 'no decision' or indecisive philosophy. . . . Those entrusted to make decisions with the accompanying authority and responsibility will increasingly turn to the next higher authority until ultimately all decisions, large and small, will be crowding in at the top and awaiting resolution. . . . Obviously such a system is ponderous and slow and unresponsive to the immediate needs of subordinate levels."[110]

Except for expressing their opposition to any action which might establish a fourth service for supply or a ministry of supply, the Joint Chiefs of Staff did not discuss the evolving pattern of defense management when they appeared before the House Subcommittee on Defense Agencies during the summer of 1962.[111] When asked in February 1963 whether military officers wielded sufficient influence in the establishment of military policy, General Taylor responded: "I would say that we military people have ample opportunity to exert influence on military policy. The question is, are we persuasive enough, are we able to bring forward a case that carries conviction? I always complain to my own staff and to all the staffs I have ever had, that we have lots of brave soldiers, sailors, and airmen, but too few men who can write a good paper, or properly present the message orally or in writing. . . . The serious answer. . . is that we have ample opportunity to influence policy. We in the Joint Chiefs of Staff always are queried as a body, and. . . I have often been queried as an individual. That does not mean necessarily our advice is always followed. Obviously it is not."[112]

While he had kept silent earlier, General LeMay began to speak quite freely about the frustrations he felt as Chief of Staff of the Air Force and as a member of the Joint Chiefs of Staff in the early months of 1964. As a service chief, LeMay knew the difficulty of pushing a program through the Secretary of the Air Force, the Secretary of Defense, the Bureau of the Budget, the President, and finally through the Armed Service Committees and the Appropriations Committees of Congress.[113] LeMay also stated that the corporate Joint Chiefs did not play as fundamental a part as in the past in making major decisions on over-all programs and policies. The 5-year force projection, for example, had become the controlling factor in budgeting: in order to secure modifications in the 5-year plan the services presented program changes to the Secretary of Defense, who might or might not accept them or might or might not submit them to the corporate Joint Chiefs for comment. The Navy's visual low attack (VAL) aircraft program change incorporated in the fiscal year 1965 budget, for example, was not submitted to the Joint Chiefs, although LeMay considered that the program change was highly important and that the completion of the program would cost about $1.5 billion. Even when they were asked to make comments on program change proposals, the Joint Chiefs looked "at these items piecemeal" and "never have an opportunity to get together and look at everything we have done and say this is more money than we can afford, what is

the order of priority of these things." "We would like," LeMay said, "to take a look at the overall budget at the end, after we have approved these individual items as they come along to see what we have done to establish some sort of priority, and try to get in balance."[114] LeMay considered cost analysis to be "very useful to know exactly what you are getting and what you have to pay for it when you are proposing new weapon systems," but he was fearful of an analysis which "tends to put an emphasis on the cost differential rather than the performance differential." "Generally speaking, particularly at the working level," LeMay concluded, "it is becoming more and more difficult to get experience and judgment ground into the solution of problems. We have to try to translate experience and judgment into cold hard facts to win a case. Sometimes this is very difficult to do."[115]

Early in his tenure of office Secretary Zuckert was willing to believe that the Air Force would have a cohesive mission for the future, and Zuckert's continuing studies of the matter convinced him that the trend in weapons development would not end the requirement for the Air Force. In an effort to penetrate through the "technological shock" engendered by the development of missiles, Zuckert established Project Forecast in the spring of 1963. This project, conducted under the direction of General Schriever, sought to provide a blueprint of technological possibilities in the 1965-75 time period. Available by February 1964 but kept highly classified, the Project Forecast report represented "a new, hard look at the fundamentals of airpower employment."[116] Among other things, Forecast demonstrated that while technological possibilities for advanced weapon systems appeared relatively unlimited, the cost and complexity of all weapons had increased so much that there was no possibility that any military service could have everything it would like.[117] Relating the problem of weapon systems to defense organization in September 1964, Zuckert outlined three fundamental facts. There was "no indication that the weapons we now have or those which can be foreseen will destroy the identity of any of the three general categories of warfare--land, sea, and aerospace." But while this was true, Zuckert believed that it was "almost impossible to conceive of substantial military action carried out by one service alone. Any war of the future will be a joint action. Hence we must deter or fight war jointly, as a thoroughly coordinated action, with all forces--aerospace, land, and sea--acting under unified control." As a third considered judgment, he believed that "many of the weapons of war will continue to increase in complexity, sophistication, and cost. The proper allocation of defense resources will remain a central problem."[118]

As he assessed the relationship of military technology, national strategy, tactics, force levels, and doctrine to national defense organization in September 1964, Secretary Zuckert noted that the pattern of centralized national defense organization which had developed since 1947 was "working well" in the areas of planning,

budgeting, and operational commands. "A loose confederation of forces such as we had seventeen years ago," he said, "simply is not adapted to the defense needs of the nation." But when he responded to the rhetorical question: Should the United States go all the way to a single service? Zuckert stated an emphatic "No." The developing national defense organization had achieved centralized planning and operational control and a balance of forces appropriate to the threat without destroying the identities of the three services. Four reasons were paramount for maintaining separate Departments of Army, Navy, and Air Force. There was a constantly increasing requirement for military professionalism. In an era of complex weapons, soldiers, sailors, and airmen could no longer easily move from one service to another, or intelligently serve a single service. The separate services were needed to train professionals and funnel many of them upward to serve the unified commanders, Joint Chiefs of Staff, and the Secretary of Defense. Providing military equipment, military doctrine, and effective military forces for aerospace, land, and sea warfare was the task of the military departments. "If we did not have them," Zuckert said, "we would have to invent a substitute for this purpose." Zuckert also noted that interservice competition--controlled enough to create positive contributions to national defense--"provides an effective system of checks and balances" and "assures that a full range of alternatives and new ideas will be examined before major decisions are taken." The individual services were also required in order to provide for efficient management. "Military administration, training, logistic support, and research and development," Zuckert asserted, "can be managed most efficiently on the basis of three military departments, each of which is relatively homogeneous in terms of the type of warfare on which it focuses. We should not disturb this arrangement." Finally, there was the intangible element of esprit de corps which was at the heart of a true fighting force. "The people who operate and maintain SAC's weapons and the people of the Logistics Command who supply them," Zuckert pointed out, "are all in the same uniform . . . . They are part of a team and their working relations are quite different from the impersonal relations that might exist between loosely related organizations which worked for different bosses."[119]

In the summation of his address on national defense organization, Secretary Zuckert warned: "The purists in organization sometimes want to carry their work to extremes which appear logical on paper but which in practice may lose more than is gained." He believed that the evolving organizational structure had centralized over-all planning, budgeting, and operational control within the Office of the Secretary of Defense, but that it had decentralized the development and support of combat forces and the formulation of doctrine along environmental lines. "This careful weaving of functional unification and environmental division," Zuckert concluded, "permits both to be effectively exploited. . . . That which is wise, natural,

and efficient is not likely to disappear in the continuing process of evolving the best possible defense organization. The three separate military departments of Army, Navy (with its Marine Corps), and Air Force make an indispensable contribution to the defense of this nation and will continue to do so. I predict that they are here to stay."[120] Where the Air Force had in the past customarily provided the strongest support for national defense unification, Secretary Zuckert's landmark address in September 1964 indicated that the Air Force was reevaluating the requirement for defense unification in the light of new ideas of technological possibilities and strategic requirements.

2. Air Force Organizational Adjustments to Defense Reorganization

Except for the establishment of the Air Research and Development Command in 1951, the internal organization of the Air Force in 1957-58 was markedly similar to the management structure set up in the immediate post-World War II years when the new Air Force was loosely federated with the Army and the Navy in the Department of Defense. The impact of the Soviet Sputnik and the Department of Defense reorganization of 1958 stimulated a ferment of introspective studies looking toward the internal reorganization of the Air Force. "We are standing at the crossroads of Air Force history," Lieutenant General Schriever exclaimed in one planning paper. "It would seem fortuitous indeed, if an organization conceived for 1950's problems were the best for changed needs of 1960-1970."[121]

With the accomplishment of the Department of Defense reorganization of 1958, the Departments of Army, Navy, and Air Force lost command over military combat forces and were restricted to the principal task of creating combat-ready forces for employment by the unified commanders in the field. With only partial guidance from the Department of Defense each of the military departments managed its internal reorganizations in a manner that represented necessary readjustments to the new defense organizational requirements and to projected trends in defense activity. The effectiveness of each service's internal organization would depend in a large measure upon the accuracy with which the services predicted future trends. Within the Air Force these estimates of future trends were manifested in the form of assumptions, and these assumptions were often more apparent from the statements of key individuals than from formal Air Force documents.

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Reflecting the belief of its founding commander General Muir S. Fairchild that a university not only disseminated knowledge but also sought to develop knowledge through research, the Air University from 1946 onward had been charged to study Air Force responsibilities for national security and to develop recommendations as to long-range

Air Force objectives. The Air University was also charged to prepare doctrinal manuals in fields of Air Force strategy, procedures, and techniques.[122] After early incandescence in the early 1950's the flame of research began to flicker at the Air University by 1956. In this year, Air War College students were no longer expected to contribute solutions to problems of Air Force and defense interest in their student theses.[123] When reductions in force and other manpower reductions had to be made within the command in the autumn of 1957, the Air University commander ruled that cuts would not be made across the board but in research areas which did not support the educational mission. The manner in which the personnel reduction was accomplished left no doubt that the training mission of the Air University had a higher priority than research.[124] In the spring of 1958 the Air University's Board of Visitors noted and criticized the fact that the Air Force appeared reluctant to assign sufficiently high quality personnel to the Air War College's Evaluation Staff.[125]

At the same time that the Air University was reducing its research capabilities, a group of officers in Headquarters, Air Research and Development Command, under the leadership of Colonel Taylor Drysdale, was impressed with the conclusion that nothing was being done in the Air Force to develop the science of warfare, although billions were being spent each year on the research and development of weapon systems. Weapon systems were being conceived, developed, and produced without consideration of the manner in which they might or might not affect the enemy and without regard to the nature of the military influence they were expected to wage. The RAND Corporation, operations analysis functions, the Weapon Systems Evaluation Group, the Lincoln Laboratory, the Air University, and a host of other agencies were engaged in random and piecemeal studies, but "nowhere," Drysdale said, "is there a rational program for research and development of military science as a whole, to learn the still unknown, fundamental principles of military power which, governing the outcome of real military actions, are at least as important as the tools they call forth." On 8 April 1957, Drysdale briefed General Power, who was then in command of the Air Research and Development Command, on this thinking and received instructions to form a study group, make a survey of the military science function, and prepare a development planning note describing a program for action. After five months work, the Drysdale group completed an extended study that was summarized in a USAF Directorate of Development Planning Note published on 17 February 1958. This note proposed a gradual establishment of a Military Science Research and Development Organization to include 1,621 military and professional persons by the end of fiscal year 1967.[126]

When briefed on the Drysdale study shortly after becoming Air Force Vice Chief of Staff, General LeMay acknowledged that the objective was important and worth pursuing. He pointed out that studies of defense matters by outsiders and observers generally

lacked utility, and he emphasized that the only men who could provide the product that Drysdale was seeking would be persons who bore the responsibility for military action, who understood the nature of combat and the price that might have to be paid for the achievement of a necessary military end.[127] At the Air University where he was completing a four-year tour as Commandant of the Air Command and Staff College, Major General Lloyd P. Hopwood proposed on 6 January 1958 that vigorous efforts ought to be made by the Air University to provide "conceptual R&D" for the Air Force through the rejuvenation of an Air Force Board type function. Somewhat more cautiously, Major General Robert F. Tate, the Commandant of the Air War College, pointed out that the Air Force had changed since the Air University had been established. The Air Staff had been expanded, the major air commands had undertaken their own conceptual planning, and a large number of study groups in industry and civilian institutions were studying the wide range of Air Force problems. An Air University organizational study committee nevertheless recommended that the Air University ought to create a warfare institute which would combine the talents still available in the Air University's Research Studies Institute and the Air War College's Evaluation Staff.[128] Despite agreement that the Air University ought to invigorate its research organization, the Drysdale proposal for a Military Science Research and Development Organization met a skeptical reception at the Air University. One senior Evaluation Staff officer called it a "panacea" and suggested that the development planning note had "fallen into the trap of believing that properly qualified and organized people, with adequate resources, can eventually resolve the basically irresolvable conflicts we are faced with today in the field of national security." Another noted: "Our studies on new weapon systems foreseen during the next 15 years have concluded that the present strategy of deterrence will continue essentially unchanged and so will the basic tasks of our military forces. . . . The key to changes in future strategy will rest with scientific development; for that nation which can gain a clear ascendancy over all the rest in adequate numbers of more highly effective weapons, whether offensive or defensive, will be in a position to dominate other nations in all forms of military conflict."[129]

In his discussion of the requirement for research and development in military sciences, Colonel Drysdale emphasized that the task of developing future knowledge could not be entrusted to Air Force planners or operations analysts, who were accustomed only to applying and analyzing already existing knowledge. "A truly professional approach to a profession," he argued, "must admit to the essential difference between the generation of knowledge and the application of that knowledge whether for the present actions or for the future actions."[130] Possibly because of this thinking, the Air Research and Development Command organized a small Science of Warfare Office under its Deputy Commander for Research and Development on 2 January 1958.[131] The Air Staff, however, equated conceptual research with

long-range planning. An increasing recognition that the Air Force ought to look ahead led early in 1957 to the establishment of the Deputy Chief of Staff, Plans and Programs, as a separate Air Staff office. In an internal reorganization on 15 July 1958, the Office of the Deputy Director for Policy (formerly the Policy Division) was established under the Director of Plans. At the same time, the Air Doctrine Branch was established under the Air Policy Division.[132] Hearing of this action, Major General Tate was skeptical of the decision to place the Air Doctrine Branch under the Deputy Director of Policy, Directorate of Plans, since this placed Air Force doctrine in a subordinate position to Air Force policy. "The Air University," he urged, "is in a position to develop doctrine free from day to day policy considerations. This is as it should be and is a major reason for retaining the basic doctrinal responsibility within the Air University."[133]

At its establishment in July 1958 within the Air Staff, the Air Doctrine Branch was designated as the single point of reference for the review of basic air doctrine prepared at the Air University and for operational doctrine prepared in the major air commands. For a time the Air Doctrine Branch merely attempted to keep current as to Air Force doctrine, but changes caused by the implementation of the Defense Reorganization Act of 1958 indicated that the Air Doctrine Branch might be expected to perform an enlarged role. Under new defense directives, the Joint Chiefs of Staff were given responsibility for prescribing doctrine for the conduct of unified operations. Each of the Joint Chiefs, as a Service Chief, would have an input into unified doctrine, and the Air Force Chief of Staff would require close assistance and advice from the Air Staff in order to formulate his doctrinal input to Joint Chiefs of Staff discussion.[134] On 1 December 1958 the Air Force Directorate of Plans recommended that the Air Doctrine Branch should be given the responsibility for preparing basic air doctrine. After lengthy discussions within the Air Staff, the Air Force announced on 6 March 1959 that responsibility for the preparation of Air Force basic doctrine would be retained at Headquarters USAF.[135] That same month, the Air Research and Development Command inactivated its Science of Warfare Office,[136] but the Air Staff wished the Air University to revitalize its research activities by the establishment of an institute of strategy.[137] After studying the matter during the spring of 1959, the Air University consolidated the Air War College's Evaluation Staff into the Research Studies Institute on 1 July. While the mission of the Research Studies Institute (subsequently renamed the Aerosapce Studies Institute) was broadened to require it to function as a doctrinal center for developing sound concepts concerning elements of military influence and aerospace power, it was expected to operate without increases in the size of its relatively small staff.[138]

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Although the Air Staff did not ignore the problem of conceptual

research in military science, the major interest of the Air Force was clearly centered in the development and procurement of advanced weapon systems. Established at the request of General White, the Ad Hoc Committee on Research and Development of the Air Force Scientific Advisory Board chaired by H. Guyford Stever prefaced its report of a survey of the Air Force research and development organization on 20 June 1958 with a broad statement of concept: "In all of its activities," the committee reported, "the Air Force will continue to experience at a growing rate the impact of advancing technology. The research and development phases will enlarge and become of greater importance. Though in the past the Air Force has introduced major changes to adjust to this increasing role of research and development, it has not kept pace with the need."[139] According to the division of responsibility specified in 1950-51 the Air Research and Development Command developed weapon systems and the Air Materiel Command procured the developed systems and provided continuing logistical support for them as long as they remained in the operational inventory. To provide command coordination each major weapon system was managed by a weapon system project office, staffed jointly by ARDC and AMC personnel. In order to speed the development of ballistic missiles, the ARDC Ballistic Missiles Division and the AMC Ballistic Missile Center were located together at Inglewood-Los Angeles.[140] By melding together personnel and responsibilities in a concurrency concept, the Air Force was able to field operationally ready ballistic missiles in a much shorter time than would have been possible with a "fly-before-buy" concept Other instances of expedited development, were less satisfactory. The F-106 interceptor was put into procurement on the basis of a contractor's assurance that its missile and fire control system would be flyable in 1953. The missile and missile control system was not completed until 1956, and the F-106 weapon system, which was expected to be operational in 1954, did not become operational until 1959.[141]

In an effort to keep pace with technological progress, the Air Force had superimposed weapon system management procedures on top of the existing Air Materiel Command and the Air Research and Development Command without inquiring as to whether some more sweeping reorganization might not be more appropriate. While the system was working it appeared to be full of delays. Seeking some new thought on the matter, General White told the Air Force Council on 30 April 1959 that the Air Force must abandon old step-by-step progressions in development and seek to make a "quantum jump" toward the best possible weapons for the future. This approach involved risk, for combat strength might be weakened while advanced weapon systems were under development, but White thought that the potential gain would be worth the risk.[142] In order to review policies and procedures for the management of weapon and support systems throughout their life cycles, General LeMay established a Weapon Systems

Study Group on 29 May 1959. He named General S. E. Anderson, Commander of the Air Materiel Command, as the group chairman and included Lieutenant General Schriever, Commander of the Air Research and Development Command, and Major General Mark E. Bradley, Acting Air Force Deputy Chief of Staff for Materiel, as members of the group.[143] After studies had been made, the majority of the group favored a plan of organization offered by Major General Bradley at a meeting on 11 March 1960. In essence Bradley proposed that other AMC center/ARDC divisions should be organized and should pattern their operations after those of the Ballistic Missile Center/Ballistic Missiles Division concept, thereby extending the dual responsibility approach to aeronautical and electronics systems. He also proposed that scattered responsibilities for weapon systems in the Air Staff should be collected into joint program and project offices. General Anderson was unwilling to continue the "piecemeal, patchwork approach" and proposed to reintegrate the AMC and ARDC into one aerospace weapons command. Lieutenant General Schriever accepted the Bradley plan, but he urged that it did not go far enough. He proposed a single operating agency for the acquisition phase--a weapon acquisition command--and an aerospace support command for logistical support.[144]

At a meeting in the Pentagon on 2 June 1960 General White heard arguments from Anderson and Schriever and provided new guidance to the Weapon Systems Study Group. He said that there would be no recombination of ARDC and AMC because this would be a step backward. Schriever's proposal was also unacceptable because any shift of procurement and production into the ARDC would dilute its efforts and hinder research and development. White generally accepted the Bradley plan, and he cautioned that organization of programs along the weapon system concept should be selective since not all systems were suited to expedited program development.[145] At its last meeting with General White on 16 August 1960, the Group proposed and White endorsed the view that "the present functional organization of the Air Force and Air Staff is sound and best suited to the over-all Air Force management problem." White also agreed that: "Product or weapon systems oriented management should be employed to integrate the functional activities of the Air Force."[146] General LeMay approved the report of the Weapon Systems Study Group on 30 August, and the new alignment began to be put into effect. In order to complete the parallel field organizations which already included the Ballistic Missile Center/Ballistic Missile Division on the West Coast and the Aeronautical Systems Center/Wright Air Development Center at Dayton, Ohio, the Air Materiel Command activated an Electronics Systems Center parallel to the Command and Control Development Division at Bedford, Massachusetts. In November 1950 General White announced that B-70, F/RF-105, Dynasoar, Skybolt, Atlas, Titan, Minuteman, Midas, Saint, Samos, SAC Control (465L), and Air Weapon Control (412L) systems would be given expedited development.[147] In order to accomplish a completely

functional organization, the Air Research and Development Command planned to divide its strength into four major divisions: one dedicated to ballistic missile and space systems in California; one dedicated to the development of aeronautical systems in Dayton; one dedicated to command and control systems at Bedford; and the fourth devoted to basic research in Washington. Integration of Air Force activities was to be attained by restructuring weapon system project offices into system program offices, which would have representatives of the ARDC, AMC, Air Training Command, and the using command. These offices would remain in being as long as their weapons systems continued in the operating inventory: they would handle responsibilities for the weapon systems from inception to final disposition.[148]

While the Air Force had determined that no major changes should be made in the organizational structure of the Air Materiel Command and the Air Research and Development Command, Lieutenant General Schriever was not entirely satisfied with the outcome of the Weapon Systems Study Group. For one thing, the two commands tended to compete with each other for technologically trained personnel as well as skilled management people.[149] During the latter half of 1960, General White refused to accept Schriever's objections, but early in 1961 Schriever's proposals for reorganization began to look more logical. Shortly after the Kennedy administration took office, Deputy Secretary of Defense Gilpatric apparently indicated to Secretary Zuckert that the military mission in space might well be centered in the Air Force provided it would "put its house in order." Gilpatric apparently believed that the Air Force could not handle the military space mission unless the machinery for performing research and development, tests, and procurement was centralized in one command.[150] Early in March Secretary McNamara called Zuckert and LeMay to his office and informed them that the major military responsibility for the space program would be assigned to the Air Force, and immediately thereafter Zuckert assembled White, Bradley, and Schriever to decide the basic outline of the reorganization that had to be made. It was now agreed that Schriever's recommendations to the Weapon Systems Study Group would be accepted, and that Schriever, who would be promoted to full general and given command of a new Air Force Systems Command, would also be given the responsibilities for activating ballistic missile sites. Secretary McNamara approved the proposals, and Zuckert negotiated an agreement with the Secretary of the Army, whereby the Army Engineers would make a general officer available for assignment as Deputy Commander for Site Activation in the Ballistic Systems Division.[151]

Except for Secretary Zuckert, Under Secretary Joseph V. Charyk, and the officers who attended Zuckert's conference, the knowledge that the Air Materiel Command and the Air Research and Development Command would be reorganized was not generally known at the Air Staff level until the plan for the reorganization was announced by Secretary McNamara on 17 March 1961. This announcement and

official orders issued on 20 March provided that the Air Materiel Command and the Air Research and Development Command would be redesignated on 1 April 1961 as the Air Force Logistics Command and the Air Force Systems Command. The Research Division of the Air Research and Development Command was redesignated as the Office of Aerospace Research and assigned directly to Headquarters, United States Air Force, as a separate operating agency. The Air Force Systems Command took over the former Air Materiel Command center functions and personnel at the formerly parallel operating locations and organized its forces into a Ballistic Missiles Systems Division, Space Systems Division, Aeronautic Systems Division, Electronics Systems Division, and a Foreign Technology Division. In order to complete its internal organization, the Air Force Systems Command subsequently established an Aerospace Medical Division at Brooks Air Force Base, Texas, on 1 January 1962. Provisionally organized at Bolling Air Force Base in April 1962, the Research and Technology Division was made permanent on 1 July 1962. The Aerospace Medical Division was intended to improve the military "interface" with NASA since it provided "one focal point in the Air Force for the bioastronautics, life sciences activity." The Research and Technology Division provided centralized management for the Air Force Rocket Propulsion Laboratory at Edwards Air Force Base, the Weapons Laboratory at Kirtland Air Force Base, the Aero-Propulsion, Materials, and Flight Propulsion Laboratories at Wright-Patterson Air Force Base, and the Electromagnetics Laboratory at Griffis Air Force Base. As its mission after the 1 July 1961 reorganization, the Air Force Logistics Command was charged with operation and control of the worldwide logistics system for the support of the Air Force.[152]

In a press conference held on the afternoon of 17 March 1961, Secretary Zuckert explained that the Air Force Systems Command-Air Logistics Command reorganization was designed to improve management. "When you have a clear line of authority," he said, "you are going to have better management."[153] In a schematic diagram of the cycle of weapon system acquisition, principal responsibility for basic research lay in the Air Force Office of Aerospace Research; the Air Force Systems Command was responsible for development, procurement, and production; and the Air Logistics Command remained responsible for logistic support of operational systems, including spares and maintenance equipment.[154] Speaking of the climate of thinking that lay behind the reorganization, Major General Friedman said: "I think that the day of the short development period and long run production is over, and I think we are talking about practically--apart from basic and applied research--practically concurrent development."[155] In order to avoid misunderstanding, Zuckert emphasized that the Air Force had not been reorganized into a weapon systems structure, but he nevertheless demonstrated the manner in which the new structure would expedite all of the myriad actions involved in bringing the twelve systems that the Air Force had selected for expedited management decisions into operational use as

quickly as possible.[156] In explanation of the establishment of the Air Force Systems Command, General White predicted that the action would "provide more rapid decisions and accelerated actions on ballistic missile and other designated system programs. . . insure efficient, responsive management of the . . . space development mission. . . provide for the close integration and participation of the Army Coprs of Engineers in the ballistic missile site activation task. . . provide for effective liaison and active participation by the Army, Navy, and the National Aeronautics and Space Administration in projects being developed for those agencies by the Air Force.[157]

As a follow-on to the field reorganization of the Air Force Systems Command and the Air Force Logistics Command, the major Air Staff offices of Headquarters, United States Air Force, were realigned effective on 1 July 1961. Under the old Air Staff organization, the Deputy Chief of Staff for Materiel and the Deputy Chief of Staff for Development had provided a parallel Air Staff organization to the Air Materiel Command and the Air Research and Development Command. Under the 1 July 1961 reorganization, however, the new Deputy Chief of Staff for Systems and Logistics assumed responsibility for system development functions. The new Deputy Chief of Staff for Research and Technology became the Air Force point of contact for the entire scientific community and was given staff cognizance over basic research and all applied research that was not a part of a system.[158] The top-level Air Staff reorganization, together with revised management procedures, sought to extend to all designated systems the same type of expeditious handling previously accorded to ballistic missile and space systems. On 25 July 1961, Zuckert established the Designated Systems Management Group as an expansion of the former Air Force Ballistic Missile and Space Committee. Chaired by the Secretary and including the highest statutory civilian and military officials, this Group assisted the Secretary in discharging his responsibilities toward programs which were designated to be of the highest priority. The former Weapons Board was redesignated as the Systems Review Board; headed by the Director of Operational Requirements, the Systems Review Board continued to function as a cross-function board at the Air Staff directorate level, and it was provided with committees, panels, and working groups that were designed to monitor programs and insure that all Air Staff elements received the information they required to insure adequate systems management. The Designated Systems Management Group and the Systems Review Board shared a common secretariat, thus insuring continuity of action from all levels of the Air Staff through to the Secretary of the Air Force.[159] The Office of Deputy Chief of Staff for Systems and Logistics included project offices for certain component and equipment programs which were of lesser scope than a system as well as eleven Designated Systems Offices (Systos) which were designed to provide up-to-the-minute status data for all matters pertaining to individual specified systems. The Systos provided the chairmen of the working

groups of the Systems Review Board. Under the new management concept there was to be no intermediate-level review or disapproval authority between responsible Air Force Systems Command system program directors in the field and the Designated Systems Management Group/Systems Review Board in the Pentagon. Employing a "red line" technique, the system program directors of designated systems were able, in the words of General Schriever, "to go quickly to the top for fast decisions on their programs." Schriever further explained: "Under 'Red Line' procedures a Director goes to the Air Staff and the Secretary for a decision, and where necessary, in some cases to the Secretary of Defense. Thus when a matter demands immediate attention, the Director can present it to the decision-maker in the course of a single day."[160]

The organization of the Air Force Systems Command and the new system management concept were expected to provide an environment wherein quantum jumps in technology could be quickly translated into operational weapon systems by concurrency programing. Based upon his experience with ballistic missiles, Schriever was completely convinced of the value of concurrency. "If you find that you have a fundamentally sound weapon," he said in 1959, "you actually save money by this technique because you do not stretch out the program so long. With time as important as it is in our day and age of thermonuclear weapons and ballistic missiles, I see no other choice but to do our jobs in this manner."[161] The establishment of the designated system management procedures in 1961, Schriever said, was "based on the premise that streamlined channels, as originally provided for in the ballistic missile program, are sound in principle and can be applied to many important programs in today's environment."[162] General Schriever's belief in the concurrency concept and in centralized management was not completely shared by some Air Force leaders. Early in 1961, Lieutenant General Roscoe C. Wilson, who would soon retire from his post as Deputy Chief of Staff for Research and Technology, suggested: "We have always felt in the Air Force that the real genius lay among the people of the United States at large and just could not be cooped up in any bureaucracy at all, and all of our efforts have been aimed at reaching out to these people rather than trying to pull them in to us." In a private interview just prior to his retirement, Wilson described the concurrency concept as "useful but very wasteful." He thought that a service could stand the cost of one or two concurrency programs, but the Air Force had far more programs underway than it would be able to afford. Wilson further predicted that the new red line management procedures would fail because too much responsibility was being concentrated at the top of the management structure.[163] Speaking as Director of Defense Research and Engineering, Dr. Brown also pointed out that excessive concurrency could delay rather than hasten the operational availability of a weapon system. "Premature commitment of subsystems," Brown maintained, "before you know how they will interact with everything else and, indeed, before you have the subsystem worked out, can produce an actual delay."[164]

During 1961-62 the Department of Defense severely reduced the number of concurrent development programs which the Air Force was attempting to maintain, chiefly because the Air Force was unable to show a proper interaction requirement for the systems in a future environment. By the winter of 1962-63, moreover, General Schriever frankly admitted that the red line management review concept between the Air Staff and the responsible system program offices had not worked very well. The full effect of the procedure was to force the management of programs in greater and greater detail up into the Air Staff and the Department of Defense. The recommendations made by the system programs offices and the Systos dealt with individual problems and lacked total program relationships when viewed in terms of the whole Air Force program. The number and types of reviews at levels above the Air Force Systems Command increased greatly, and these reviews necessarily involved complex technical evaluations as well as functional considerations. "Thus," Schriever wrote, "the attempt to eliminate levels of review has actually resulted in an increase in detailed data required at the top and a decrease -in the name of urgency--in the quality of the review." From this experience Schriever drew the basic lesson that the "unique short-circuit management techniques and administrative procedures" that had worked for programs involving "extreme national urgency or risk" could not "be extended beyond a relatively few programs without some deleterious effect on the normal management structure and on the portion of the system program that does not fall within the highest priority category." To add more and more systems to a specialized management list merely diluted the amount of special management emphasis that might be applied in priority areas and degraded the normal management emphasis available for lesser priority systems.[165]

During the summer of 1962 following the retirement of General Frederic H. Smith, Jr., for physical causes, General LeMay brought General William F. McKee from his assignment as Commander of the Air Force Logistics Command and named him Air Force Vice Commander. Early in the 1950's McKee had provided guidance for the reorganization of the Air Staff and his first task as Air Force Vice Commander was to superintend a major realignment of the Air Staff. One objective of the reorganization was to comply with Secretary McNamara's directive that headquarters staffs be reduced and management should be decentralized. Another objective provided by Secretary Zuckert was to "increase responsiveness to the stringent demands of modern 'command and control.'" As announced on 1 February 1963 the new Air Staff organization included the Deputy Chief of Staff, Plans and Operations, as a consolidation of the former Deputy Chief of Staff for Plans and Programs and the Directorate of Operations from the now-disestablished Deputy Chief of Staff for Operations. A new Deputy Chief of Staff, Programs and Requirements, included elements from the former Deputy Chief of Staff for Operations, such as the Directorate of Operational Requirements and

a new Directorate of Aerospace Programs. The functions of the Deputy Chief of Staff, Systems and Logistics, and the Deputy Chief of Staff, Research and Development, were made to parallel the field organization of the Air Force Logistics Command and the Air Force Systems Command. The Deputy Chief of Staff, Systems and Logistics, would generally be concerned with production: its former Directorates of Systems Acquisition and Systems Services and the twelve designated systems offices were combined into a Directorate of Production. Concurrently with the elimination of the systems offices, the Air Force Systems Command took over the responsibility of providing technical expertise and systems advocacy before the Air Staff and the Office of Secretary of Defense. Within the Office of the Chief of Staff, the Air Force Council remained as the senior organ for study and recommendation. The Designated Systems Management Group also continued in being, but other boards, including the Systems Review Board, were combined into a new Air Staff Board. Headed by the Director of Operational Requirements, the Air Staff Board was organized into two committees--one on Force Structure and the other on Program Review--and eight working panels. The Air Force Council and the Air Staff Board were charged to make recommendations in order to speed decisions: they did not make decisions.[166]

"What it amounts to," said Secretary Zuckert in reference to the Air Staff reorganization of 1 February 1963, "is we're learning to go to the doctor before we really get sick."[167] The new organization for systems research and development sought to correct the difficulties that had arisen from the July 1961 organization. While the Designated Systems Management Group remained in being, the Air Force re-evaluated its list of designated systems to ensure that only a minimum number of highly-important projects would be accorded special management procedures.[168] Lieutenant General James Ferguson, Air Force Deputy Chief of Staff for Research and Development, conceived his responsibilities to be "those related to policy, to broad general direction, to major programing. . . . We identify what needs to be done, we get the work started, issue the instructions to the field, we review what is done, we sponsor it to the Department of Defense, we issue policy guidance."[169] Within the Air Force Systems Command, General Schriever sought to make program study and review meaningful at every echelon. Thus the project level--laboratory or system project office--was to be recognized as the last word technically within the command. The project level, however, could not evaluate the relative importance of individual projects in a whole Air Force program. This evaluation had to be the contribution of Headquarters, Air Force Systems Command, employed collectively as a central command review group on a continuing basis, since this was the only agency with a broad enough knowledge of the entire command program to evaluate new proposals or changes in existing proposals. In order to strengthen functional review, Schriever organized an Air Force Systems Command Council comparable to the Air Force Council and charged it to maintain a review of the

research and development programs recommended to the Air Staff. "These actions," Schriever believed, "promise to bring a significant improvement in the management capability that is the pacing element in achieving technological superiority."[170]

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Whether it was to be known as "military science" or "doctrine" the task of rationalizing and enunciating the fundamental beliefs that were to underlie the development, deployment, and employment of aerospace power in peace or war did not appear to progress well following the assumption of the mission by the Air Force Deputy Chief of Staff for Plans and Programs on 6 March 1959. Located under the Aerospace Policy Division of the Plans Directorate, the Doctrine Branch initially attempted to maintain in its possession a current statement of Air Force basic doctrine. It sought to keep a working draft of Air Force Manual 1-2, United States Air Force Basic Doctrine, constantly up to date by revising portions of the 1955 manual that had been affected by the development of new weapons and by the Defense Reorganization Act of 1958. As has been seen, a revised edition of Air Force Manual 1-2 was issued on 1 December 1959, but the revisions consisted principally of changes of terminology rather than of substance. One of the major functions of the Aerospace Policy Division was to provide Air Force "positions" on subjects of defense interest, and many of these position papers became the basis of speeches and statements by Air Force leaders. Published by the Secretary of Air Force Office of Information, the Air Force Information Policy Letter for Commanders and the monthly Supplement to the Information Policy Letter for Commanders contained excerpts or full texts of statements by national leaders on matters of special interest and value to Air Force personnel. In September 1961 the Air Force directed that the Policy Letter "provides concepts, doctrine, facts, references, and suggestions for all Air Force commanders and their staffs in meeting their responsibility to advance understanding inside and outside the Air Force."[171] In the aftermath of the Air Staff reorganization of 1 July 1961 an internal reorganization within the Office of the Deputy Chief of Staff for Plans and Programs made Brigadier General Jerry D. Page the Deputy Director of Plans for Aerospace Plans and established the Aerospace Doctrine Division and the Long Range Plans Division under him.[172]

In the autumn of 1961 it became evident to General LeMay that even knowledgeable persons were no longer sure of what the Air Force stood for in the way of concepts and doctrine. Attempting to clear up some of the confusion, LeMay asserted: "I think we have been consistent in our concepts since the formation of the GHQ Air Force in 1935. Our basic doctrine has remained generally unchanged since that time."[173] At least by implication, LeMay endorsed extant statements of Air Force doctrine and stated the requirement that the

Air Force must "act with vision and daring to exploit technology to achieve distinct strategic advantages."[174] In an address in February 1962, however, Brigadier General Page attempted to place science and technology in perspective with strategy. "Although science is a search for new knowledge and is essentially unpredictable," Page reasoned, "technology is another story; it goes essentially where it is directed to go. . . . For the future," he asserted, "the military planner must spend more time applying his professional judgment to determine what is needed from technology for meaningful improvements in strategy, and less time listening to predictions of ways in which strategy must be influenced by hypothetical trends in technology."[175]

In the course of the revolution in national military strategy that took place during 1961-62, the Air Force found it very difficult to justify many of its forward-looking weapon systems because of its failure in predicting the future operational environment in which the weapon systems would have to be employed. At the Air University in April 1963 the Board of Visitors of the Air University recommended that, both for instructional and planning purposes as well as for the benefit of the total national defense effort, there was "a need for clear, long-range thinking on such matters as doctrine and the role of the Air Force and its programs in relationship to other defense agencies."[176] In the Pentagon, after some conversations with Brigadier General Page, Major General Dale O. Smith prepared and submitted to General McKee on 15 April 1963 a scathing indictment of Air Force failures to keep its doctrine dynamic. "The deplorable condition of aerospace power today," Smith wrote, "is to a large extent the result of allowing Air Force doctrine to stagnate and become inapplicable to modern conditions." Smith urged that the Air Force must devote substantial resources to "in-service, blue-suit, research on matters of Air Force doctrine." "The idea of letting our doctrine drift from the whim of one operational leader to another, or from one ad hoc measure to the next," he warned, "will never provide us with the comprehensive, dynamic, understandable, and salable doctrine necessary to save the Air Force." Smith pointed out that the Army, through intellectual activity and organizational structure, had adapted its mission and capabilities to changing national strategy in the years after 1954. "The Army," he noted, "suffered by the front-running Air Force doctrine of massive retaliation during the early 1950's, yet they have recovered in less than a decade." The Air Force, on the other hand, had become a victim "of 'hardening of the categories' by avoiding full consideration of national military doctrine, national and foreign policy, as well as arms control philosophies" and had not "appropriately related or influenced developments in these fields to pure Air Force doctrine nor anticipated their impact."[177]

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While Major General Smith possibly overemphasized the role of the Army in the changing national military strategy, it was nonetheless true that the Army had built a visualizing, planning, testing, and developmental organization that was extremely productive of new concepts for the employment of ground forces in a future military environment. In the immediate post-World War II years, Generals Eisenhower and Bradley had been hesitant to authorize the reopening of an Army War College because they believed that the National War College could better serve a purpose of unifying military thought. In January 1950, however, General Collins decided to reopen the Army War College, and, after a first year at Fort Leavenworth, Kansas, the senior institution relocated its permanent home at Carlisle Barracks, Pennsylvania.[178] The Army War College sought to prepare Army officers with a knowledge of the capabilities and limitations of their own service. Although a consideration of joint operations was included, primary emphasis in the curriculum was placed on Army problems associated with military doctrine, national strategy, and supporting military programs.[179] The Army Command and Staff College at Fort Leavenworth continued to be a principal center for the formulation of Army doctrine,[180] but reportedly because of the recommendation of Dean Rusk, who was then serving as the chairman of the Army War College's board of visitors, the Army created an Advanced Study Group at Carlisle Barracks in 1954. This group apparently received strong support from its parent service, and it ultimately propounded many of the basic concepts of the strategy of flexible response. "It was here at the Army War College," commented Brigadier General Noel F. Parrish, Director of the Air University Research Studies Institute, "that the Army concentrated its new emphasis on brains and foresight, while the Air Force emphasized the 'big operator.'"[181]

During the 1950's the Army found itself in almost the same situation of adversity that the Army Air Corps had known in the 1930's, and in a remarkably parallel pattern of action to these earlier days Army thinkers at Fort Leavenworth and Carlisle Barracks funneled new ideas and concepts up through the Continental Army Command to the Department of Army. The new ideas and concepts were designed to provide an understanding of the role of warfare in a land environment. While the Army actively challenged existing doctrine, the Air Force found itself increasingly defending the old doctrines that had been proven in World War II.

Many of the Army proposals for change in air-ground doctrines related to a basic contention that the principle of unity of command demanded that local ground commanders should have command control over the air units that supported them.[182] In order to guarantee adequate air support the Army stated a requirement that the Air Force should provide approximately two tactical reconnaissance wings for each field army and one wing of tactical fighter aircraft for each army division committed to combat. It further stipulated that the close-support fighter wings should be under the control of

division commanders in order that they would be immediately responsive to ground requirements. Arguing from past experience, the Air Force urged that the national economy could not support duplicative and specialized air units and that the centralized control of tactical air units under an air commander was vital to a proper accomplishment of a theater commander's mission. The Air Force also noted that its tactical air units had to be prepared to support both United States ground forces and the friendly foreign forces in the North Atlantic and Southeast Asia Treaty Organizations.[183]

Another point in controversy throughout the 1950's was the Army belief that the advancing speeds of tactical fighter aircraft would prevent Air Force pilots from accomplishing effective close-support missions. "The Army recommends," General Lemnitzer stated in 1960, "the development of an inexpensive tactical fighter capable of operating off semi-improved fields. This aircraft should be specifically designed for accomplishment of the close support mission."[184] In the early 1950's Air Force leaders remembered the fate of the Nazi Stuka close-support aircraft and opposed the development of a vulnerable single-purpose plane that would have little expectation of defending itself in the air. By 1956-57, however, the Air Force position showed some signs of change as General Norstad, thinking as Supreme Commander Europe, foresaw a requirement for a relatively inexpensive, light-weight, easily-maintained tactical strike aircraft that could operate from short, relatively-unprepared runways. As a result of studies conducted by NATO's Advisory Group for Aeronautical Research and Development (AGARD), Fiat of Italy designed and built the G.91 lightweight strike and reconnaissance aircraft. When it became available in 1959, the G.91's price of approximately $300,000 appealed to the smaller NATO nations.[185] Both in response to Norstad's requirement and in the belief that a less expensive aircraft might be obtained for military assistance pact procurement, the Air Force expressed substantial interest in 1957 in the Northrup Aviation Corporation's proposal to develop a lightweight tactical fighter from its T-38 jet trainer. This plane failed in key competitions in 1958-59, when the F-104 was selected as the new standard fighter for the Netherlands, Norway, Japan, Canada, and West Germany, but the Air Force nevertheless awarded Northrup a contract for the development of three N-156 aircraft. In April 1962, the Air Force would place substantial orders for this plane, now designated as the F-5, for service as a replacement fighter in the inventories of many military assistance pact nations. The F-5 was a retrogression in speed and altitude capabilities, but it promised advantages in range and maneuverability and had cost-effectiveness advantages for nations with fewer resources than the United States.[186]

In an effort to settle the lingering controversy over the type of close-support fighter that the Air Force would expect to possess in the future, General White proposed to General Decker in January 1960 that the Army could have the decisive voice in the selection of interim modernization aircraft for eleven squadrons that were to be

kept in the Air Force inventory for the special purpose of supporting ground forces. In mid-April at Nellis Air Force Base, senior Army and Air Force officers viewed all currently inventoried planes that appeared suitable for selection as an interim close-support plane. After study of the matter, General Decker decided that he did not wish to make the choice of the aircraft that would be employed for close support. The Army would instead prefer to express its requirements for tactical support in terms of the type of support to be provided rather than in terms of the specifics of the delivery vehicles.[187] As has been seen, General Wheeler later agreed with the prevailing Air Force position that Air Force tactical fighters ought to be high performance planes that would be able to perform all tactical air warfare missions with a high degree of versatility.

Possibly because the subject involved a projection of developing surface-to-air missile weapon systems into a future operational environment, the Army and the Air Force had more difficulty arriving at procedures for the control of the air over an oversea battle area. Early in the 1950's the Army and Air Force operated in accordance with the Vandenberg-Collins agreement which provided that an Air Force air defense commander in an oversea combat zone would exercise operational control over antiaircraft artillery "insofar as engagement and disengagement of fire is concerned."[188] Based upon its interpretation of Secretary Wilson's roles and missions memorandum of November 1956, however, the Continental Army Command asserted in 1957 that an army field commander would be solely responsible for the air defense of his combat area and would not only control all air defense units but would also regulate all air operations through the air space above his combat area.[189] The Army believed that surface-to-air missiles would eventually become so effective that it would be able positively to control the air space over its ground armies. Unable to arrive at any mutually acceptable agreement, the Tactical Air Command and the Continental Army Command ultimately noted that the unified commanders in Europe and in the Pacific had already effected command control arrangements for battle area air space in their theaters. In the summer of 1960 the two commands began to employ these theater command control arrangements in their joint maneuvers.[190] After months of study, Generals LeMay and Decker signed a statement of agreement on a doctrine for overseas area air defense on 12 July 1962. This agreement accepted the basic principle that a coordinated and integrated air defense system under a single commander would be essential to successful theater operations and that this single commander would be expected to ensure that the mix of weapon systems available to him would be effectively organized and employed. A unified theater commander would normally appoint his air component commander as the area air defense commander, but where another service contributed a significant portion of the air defense weapons a senior officer from that service would be appointed to serve as deputy in air defense matters to the area air defense commander. All commanders were to ensure

that surface-to-air missiles, manned interceptors, and command and control systems were integrated into a single air defense system.[191] Since the LeMay-Decker agreement was not officially promulgated as joint doctrine, it affected Army and Air Force relationships but was not mandatory upon theater commanders.

At the same time that the Army maintained an active interest in the air support that it would obtain from the Air Force, Army thinkers also put together a visionary plan to increase the Army's ground mobility by the employment of organic Army aviation. The concept was first publicized in an article published by Major General Gavin in April 1954 under the title "Calvary, and I Don't Mean Horses." Gavin asserted that the Army should develop helicopter-borne troop units that could operate in old-fashioned cavalry missions.[192] Another Army aviation enthusiast, Major General Hamilton H. Howze, expanded Army requirements for organic aviation during his period of service as Director of Army Aviation. In May 1956 Howze emphasized that the Army required simple and rugged aircraft capable of providing observation, lifting troop units within the combat zone, performing cargo lift, serving liaison and communications purposes, and evacuating casualties from front-line positions. He also envisioned that Army units equipped with helicopters would perform reconnaissance, screening, security of open flanks, seizure of critical areas, pursuit, and limited exploitation missions.[193] To Army planners the prospects of a nuclear battlefield--where troop units would be widely dispersed and targets would be fleeting and elusive--dictated a clear requirement for air cavalry units which would be able to cover an advance, flanking, or rearguard action, to control or deny terrain remote or inaccessible to ground vehicles, to secure areas against enemy airborne, guerrilla, or infiltrating units, and to cross or enter areas of nuclear contamination. "Army aerial vehicles, far more mobile than surface transport," General Lemnitzer observed, "provide the best means of accomplishing these reconnaissance missions."[194]

As it was issued in November 1956 Secretary Wilson's roles and missions directive appeared at first to pose a check to the development of the visionary plans for Army aviation. The directive limited fixed-wing Army planes to an empty weight of 5,000 pounds and Army rotary-wing aircraft to an empty weight of 20,000 pounds. While the directive authorized the Army to develop a limited airlift capability, it stipulated: "Provision of this limited airlift capability will apply only to small combat units and limited quantities of materiel to improve local mobility, and not to the provision of an airlift capability sufficient for large-scale movement to sizeable Army combat units which would infringe on the mission of the Air Force."[195] In the directive, Wilson promised to make specific exceptions to the weight limits placed on Army aviation after a consideration of Army requirements and the capabilities of the other services to meet them. He almost immediately authorized the Army to procure five DeHavilland DHC-4 Twin Otter aircraft for test and

evaluation. Subsequently, the Office of Secretary of Defense permitted the Army to procure limited numbers of 15,000-pound Caribou transport planes and 9,000-pound Mohawk turboprop observation aircraft. Despite these exceptions, General Lemnitzer was opposed to any weight limitations on Army aircraft. "The Army," he said, "does not consider it advisable or desirable to have weight limitations imposed on any Army aircraft. . . . Despite the fact that two exceptions to the aircraft have been authorized by the Secretary of Defense. . . the weight limitations have inhibited the thinking of Army planners and the initiative of the aircraft industry to produce new aircraft for the Army."[196]

In the late 1950's the Army began tests of the basic air cavalry concept at Fort Stewart, Georgia, where it organized an Aerial Reconnaissance and Security Troop. This troop employed 16 observation and 11 larger helicopters, some of which were armed with machineguns and rockets. Discovery of the enemy was said to be the primary function of the air cavalry; it was not described as an organization which could engage in a sustained fire fight.[197] Other Army spokesmen developed more ambitious concepts. Major General Robert J. Wood, Deputy Chief of Staff of Army Research and Development, stated in 1958: "We have to be able to move over the battlefield and to reconnoiter with what our sky troopers now call 'zero foot pressure' on the terrain, which means moving in the nap of the earth just above the battlefield."[198] In the scenario for an exercise prepared by the Continental Army Command for cooperative play with the Tactical Air Command in 1960, Army officers visualized a helicopter-mounted airborne assault of six battle groups into an area 30 miles beyond the forward edge of the battle area. As commander of the Tactical Air Command, General F. F. Everest had difficulty conceiving that the movement of six airborne battle groups could be considered to be a small unit action, and he thought that such an operation would clearly duplicate the Air Force's assigned responsibility for airborne assault operations. Rather than to allow doctrinal differences to interfere with training, however, the Tactical Air Command participated in the planned maneuver.[199]

When President Kennedy took office in January 1961, the Army began to find a favorable climate of opinion for effecting the far-reaching organizational and operational concepts that had been maturing during the 1950's. President Kennedy spoke of a need for reorganization and modernization of the Army, for improving the Army's tactical mobility in any environment, and for improving the national ability to deal with guerrilla forces, insurrections, and subversion in emerging free nations of the world. Secretary McNamara stated that the Department of Defense would not apply weight limitations to the development of Army aircraft, and the Department of Defense program package budgeting procedure in effect minimized the old roles and missions and invited the services to bid against each other in terms of cost-effectiveness comparisons for the performance of outlined military tasks.[200] In a very long range

strategic forecast issued on 21 February 1961, the Army's Strategic Studies Group at Carlisle Barracks posed an optimistic outlook for the Army: "Although service roles and missions will change with the advent of a greater degree of centralization at Department of Defense level," the group estimated, "vital responsibilities will remain with the services. . . . The Army will be responsible for developing doctrine and for providing forces and weapons required for successful conduct of warfare in the land environment plus that portion of the air and water space adjacent to the land in which its forces and weapons will be employed."[201]

During the 1950's the Tactical Air Command and the Continental Army Command had provided an interface for the development of air-ground doctrine, and the Army and Air Force chose to continue the relationship as they established counterinsurgency programs. During the spring of 1961 the Army raised the status of its Special Warfare Center at Fort Bragg and substantially increased the strength of its special forces. In April 1961, the Tactical Air Command established the 4400th Combat Application Crew Training Squadron at Eglin Air Force Base. The 4400th was soon redesignated as the 1st Air Commando Wing and given the two-fold mission of furnishing the air power needed to support U.S. Army Special Forces and of training foreign air forces for the conduct of special air warfare operations. In April 1962, the Tactical Air Command expanded the Eglin establishment into the Air Force Special Air Warfare Center (SAWC), under the command of Brigadier General Gilbert L. Pritchard. The Special Air Warfare Center included the 1st Air Commando Wing and the 1st Combat Applications Groups, the latter organization being designed to provide a quick response to field requirements and to develop doctrine, tactics, techniques, and equipment required in the field on short notice. In July 1962 the Air University also introduced a 2-week course on counterinsurgency which was available to officers assigned to foreign missions, military assistance advisory groups, and to selected staff and operational personnel.[202]

While the essential relationships of the Tactical Air Command and the Continental Army Command were continued in the counter-insurgency field, the establishment of the United States Strike Command in the autumn of 1961 promised to make marked changes in the old relationships. Under his terms of reference, CinCSTRIKE was authorized to develop joint doctrine for the employment of the forces assigned to him. He was to be guided by the provisions of the Unified Action Armed Forces publication, but in the interest of developing rapid reaction capabilities and joint striking power he was authorized to develop new ideas and concepts, to test and prove them in the field, and to recommend them to the Joint Chiefs of Staff for issuance as revisions or additions to the Unified Action Armed Forces papers. In this endeavor, CinCSTRIKE was cautioned to give careful consideration to the specific doctrinal requirements of the unified commands to which STRICOM augmentation forces might be committed.[203] As soon as STRICOM became operational, the Office

of Defense General Counsel recommended to Secretary McNamara on 29 March 1962 that a STRICOM Combat Developments Test Center should be established to conduct selected combat developments study projects and material test and evaluation projects which would be of joint concern and which would be relevant to the organization, equipment, and concepts of employment of land-air forces. The recommendation provided that the scope of Combat Developments Test Center projects would "include deployment of forces to theaters of operation and employment of forces under the entire range of possible conditions, namely from large-scale operations of regular forces, both nuclear and non-nuclear, on the one hand, to counter-guerrilla operations, support of indigenous forces in counter-insurgency operations, and other Cold War actions on the other."[204] When asked about this recommendation in June 1962, Secretary McNamara expressed no intention of establishing such a Combat Developments Test Center, at least not in the near future. He said in regard to STRICOM: "I wouldn't believe it wise to assign to that command any responsibility for the tactical doctrine or development that could properly be handled by one of the military departments separate from the activity of the other military departments. But such a doctrine. . . as that relating to the use of tactical air in close coordination with tactical ground forces. . . are quite proper subjects for review with and assignment to the Strike Command."[205]

In his list of projects which he assigned for study early in 1961, Secretary McNamara directed the General Counsel of the Department of Defense to report on the organization of the Army, emphasizing the technical services and recommending such organizational changes as might be appropriate. This study was completed within the Army in October 1961 and as approved by the Secretaries of the Army and of Defense it became the basis for the Army reorganization plan which President Kennedy submitted to Congress on 16 January 1962. Since Congress did not disapprove the reorganization plan it was placed into effect during 1962. In Headquarters of the Army, operational functions were removed from the general staff and most statutory functions were removed from the old chiefs of the arms and services. Almost all individual and unit training responsibilities were assigned to the Continental Army Command. The Army Combat Developments Command, activated on 20 June 1962, was charged to develop organizational and development doctrine, material objectives and qualitative requirements, war gaming and field experimentation, and cost-effectiveness studies. The Army Materiel Command became operational on 1 August 1962 and was assigned all operating responsibilities for research, development, testing, production procurement, storage, maintenance, and distribution of materiel on a wholesale basis.[206] With its headquarters at Fort Belvoir, Virginia, the U.S. Army Combat Developments Command was expected to provide continuing study and answers to the questions: How should the Army be organized? How should it fight? Its mission required it to formulate and document current doctrine for

the Army, and, in anticipation of the nature of land warfare in the future, to determine the types of forces that would be required and how they would be employed. Where these functions had previously been performed in some 30 different combat developments sections, boards, and agencies, they were now given a command focal point. The Combat Developments Command had 6,400 people assigned in sub-commands and activities throughout the United States. Its activities could range from studies, estimates, and assessments extending 20 years into the future made at the Institute of Advanced Studies at Carlisle Barracks to the actual testing of ideas, concepts, equipment and organization under field conditions by a 4,000-man Combat Development Experimentation Center at Fort Ord, California. After developing doctrine, the Combat Developments Command was the primary agency for translating it into usable media such as doctrinal manuals, detailed requirements for equipment, and tables of organization and equipment.[207]

Without awaiting the completion of the Army reorganization, Secretary McNamara requested the Secretary of the Army on 19 April 1962 to provide him with an imaginative study on the future role of Army aviation without regard to traditional military doctrine. To handle the study the Continental Army Command established the U.S. Army Tactical Mobility Requirements Board, under the presidency of Lieutenant General Hamilton H. Howze, Commanding General, XVIII Airborne Corps. The Howze Board's principal activities were centered at Fort Bragg, and a number of Army aviation units were temporarily moved there for field tests and maneuvers. The unclassified version of the Board's directive required it to "conduct an extensive program of analyses, exercises and field tests to evaluate new concepts of battlefield mobility in terms of cost-effectiveness and transport-effectiveness factors." It was also charged to determine "the extent to which air vehicles, operating in the environment of the ground soldier, can be substituted for conventional military surface systems, both tactically and logistically."[208] After some 18 weeks of study, the Howze Board published its final report on 20 August 1962.[209] In order to evaluate the Howze Board report, General LeMay established the U.S. Air Force Tactical Air Support Requirements Board, under the presidency of Lieutenant General G. P. Disosway, Air Force Director of Programs and Requirements. The Disosway Board completed its analysis and evaluation on 14 September, and Secretary Zuckert forwarded this report to Secretary McNamara with some added comments.[210] The reports of the Howze and Disosway Boards were not released to the public, but many of their salient recommendations were apparently discussed before Congressional committees during the spring of 1963.

When he presented the substance of the Howze Board report to Congress in February 1963, Secretary McNamara noted: "I asked that the Howze Board be established. I am very pleased with the depth of its work, the imagination it showed during the period of its work, and the intensity of its work. I think many of the recommendations are very beneficial and will greatly strengthen the total

military establishment. . . but there are a number of recommendations . . . which I question at the present time."[211] The Howze Board recommended the organization of two new types of completely air-mobile Army units. These would be air assault divisions, each with 459 organic aircraft, and air cavalry combat brigades, each with 316 aircraft. It also stated a requirement for two new types of special purpose Army air units: air transport brigades, each with 134 aircraft, and corps aviation brigades, each with 207 aircraft. The Board visualized that the air assault division would employ air-transportable weapons together with armed helicopters and fixed-wing aircraft as a substitute for conventional ground artillery. The air assault division would also be allotted 24 Mohawk aircraft in order that it might perform a "very close" support mission for its own troops. Possessing a very high degree of tactical mobility, the air assault division would be able to make deep penetrations into enemy territory, to outflank an enemy by moving over inaccessible terrain and executing quick strike delaying actions, or to serve as a highly-mobile combat reserve for other more conventional divisions. While the air assault division would probably be able to perform most of the missions expected of airborne divisions, it would be particularly valuable for conflicts outside of Europe. The air cavalry brigade would be equipped with a large number of helicopters, and the brigade would be useful for attacks against an enemy's flanks and rear areas and for attacks against hostile armored penetrations, since it would have large numbers of anti-tank weapons--including missiles--mounted on its helicopters. Each air assault division would be supported by an air transport brigade, which would have 54 helicopters and 80 AC-1 Caribou light transport aircraft. The brigade would pick up cargo delivered by Air Force aircraft and carry it forward to the ground troops. Under this concept the Air Force would provide "wholesale" distribution of cargo and the Army air transport brigade would "retail" the cargo to front-line units.[212] Both General Wheeler and Secretary Vance emphasized that the Army would continue to look to the other services for a continued performance of air transport, air supremacy, and air support missions.[213]

"What the Howze Board report is advocating, I think," General LeMay testified before the Howze Committee on Armed Services, "is in effect building another Air Force for the Army. . . . I think the Air Force is capable and has the capability now of performing these tasks for the Army, and I think this should be done rather than build the duplicating capability in another service."[214] LeMay pointed out that there were sound reasons for centralizing the command of tactical aviation. In theaters of operations tactical air forces had always been employed under theater commanders, who had been Army officers. Under these circumstances, tactical air squadrons could have been assigned to local ground commanders, but

experience has shown that tactical aircraft had to be centrally controlled and employed for the performance of priority missions determined by the theater commanders.[215] Both LeMay and the Disosway Board emphasized that the Howze Board had not considered the ability of the Air Force to perform the functions that were recommended for Army aviation. "We can perform anything that the Army wants done with airplanes," LeMay asserted.[216] In hearings before the House Subcommittee on Defense Appropriations, General David M. Shoup, Commandant of the Marine Corps, expressed a fear that helicopters were too vulnerable for the work of active combat. He stated that Marine Corps experiments had shown that helicopters could not penetrate into well-fortified areas. The Marines depended upon attack aircraft, rather than helicopters, for fire support. LeMay agreed with the Marine position: "Anybody," he said, "can shoot down a chopper. It is a poor platform from which to deliver munitions."[217]

After studying the reports of the Howze Board and the Disosway Board, the Joint Chiefs of Staff recommended on 17 January 1963 that the U.S. Strike Command should be directed to test and evaluate the Army's air mobility concept and that the test and evaluation should include the suitability of Air Force capabilities and procedures for the enhancement of the mobility of Army units. While he was generally convinced that the new type units recommended by the Howze Board would significantly increase the Army's capabilities, Secretary McNamara agreed that the proposals were "so revolutionary in character and so closely related to the Air Force Mission" as to demand thorough testing. McNamara thought it possible that the Air Force could use new C-130 and C-141 transport aircraft to lay down cargoes very close to front-line units, thus eliminating the Army's need for many of the Caribou light transports. The Howze Board, moreover, had not clearly indicated how proposed increases in Army air mobility would reduce requirements for line-of-communications forces, such as trucks, pipelines, and depots. McNamara therefore accepted the Joint Chiefs of Staff recommendation that the Army concept should be tested by Strike Command. In a separate but related action, he requested on 16 February the Army and the Air Force to examine jointly the problem of improving Air Force close air support for ground operations. In support of the proposed air mobility tests, McNamara and the Joint Chiefs of Staff recommended that the Army be authorized to add 15,000 men to its fiscal year 1964 strength in order to form a provisional air assault division.[218]

* * * *

Within the Air Staff there was considerable dismay that the Howze Board report could be having such a major impact in the Department of Defense.[219] As the Air Staff got about the business of effecting an Air Force organization for conducting extensive tactical air warfare tests, however, it began to recognize--as Major General Smith pointed out--that the Army through intellectual

activity and organizational structure had brought itself forward while the Air Force had failed to give full considerations to the development of national military doctrine and had become a victim of a "hardening of the categories."[220] In the implementation of its share of the tests that would be drawn up by Strike Command, the Army would be able to use the concentrated resources of its new Combat Developments Command and its Continental Army Forces. Lacking equivalent organizations, General LeMay on 28 February chartered the USAF Tactical Air Support Evaluation Board (TASEB) under the presidency of Major General Fred M. Dean, Vice Commander of the Twelfth Air Force, and instructed it to make recommendations regarding Air Force organization and methods of operation necessary to test and evaluate a STRICOM joint test plan. On 27 April Major General Dean reported that the Air Force possessed no single organization that could carry out the air-ground test and development program. Air Force regulations divided bits and pieces of the necessary capabilities between the Tactical Air Command, the Air Force Logistics Command, the Air Force Systems Command, the Pacific Air Forces, and the U.S. Air Forces in Europe. The Dean Board recommended that the Air Force should take steps to form a working arrangement that would be able to handle the immediate testing problems, but that it should look forward toward the establishment of a permanent organization that would be able to give continued attention to the development of doctrines, tactics and techniques, and equipment in the field of tactical air warfare.[221]

In order to prepare the study that Secretary McNamara desired on the subject of improving Air Force close air support for ground forces, the Army established an Army Close Air Support Board, headed by Lieutenant General John S. Upham, Jr., and the Air Force established an Air Force Close Air Support Board, headed by Major General Dean. The two boards assembled at Fort George G. Meade, Maryland, in May 1963 and prepared a final report that was filed on 15 August. An unclassified appendix in the final report contained conclusions and recommendations regarding the development of tactics, procedures, and techniques of close air support. The boards pointed out that the Joint Chiefs of Staff had never approved a doctrine for air-ground operations or for the utilization of air space over a combat area and that no joint Army-Air Force agency had a continuing mission of examining doctrine and evaluating equipment for close air support. They accordingly recommended that the Departments of Army and Air Force should establish a bilateral air support center which would be able to evaluate and test equipment, examine doctrine, develop new tactics and techniques for close air support, and provide a continuous review of system testing. Although Strike Command had specified responsibilities relating to the development of joint doctrine, the boards believed that this command would have to continue to depend upon the services to develop their respective doctrine, tactics, and techniques. "The Services," the boards concluded, "are charged with those responsibilities and rightly so as

they are intertwined with logistical and developmental functions, which are also responsibilities of the Services."[222]

During 1963 Air Force officers at the Air Staff level also gave close attention to the problems of developing doctrine. In the 1 February 1963 Air Staff reorganization, the Directorate of Plans for Aerospace Plans remained unchanged, but the establishment of the Directorate of Plans and the Directorate of Operations under the Deputy Chief of Staff for Plans and Operations affected the procedures for developing and monitoring the development of Air Force doctrine. Under the new system, the Director of Plans was responsible for formulating, coordinating, and reviewing basic Air Force doctrine and for preparing and disseminating basic Air Force doctrinal manuals. The Director of Operations was made responsible for monitoring and reviewing operational Air Force doctrine, and the responsibility for developing and submitting operational doctrine was assigned to the Tactical Air Command (tactical air operations), the Strategic Air Command (strategic operations), the Air Defense Command (air defense operations), the Military Air Transport Service (strategic airlift operations), the Air Force Communications Service (communications operations), the Air Weather Service (weather operations), and the Air Rescue Service (search and rescue operations). Operational doctrine was defined as "rules, tactics, techniques, and procedures employed by an organization in carrying out a specific function." The responsibility for the performance of Air Force actions looking toward the promulgation of unified doctrine for joint operations by the Joint Chiefs of Staff was also divided between the Directorates of Plans and of Operations: Plans was responsible for monitoring Air Force actions leading toward development of proposed unified doctrine, for formally submitting completed Air Force doctrinal projects to the Joint Chiefs, and for attempting to resolve service divergencies before projects were submitted to the Joint Chiefs; Operations was responsible for determining the appropriate Air Force organization or command to develop doctrine required by the Joint Chiefs, for the direct supervision of the preparation of such doctrine, and for providing Plans with necessary assistance during the formal process of obtaining Joint Chiefs of Staff approval of doctrinal projects.[223]

At the same time that Air Staff responsibilities in doctrinal matters were given clarification, Colonel J. M. Hill, Assistant Chief of the Aerospace Doctrine Division, Air Force Directorate of Plans, was charged to prepare a study looking toward the accomplishment of the Dean Board's recommendation for an organization that would be able to give continuing attention to the development of doctrine, tactics and techniques, and equipment for air warfare. This study determined that within the Air Force there was no "organization, agency or activity with the resources to think and plan ahead in terms of concept and doctrine; to study, evaluate, war game and if necessary physically test new concepts and doctrine." It also proposed that any course of action which the Air Force might take to improve its system for developing doctrine ought to have

the capabilities to initiate basic ideas and concepts; to evaluate, test, and coordinate them before presenting them to the Air Staff; to be free from the press of daily priority staff work which would inevitably detract from the primary mission. If the function were assigned to an office in the Pentagon it would have an advantage in that it would be close to sources of information on national policy and tehcnological development, but such an assignment "would almost certainly result in a gradual involvement in Air Staff activities with a resultant decrease in the ability to develop doctrine." Smith recommended that the Air Force required a doctrinal establishment that would be less extensive than the Army's Combat Developments Command; that would be free from the press of the Air Staff's daily work; and that would have a capability to initiate basic ideas and concepts and to test, evaluate, and coordinate them before presenting them to the Air Staff.[224]

As General McKee began to attack the Air Force organizational problem of providing a test and development establishment, he initially indicated that he intended to form an interim organization that could later be expanded into a separate major air command that would be able to serve as a single agency for the development of concepts and doctrine as well as for long-range, Air Force-wide tactical employment testing.[225] Under existing regulations, the Tactical Air Command had the mission of developing air-ground doctrines and procedures, and the Air Force Systems Command was charged to perform testing and evaluation to establish the technical adequacy and qualitative characteristics of materiel. Making a beginning of the interim organization, General Walter C. Sweeney, Commander of the Tactical Air Command, organized effective on 1 February 1963, the USAF Tactical Air Reconnaissance Center at Shaw Air Force Base, South Carolina, and on 7 May 1963 the Air Force charged the Tactical Air Reconnaissance Center to develop, coordinate, validate, and test tactical air reconnaissance requirements, concepts, doctrine, tactics, and procedures; to test airborne and ground tactical air reconnaissance equipment; and to train aircrews.[226] On 26 July, General McKee informed the Air Force Systems Command that he intended to use the command's resources to establish the 1106th Tactical Test Group at Eglin Air Force Base, under the command of a general officer and with immediate responsibility to Air Force Headquarters. The 1106th would provide Air Force support to STRICOM tests, and it would later be expanded into a major air command.[227] General Schriever promptly protested what he referred to as a preemption of Air Force Systems Command responsibilities. He urged that the establishment of the 1106th from AFSC personnel resources as a separate Air Force organization would disrupt the interface between the Air Force Systems Command and the Tactical Air Command.[228] As a result of Schriever's thinking the Air Force Systems Command designated and organized the 3209th Tactical Test Group at Eglin on 15 August with assignment to its Air Proving Ground Center.[229] On 16 September, however, the Air Force charged the Tactical Air

Command with responsibility for Air Force support of the STRICOM tests, and, accordingly, effective on the following day, the Tactical Air Command established the 4475th Tactical Air Warfare Group at Eglin and the Air Force Systems Command concurrently discontinued the 3209th Group.[230] On 10 October, the Air Force accepted the Tactical Air Command's proposal that the 4475th Group be expanded into the USAF Tactical Air Warfare Center--which would be done on 1 November 1963--but at the same time it called upon the Tactical Air Command to make plans for an eventual consolidation of the Special Air Warfare Center, the Tactical Reconnaissance Center, and the Tactical Air Warfare Center into a single establishment that could handle testing, develop concepts, and conduct training.[231]

In preparation for the tests, Strike Command organized a Joint Test and Evaluation Task Force in September 1953, manned by Army and Air Force personnel and headed by Major General William B. Rosson, as Director, and Brigadier General Andrew S. Low, Jr., as Deputy Director.[232] As approved by the Joint Chiefs of Staff, the STRICOM test plan sought to establish conditions under which a comparative evaluation of the Army and Air Force concepts for improving Army tactical mobility could be measured. Both services refined and defined their concepts: Air Force concepts were set forth on 8 December 1963 and Army concepts were expressed in another publication on 12 December 1963. Both the Army and the Air Force were allotted a period of months to prepare test forces. Taking advantage of additional personnel spaces authorized to it, the Army formed the 11th Air Assault Division (Test) and the 10th Air Transport Brigade (Test) at Fort Benning, Georgia, in February 1964. It also organized an Army Test, Evaluation, and Control Group at Fort Benning under the Army Infantry Center commander: this group was charged to monitor the control test activities and to provide reports and recommendations up through the Combat Developments Command to the Department of the Army.[233] Since the Air Force was allowed no additional strength for the tests, the Tactical Air Command had to accept some reductions in its war-plan commitments. The Tactical Air Command nevertheless organized and assigned the 4485th Test Wing to the Tactical Air Warfare Center effective on 1 February 1964. The wing organized troop carrier and reconnaissance test squadrons, and it took control over detachments of a tactical fighter wing and a communications and control group that were attached to it. Effective on 1 March the USAF Fighter Weapons School at Nellis Air Force Base, Nevada, was also attached to the Tactical Air Warfare Center.[234]

After making a comparison of the Air Force and Army concepts papers for the tests, General LeMay pointed out that there seemed to be a general agreement that the tasks of tactical air power included counterair, interdiction, ground support, and reconnaissance. One point of difference in the concepts was that the Air Force believed that air war requirements would necessitate the use of increasingly sophisticated aircraft which would be able to live in a hostile

environment. LeMay remarked that the Army wanted all the support it could get from the Air Force, but it wanted the support "farther back behind the front lines and farther back into the rear areas." "Now, the Army's position," he said, "is that they want to outline the battlefield and say this is the Army's task. . . . In other words we haul everything by air from the United States right up to the rear of the battle zone, dump it out there. Then the Army will take it and distribute it with their airplanes. Then they say we will do all the interdicting and everything outside the battle zone deep in the enemy territory, and they will do everything over the battle zone." LeMay thought that the Army concept would involve the building of two tactical air forces--one Army and one Air Force--at enormous expense, with duplicate training establishments, logistic support, and procurement organizations. He was confident that there would always be more requirements for aircraft than money to buy them, that it would be wasteful of the nation's resources to build another air force, and that the Air Force could perform required tasks much cheaper than the Army could create, man, and equip a specialized battle area air force.[235] LeMay's remarks summarized the Air Force concepts paper that had been submitted to Strike Command. In this paper the Air Force agreed that the Army should be provided with increased mobility and combat effectiveness, but it urged that the armed services had to be mutually supporting and that flexible Air Force capabilities could perform required air-ground tasks without the need for the duplication of effort inherent in Army proposals.[236] Speaking at a public meeting on 25 May 1964, Major General Gilbert L. Meyers, Commander of the Tactical Air Warfare Center, described the basic Air Force concept on tactical air warfare as being quite simple. "This concept," he said, "is that current Army Divisions with their full complement of combat equipment, teamed with Air Force units with first-line aircraft, provide the optimum in combat strength and staying power, significant increases in mobility, and the ability to engage the most capable of potential enemies. By tailoring weapons, equipment and forces, this flexible combat team can handle threats from enemies of lesser capability."[237]

In a series of field exercises called "Indian River" held on the Eglin reservation from June through September 1964, the Tactical Air Warfare Center worked with elements of the 1st Infantry Division, a standard reorganization objective army division (ROAD), in order to plan, perfect, and train in new ground support techniques. These exercises prepared the air and ground forces for the major STRICOM text exercise, called "Gold Fire I," which was conducted in the Fort Leonard Wood-Camp Crowder area of Missouri between 25 October and 11 November 1964. In all of these exercises, a joint task force commander and joint task force headquarters exercised command and control over the ground and air forces through respective component commanders. Using more than $20 million worth of newly developed experimental equipment, the Tactical Air Warfare Center tested some 40 new concepts, items of equipment, and procedures. In order to

speed the transmission of close-support requests from the front lines, Air Force forward air controllers radioed the air strike requests directly to a direct air support center (DASC) at corps level; intermediate Army unit headquarters monitored the request net, and if they did not cancel the request, the DASC ordered it flown. This procedure had been used by the Ninth Air Force during World War II but it had not been incorporated in postwar air-ground procedures because the Army had undertaken to provide its own organic tactical air request communications facilities. Employed for the first time in field tests, F-4C Phantom 2 jets of the 557th Tactical Fighter Squadron proved able to operate from new aluminum matting forward air strips. Although not to the complete satisfaction of the Army, these world's fastest tactical fighters were able to provide fighter cover for helicopters: four F-4C's were able to fly a generally-circular "pork chop" pattern over the helicopters at holding speeds of 400 knots, and in this pattern one of the fighters was always in a position to attack a hostile target within 14 seconds. When a fifth F-4C was added to the pattern, the attack reaction time could be reduced to 8 seconds.[238]

During Indian River and Gold Fire I the Tactical Air Warfare Center tested the ability of RF-101 and RB-66 aircraft to perform battlefield reconnaissance. Each of the exercises also provided extensive tests of the capabilities of C-130 troop carrier planes. In fact, Goldfire I was a test of the concept that some 10,000 men and equipment of a standard ROAD division could be moved a distance of 2,200 nautical miles and landed ready to fight on 2,000-foot dirt strips in a combat area. While the troops were in action, a new movement control center concept was evaluated. In this concept a forward assault airlift coordinating officer was assigned to battalion-sized Army units to relay mission planning information back to the airlift task force control center at the same time that the battalion was clearing its request for emergency resupply through Army channels. As was the case with the DASC close support procedure, the airlift force was able to prepare for a resupply mission while Army channels were determining whether it needed to be flown. The C-130's also tested new supply delivery techniques. In a low altitude parachute extraction system (LAPES) cargo pallets were snapped out of the C-130's as they skimmed across a cleared zone. In a parachute low altitude delivery system (PLADS) loads were discharged into very small clearings from 200-foot altitudes. A ground proximity extraction system (GPES) permitted the C-130's to discharge their cargoes by flying low and engaging a trailing hook in a cable stretched across a drop zone. A new rough-terrain loader (RTL) hastened unloading of C-130's that landed in forward airstrips. In a brief summary of Gold Fire I, Major General Meyers stated: "We effectively utilized the C-130 in forward operating areas and have demonstrated we can fly escort missions for assault helicopters flying in the combat zone."[239]

At the same time that the Air Force was testing its concepts,

the Army commenced brigade-size tests of its 11th Air Assault Division and 10th Air Transport Brigade in May 1964. As was the case with Indian River, the Army's Air Assault 1 tests were unilateral exercises conducted by the Army Test, Evaluation, and Control Group under the review of the Army Combat Developments Command. Between 20 September and 15 November, the Army additionally tested the 11th Air Assault Division in field exercises called Air Assault 2 in the Fort Jackson-Fort Bragg areas of North and South Carolina. While STRICOM observers were present at Air Assault 2, the Army Test, Evaluation, and Control Group and the Combat Developments Command maintained control of the tests because of a reasoning that the Army was not yet certain whether its concepts were sound, how far it might want to go with them, or what form of organization and types of air vehicles it might ultimately need.[240] Under these circumstances STRICOM made the official report and recommendations on Gold Fire I to the Joint Chiefs of Staff, and the Army's Combat Developments Command reported results of Air Assault 2 to the Army Chief of Staff who made the information available to the Joint Chiefs of Staff. While joint tests of the Army and Air Force concepts were to have been made in March 1965, the Army recommended that sufficient data had been accumulated on the air-mobile concept and that plans for further tests should be cancelled.[241]

While he had considered the Howze Board report to be fresh and challenging, Secretary McNamara had not agreed that the Army should be given a combat area air force. He had demanded cost effectiveness comparisons between the Army Caribou and the Air Force C-130 and between the Army Mohawk surveillance aircraft and the Air Force tactical reconnaissance system. These comparisons went against the Army: the Mohawk was deleted from the Army's fiscal year 1965 budget and proposed purchases of Caribou I light transports were severely reduced.[242] While he was sympathetic to the idea that increased numbers of helicopters could improve the Army's tactical mobility, General Wheeler appeared skeptical of the Howze Board's willingness to substitute aerial firepower for all-weather artillery support. He also suggested that the Army would probably not require very many air assault divisions: they would be much more useful against relatively unsophisticated defense environments such as might be found in Southeast Asia than against the sophisticated air and missile defenses that existed in Europe.[243]

Early in 1965 the Joint Chiefs of Staff agreed that sufficient data was at hand to permit an evaluation of the air mobility concept and cancelled further tests. Early in 1965 Secretary McNamara also directed the Army to make a comprehensive review of its future requirements for aircraft, and on 19 February the Army released contracts for the program definition phase of an advanced aerial fire support system which was conceived to be an armed helicopter that would have a speed in excess of 200 knots. As late as February 1965 the 11th Air Assault Division was scheduled to phase out at the end of the fiscal year, but in March the Joint Chiefs of Staff--now

including General John P. McConnell as the new chief of staff of the Air Force--completed their analysis of the field test results, and in June Secretary McNamara, on the basis of Joint Chiefs of Staff recommendations, authorized the reorganization of an existing infantry division at Fort Benning, Georgia, as the 1st Cavalry Division (Airmobile). Shortly after it was formed up, the new division was deployed to Vietnam. In comparison with the 3,200 ground vehicles and 101 aircraft in a standard 15,500-man ROAD division, the air mobile division would have 15,700 men, 1,750 ground vehicles, and 434 aircraft, indlucing 283 UM-1 Iroquois utility helicopters, 95 light observation helicopters, 50 CH-47 Chinook transport helicopters, and 6 OV-1C Mohawk fixed-wing observation aircraft. The Army also planned that the new advanced aerial fire support helicopters would be incorporated into the air mobile division if they proved practicable for production. With the 434 organic aircraft, the new air mobile division marked a rapid expansion of Army air power, which had grown from the 10 aircraft in World War II triangular divisions, to 26 aircraft in Korean war divisions, to 49 in Pentomic divisions, and to 101 in the standard ROAD divisions.[244]

* * * *

One of the results of the studies of the Air Force and Army plans for enhancing the mobility and fire support for ground troops was a direction of attention to the roles and missions definitions included in JCS Publication 2, "Unified Action Armed Forces," to the category of military thinking described as "doctrine," and to the status of existing joint doctrine. The Army offered a consistent position that the augmentation of its organic aircraft would not change the assigned roles and missions. "Army aviation," stated Lieutenant General Dwight E. Beach, Commanding General of the Army Combat Developments Command, "is part of land power. It provides us with a better means to do what armies have always had to do since time immemorial--close with and destroy the enemy, or break his will and force his surrender. Army aviation is not air power in any sense of the word, since air power involves air-to-air combat, the gaining of air superiority, air strikes deep in the enemy rear with strategic objectives, interdiction of the battle area, close air support by high speed tactical aircraft, strategic airlift of Army and other forces. Army aviation is not any of these."[245] The Air Force, on the other hand, saw the build-up of Army aviation--particularly the armed helicopters, the battlefield surveillance capabilities, and the very heavy cargo helicopters--as both a violation of assigned roles and missions and as a costly duplication of Air Force capabilities.

In an effort to play a role as a mediator, General Adams at Strike Command proposed that both the Army and the Air Force were tending to infringe on each other's assigned missions. Adams admitted

that the arming of Army aircraft contravened existing unified doctrine, but he acted under Secretary McNamara's instructions and authorized that such aircraft should be tested. Where the unified doctrine did not clearly comprehend other points that might be at issue, General Adams proposed that Strike Command would make tests and devise findings that would be forwarded to the Joint Chiefs of Staff for consideration as joint doctrine. In a definition of joint terms appended to its Army Mobility Test Plan, Strike Command defined "doctrine" as: "That which evolves from a series of actions, tests, or studies which are repeated, revised, modified, or rerun in sufficient numbers and over a sufficient period of time to prove the validity of the thinking which forms the basis of the doctrine."[246] Adams organized a Doctrine and Requirements Division within the STRICOM J-5 Plans Directorate and charged it to develop "joint doctrine and operating procedures with the objective of bringing doctrines of the several services into consonance for deployment and employment of land, sea and air forces assigned to the USSTRICOM."[247] In an interview, Adams conceived that the preparation of doctrine involved the preparation of preliminary papers by a "thoroughly integrated staff;" the solicitation of service views on the preliminary papers; the testing of proposed doctrine in field exercises; and finally the submission of the proposed doctrine to the Joint Chiefs of Staff for approval as joint doctrine. He concluded his remarks with the observation that doctrine was "not the outpouring of a genius," but rather the consensus of a number of individual opinions and talents.[248]

Even though the U.S. Strike Command was empowered in its terms of reference to recommend joint doctrine to the Joint Chiefs of Staff, the Air Force conceived that joint doctrine would be an outgrowth of basic service doctrine that would be prepared within the several services. As issued on 20 March 1963, Air Force Regulation 1-1, Aerospace Doctrine: Responsibilities for Doctrine Development, described basic Air Force doctrine, operational doctrine, and unified doctrine. As already seen, the Air Force delegated its responsibility for negotiating doctrine in most joint fields to the Tactical Air Command. In coordinating doctrine with interface agencies in the other services, however, the Air Force developing commands were instructed not to accept any proposals that would conflict with basic Air Force doctrine.[249]

As it was charged to do under Air Force Regulation 1-1, the Tactical Air Force undertook to work in coordination with the Army Combat Developments Command to develop mutually agreeable joint doctrinal manuals for submission to the Joint Chiefs of Staff. Toward this end the Tactical Air Command completed the draft of a proposed joint airborne operations manual and circulated it to interested commands for comments and recommendations. When he received a copy, General Adams recognized the need for the manual but he informed General Sweeney on 13 June 1963 that STRICOM would have to serve as the focal point for all jointly developed doctrine pertaining to joint airborne operations. He requested Sweeney to

forward all of the working papers on the draft manual to STRICOM. "To take full advantage of the effort expended in preparing the draft manual," Adams wrote, "it is logical that U.S. Strike Command assume responsibility for the review, editing, joint testing and evaluation, preparation of final draft and submission to the Joint Chiefs of Staff for approval."[250] In separate letters to General Adams the commanders of the Tactical Air Command and the Combat Developments Command both pointed out their service responsibilities for developing joint doctrine. General Sweeney also forwarded the correspondence to General LeMay with a recommendation that he secure a clarification of CinCSTRIKE's doctrinal responsibilities.[251]

In the clarification of doctrinal responsibilities, the military services retained the primary responsibility for the development of proposed joint doctrines, but STRICOM was charged to develop and forward appropriate recommendations to the Joint Chiefs regarding doctrines and techniques for the joint employment of forces assigned to it. As a result of the changed terms of reference, Strike Command modified its methodology for making doctrinal recommendations, providing that perfected doctrinal positions would be circulated to the services and to the unified commands as a last step before they were submitted to the Joint Chiefs of Staff.[252] In considering changes to existing doctrine or in the development of new joint doctrinal recommendations, the Strike Command additionally proposed that it would adhere to three basic principles: joint doctrines would attain a maximum integration of combat power, a maximum freedom of action for service components, and joint command and control would be employed in order to attain unity of effort, to facilitate operations of components, and to effect economies of force.[253]

As soon as the responsibilities of the military services for recommending joint doctrines were clarified, the Tactical Air Command and the Combat Developments Command seriously addressed themselves to efforts to secure agreements that would be mutually acceptable.[254] Since the Air Force was the responsible service for coordinated development of a unified doctrine for air defense of oversea combat areas, the Tactical Air Command's Directorate of Plans drew upon the basic guidance of the LeMay-Decker agreement for the formulation of a doctrinal paper. As reviewed and amended by the other services and the unified commands, this paper was accepted by the Joint Chiefs of Staff who issued it in official use print as JCS Publication 8, Doctrine for Air Defense from Oversea Land Areas, on 23 May 1964.[255] Also active in the doctrinal field, the Air Defense Command, in coordination with the Army Air Defense Command and the Navy Forces for Continental Air Defense, matured a doctrinal statement that was subsequently published as JCS Publication 9, Doctrine for the United Defense of the United States Against Air Attack, on 9 September 1964.[256]

As the Air Force began to move toward a recapture of the initiative in its areas of military responsibility, Major General Page faced the fact that eight Air Force doctrinal manuals were nine

years old and that the basic Air Force doctrinal manual was four years old. The Army's equivalent basic doctrinal manual was one year old and the Navy's equivalent publication was one and a half years old.[257] As will be seen a number of false starts were made in the effort to revise the Air Force doctrinal manuals after 1959, and in each case the work was laid by pending clarifications of Department of Defense policy and strategy. In the spring of 1963, the Air Force Plans Directorate again undertook work designed to consolidate and revise the Air Force's nine doctrinal manuals into a single volume. This plan, however, soon gave way to another project which involved the preparation of an entirely new basic doctrinal manual, reflecting changing considerations of national policy and the characterisitcs of military aerospace forces that had been incorporated in the report of Project Forecast. A draft of this manual was completed in the winter of 1963-64, and Air Force Manual 1-1, United States Air Force Basic Doctrine, was published on 14 August 1964.[258] Citing the fact that the basic Air Force doctrinal manual was in preparation, the Air Force Directorate of Operations listed a companion series of Air Force operational doctrine manuals that would be prepared by the major commands.[259]

More convinced than ever on 8 July 1963 that one of the central problems facing the Air Force lay in its need for an organization along the lines of the Army's Combat Developments Command, Major General Dale O. Smith commented: "I suspect that people in the Air Staff will say that Project Forecast will solve the doctrinal problem." Smith could not agree that any ad hoc solution could solve a problem or provide the novel, dynamic, and well presented studies that the Air Force required as a basis for its forward projections.[260] Although the challenge of the Army's air mobility concept caused the Air Force to review lessons on the unity of air power, both the Air Staff and the Tactical Air Command selected to make interim responses to the organizational problem. In its Combat Developments Command, on the other hand, the Army appeared to have established an organization which could think and plan ahead in concepts and doctrine; which could study, evaluate, war game, and physically test new concepts and doctrines; and which could prepare novel, dynamic, and well-presented studies.[261] "The Army has done, I think," reported Assistant Secretary of the Army W. M. Hawkins in March 1964, "a really good thing in creating their Combat Developments Command . . . . I believe it is just now coming to full fruition."[262]

CHAPTER 14

TOWARD THE FUTURE: NEW DIRECTIONS IN RESEARCH AND DEVELOPMENT

1. Defense Rationale on Science and Technology

"I think all of us fully realize," observed Lieutenant General Donald L. Putt, Air Force Deputy Chief of Staff for Development, in May 1956, "that we are living today in an era of vigorous scientific and technological revolution unprecedented in the history of mankind," Confronted with a "ruthless and determined aggressor foe" who understood the importance of technological superiority, the United States faced the difficult and costly necessity, as Putt saw it, of simultaneously performing research and development work on at least four generations of weapons: "First, model improvements of weapons in production and in inventory; second, scheduled development of the next weapon system to go into production; third, pursuit of those technical developments of new equipment and techniques which will form the building blocks for the next succeeding generation of weapons; and, finally, basic or fundamental research to acquire new knowledge to push back the scientific frontiers, and remove the barriers to still more advanced and effective weapons."[1]

The views expressed by Lieutenant General Putt were generally shared within the Department of Defense. In 1958 and again in 1959, Secretary McElroy pointed out that the United States, the Soviet Union, and the world were "moving rapidly into a period of increasing danger." "It is the inevitable consequence," McElroy said, "of the explosive progress in science and technology which is making available a succession of weapons of ever-increasing destructiveness and speed of delivery."[2] Faced with the critical threat that the Soviets had shortened leadtime in the development of new weapons and appeared willing to afford duplicate prototypes of new weapons, General White wished to see an acceleration of research and development in the United States. "We in the Air Force, and I think all of the military services," he stated, "always want to see technology move faster because we realize that it is from the area of new developments that our lifeblood stems." Writing anonymously in 1961, two Air Force military analysts asserted: "Technology wins wars. . . . Technology paces strategy and determines its nature. Strategy can place demands on technology in order to meet momentary requirements. But over the long haul, changes in strategy came primarily from technology."[3]

Even though a nation might have the greatest technology in the world, such a capability would be useless for military purposes unless it were translated into useful weapon systems. These processes demanded an increasingly close association between science, industry, and the Air Force. Lieutenant General Putt observed:

"An alliance, or marriage, has occurred between science and arms, between the scientists and the military. New weapons devised by science are bringing about significant changes in tactics and strategy. Conversely, changes in tactics and strategy required by changing world conditions generate demands for new weapons to meet new strategies. The interaction between science and strategy is continuous."[4] Although the Air Force had always relied heavily upon industry for research and development, the Air Force had built up a very substantial in-house organization that was able to evaluate and manage research and development in the aeronautical field. After World War II, however, the Air Force faced tremendous requirements in new fields--ballistic missiles, space, electronics--where it had few in-house technical capabilities.[5] In the era of technological explosion and cold-war conflict, new organizations for scientific engineering and technical management were brought into being in the form of non-profit corporations.

The oldest of the non-profit companies was the Research and Development (RAND) Corporation which was initiated in 1945 with some five people to provide the Air Force a full-time, competent, and objective group which could analyze advanced technology; war game and evaluate new systems that were possible from advanced technology; determine the effects upon the Air Force; and recommend the introduction of new systems into research and development. From the five original people, the RAND "think factory" grew to some 900 people by 1960 and continued to provide conceptual studies to the Air Force and other defense agencies.[6] Requiring a similar though smaller scientific advisory organization closer at hand in July 1958, the Air Force Deputy Chief of Staff for Development sponsored the establishment of Analytic Services, Inc. (ANSER) in Alexandria, Virginia. With a professional staff of approximately 40 persons, ANSER was able to provide quick evaluations of proposed weapon systems or proposed solutions to immediate technical problems involved in developmental planning.[7]

In view of its internal aeronautical knowledge, the Air Research and Development Command's Aeronautical Systems Division at Wright Air Force Base was able to provide sound planning, evaluation, and management in the aeronautical field of systems acquisition. As an unprecedented organizational approach to the revolutionary challenge of ballistic missile technology, the Air Force in 1954 drew upon a special technical support contractor--the Guided Missile Research Division of the Ramo-Wooldridge Corporation and its successor Space Technology Laboratories, which was colocated with the Air Force Ballistic Systems Division at San Bernardino, California. The search for a long-term management organization for military space led to the establishment of the Aerospace Corporation in June 1960 in proximity to the Air Force Space Systems Division in Los Angeles. The MITRE Corporation had its beginning in 1957 when the Air Defense Systems Integration Division (ADSID) was established at

Hanscom Air Force Base, Massachusetts, and contracted with the Massachusetts Institute of Technology's Lincoln Laboratory for electronic technical assistance. When the university contract proved unsuitable, the MITRE Corporation was established in 1958, and it supported ADSID's successor Electronics Systems Division.[8]

By relying upon the non-profit corporations for engineering and technical direction of certain systems development, the Air Force was able to speed the translation of technology into aerospace weapon systems. The procedure also reduced the need for defense contractors to build up and maintain self-sufficient scientific management capabilities, thus over-bidding and fractionating scarce national technical manpower. As a general rule, however, industrial corporations did not like the fact that the non-profit corporations received contracts as prime weapon system contractors, and Congress suspected that the corporations provided a means for evasion of the classified Civil Service salary schedules. Despite these criticisms, General Schriever believed the non-profit corporations to be very effective. "From where I sit as Commander of the Systems Command," he stated, "I would not know what I would do if I did not have this capability. I just could not get the job done. It is just that simple."[9]

Especially in aeronautical fields the Air Force relied strongly upon proposals from industry to provide the most feasible concepts for new weapons.[10] Some corporations, such as Lockheed Aircraft (which spent over a million and a half dollars on studies and testing of a supersonic transport and another half million dollars on an airborne early warning plane), used company funds for research and development in the expectation of developing an item that would be bought by the Armed Services, but the costs were so high and the frequency with which they had to enter competitions to maintain volume business was so great that few corporations could tie up their own funds for prolonged periods. Recognizing this problem, the Armed Services usually contracted for feasibility studies and even design proposals. To remain solvent, however, aviation corporations had to achieve repeated successes in design competitions, and the most successful corporations had the engineering staffs that enabled them to invent devices or discover articles that would be useful in filling a military role.[11] When asked about the origination of ideas for new weapon systems, Dr. Herbert F. York, while serving as Director of Defense Research and Engineering in 1959, recognized that the individual Armed Services probably got many of their new ideas from industrial organizations.[12] General Schriever noted that Air Force general operational requirements were established by a combination of operational need and technological opportunities. "I might say . . . in terms of our inputs," Schriever said, "that we constantly have industry studying and making proposals to the Air Force and these are part of the inputs and the establishment of general operational requirements."[13]

At the same time that the pressure of the Soviet technological threat brought increasingly close relationships between scientists and the military, the Eisenhower Administration maintained a favorable attitude toward the pursuit of parallel lines of development. Established in 1955 to determine means of reducing leadtime in the weapon systems cycle, an ad hoc committee headed by Deputy Secretary of Defense Reuben B. Robertson, Jr., recommended in July 1956 that parallel development should be accepted among other things as a definite policy for speeding development.[14] Parallel development and production of projects and systems designed for the same general mission was recognized as being very costly. Not only were there duplicative development costs, but duplicative production lines had to be set up and tooled, and the economics of large-scale, repetitive production were lost, thus significantly increasing the cost per unit article. Duplicative pipelines of spares and unique support equipment had to be established in the logistics systems, and, finally, duplicative sets of obsolete spares and support equipment had to be disposed of when the weapon systems were phased out of the operational inventory. In the 1955-58 time period, however, the Air Force and the Navy each had two tactical fighters under development. Even though special requirements appeared to necessitate different aircraft, the House Appropriations Committee noted in its report on the 1958 appropriation bill that the Navy's F-4H-1 and F-8U-3 aircraft had approximately the same characteristics and demanded that the Navy take prompt action to determine which aircraft should be placed in production. The Navy eventually chose the F-4H-1, but by the time the F-8U-3 development was terminated it had cost over $136 million. The Air Force simultaneously developed the F-105 and the F-100B (redesignated as the F-107A) and ultimately terminated the latter at a cost of $85 million.[15] As has been seen, President Eisenhower and Secretary Wilson relied upon budgetary ceilings that kept the Armed Services "running a little hungry" to insure that lesser priority projects would be discontinued. Nevertheless, the need to select between two prospective systems often made for an agonizing experience. "It is the hardest thing in the world," commented Lieutenant General C. S. Irvine, Air Force Deputy Chief of Staff for Materiel in 1959, "to stop a program."[16]

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When the Kennedy administration was taking office early in 1961, the Air Force expressed its views on the future and its future requirements in some detail. On several occasions, Secretary Zuckert stated the basic conception that "for every weapon in the inventory, another must be in development and a third in idea."[17] "Future technological growth," wrote Major General Bruce K. Hollaway, Air Force Director of Operational Requirements, "will continue to accelerate at an exponential rate."[18] In the development of new weapon systems, General LeMay stated that Air Force belief that "we must push the

state of the art right up to the limit; that we cannot go into battle with anything less than that."[19] Making a philosophical approach to the phenomenon of technological breakthrough, Colonel Francis X. Kane, Special Assistant to the Air Force Deputy Chief of Staff for Development, demonstrated that the "onrush of technology" did not spontaneously produce technological breakthroughs. Instead, revolutionary advances had progressed in recognizable steps: first, the intellectual breakthrough and the identification of theory; second, the invention which translated theory into devices; third, the policy breakthrough which involved the decision to translate an invention into materially useful products; and, fourth, the engineering breakthrough, which was the step wherein the invention chosen by management was produced in numbers. Colonel Kane believed that the key step was the policy breakthrough, which involved the problem of evaluating--in terms of costs and ultimate utility--the interrelationships of a growing number of inventions.[20] Under the Defense Reorganization Act of 1958 the Secretary of Defense and the Director of Defense Research and Engineering had been given responsibility for the supervision of all research and development programs in the Department of Defense, and were thus the agents who would determine policy breakthroughs. By the 1958 act, the Secretary of Defense was additionally empowered "to assign, or reassign, to one or more departments or services, the development and operational use of new weapons or weapons systems."[21] In the words of Congressman Vinson, Congress intended the Defense Reorganization Act of 1958: "To place defense research and engineering under one responsible official with the power to stop unnecessary duplication, speed up essential work, and eliminate unnecessary competition or rivalry."[22] In the preparation of the defense budget for fiscal year 1960, Secretary McElroy directed the shifting of funds for test and evaluation that had formerly been included in the procurement appropriations to the research and development budget.[23]

In his initial submission of questions requiring answers in March 1961 and in his subsequent expansion of the questions into projects which required investigation, Secretary McNamara gave much attention both to defense organization for research, development, test, and engineering and to specific projects that were underway. In his search for rational explanations of why things were being done as they were, McNamara brought many civilian analysts from non-profit corporations into the Department of Defense, and the analysts, who had formerly advised military leadership, now assumed basic positions of responsibility. Within a few months, Secretary McNamara, Deputy Secretary Gilpatric, and Dr. Harold Brown, who became Director of Defense Research and Engineering, put together a new rationale toward research and development which was markedly different from that of the Eisenhower administration.

The new Department of Defense thinking on the organization of research and development began to become evident on 6 March 1961 when Secretary McNamara assigned primary responsibility for

development of military space projects to the Department of the Air Force. In regard to this action, Deputy Secretary Gilpatric explained that it was "the policy of the Department of Defense to make use of unique technical capabilities within the Department of Defense wherever they exist." In the past, the using service had been charged to conduct the research and development on a weapon system: this practice would be continued in cases in which only one service had a unique requirement, but where projects were of tri-service interest there would be an integration of responsibilities in one service in order to avoid the emergence of large, multiple management organizations.[24] Speaking personally, rather than as Chairman of the Joint Chiefs of Staff, General Lemnitzer opposed the policy. He urged that the service that would use a weapon system should develop it in order that it might concurrently organize and train units to employ the operational system.[25]

In the past the Air Force had also believed that the service that would employ weapons should develop them, but it was willing to see a re-evaluation of the concept. In the infancy of aviation, for example, the centralization of aircraft research and development in either the War or the Navy Departments might have been valid from an economic standpoint, but it had been impossible because there was no central executive control of the two departments below the President. In World War II mass production of aircraft would have swamped one management establishment. In 1961, however, a new situation might well exist. The science of aeronautics was relatively mature. The role of pure aeronautics in military affairs was firmly established. The airframe and airbreathing industries were in the descendency, and the unit and dollar volumes of military aircraft development were waning. Development costs nevertheless constituted an increasing portion of total aircraft program costs, due in some measure to the limited numbers of modern aircraft that were being procured and the continued large investments in departmental development organizations. "Careful study," the Air Force pointed out, "might determine that many advantages would accrue from consolidation of Department of Defense aircraft development when the unit or dollar volume of such reaches a level which would no longer justify the continuation of separate departmental organizations for such tasks."[26]

Based upon careful study of the text and legislative history of the Defense Reorganization Act of 1958, Secretary McNamara reached his own conclusions as to how defense research and development should be managed. Congress clearly intended that the military services and departments should not be merged. McNamara asked himself, "What is essential--what is the essence of a military department?" And he concluded: "The essence of a military department is the major actions it is taking to prepare forces for its specified mission." While research and development of new weapons was a major action looking toward the preparation of forces to accomplish a specified mission, Congress clearly expected the Secretary of Defense to

eliminate duplication in research and development. Where a new weapon might be used by two departments, the law thus provided that the Secretary of Defense could choose between the departments and make either of them responsible for the development of the new weapon. In regard to the development of a new aircraft, McNamara reasoned: "I feel I have the authority to assign the research and development responsibility for that weapon to either the Air Force or the Navy, but not to the Army, because to assign the responsibility for research and development to the Army is a move away from a separate Air Force, and this seems to me to be contrary to the intent of Congress."[27]

Over the years before 1961 the Air Force and the Navy had used as many as 50 versions of the same common aircraft, especially reconnaissance, transport, training, utility, and rotary-wing aircraft. Among combat types, the Navy had bought the FJ-Fury, a version of the F-86 Sabre, and the Air Force had procured the B-66 as a version of the Navy A3D. The chief difficulty in commonality was the fact that the Air Force, operating from land bases, could employ higher-performance planes that were generally heavier than could operate from the Navy's aircraft carriers.[28] Despite this problem, McNamara made sustained efforts to eliminate parallel development projects and systems that he considered designed for the same general mission. He believed that parallel development and production of weapon systems was a major source of waste, involving duplicate development costs, duplicate production lines and higher unit costs, duplicate stocks of spares and support equipment. After studies in 1961 which have been noted, McNamara directed the Air Force to terminate its F-105 procurement and to buy F-4H (later F-4C) tactical fighters, which would become the basic tactical fighter for both the Navy and the Air Force. He assigned supply management responsibilities for all spare parts and components peculiar to the F-4H to the Department of the Air Force and required the Air Force and the Navy to develop joint plans for the maintenance of the aircraft.[29]

In response to a Tactical Air Command requirement for a follow-on tactical fighter put forward in 1959, the Air Force had begun the design of the Tactical Fighter-X, or the TFX, during the last year of the Eisenhower administration. The system development requirement called for a short take-off and landing aircraft that would have an extended unrefueled ferrying range, high speed at high and low altitudes, and an ability to penetrate heavily-defended enemy environments. Early in 1961 the TFX project was taken under review by the Office of Secretary of Defense, and on 14 February Dr. York, who was then Director of Defense Research and Engineering, ruled that the TFX would be developed by the Air Force as a triservice tactical fighter, specifically designed to meet the requirements of the Army, Navy, Air Force, and Marine Corps. The Air Force already planned to use a variable-sweep or a variable-geometry wing on the TFX which would permit the plane to fly at top supersonic speeds or

to fly at low speeds with the wing extended, and the Department of Defense believed that new developments in aerodynamics and engine performance would permit the development of a tactical fighter which could operate from aircraft carriers as well as from shorter and rougher runways than normal and still carry the heavy conventional ordnance loads that would be needed in limited wars. At McNamara's direction the Army, Navy, and Air Force listed their requirements for such a tactical fighter, and a committee of Defense and service representatives undertook to reconcile differences.[30]

The Army and the Air Force reached an agreement on desired aircraft characteristics fairly easily, but the Navy was pessimistic about the project of a triservice fighter. Fundamentally, the Air Force wanted to press the state of the art in developing the advanced fighter and visualized a longer and heavier plane than the Navy could accept for carrier-based employment. While the negotiations dragged on through the summer of 1961, McNamara was encouraged by the Air Force's success in using the Navy F-4 in place of the F-105. After reviewing final proposals which showed that a TFX could be developed in two versions but with a high percentage of common parts, McNamara expressed his opinion on 1 September 1961 that the development of a single aircraft of genuine tactical utility to both services was technically feasible. He therefore directed the Air Force, in collaboration with the Navy (to include Navy participation on the source selection board), to develop plans for the management and funding of the TFX program. He further ordered that changes to the basic Air Force tactical version of the aircraft needed to accommodate it to Navy use would be held to a minimum.[31]

At the same time that the triservice fighter was in its predevelopment stage, Secretary McNamara was evaluating other outstanding research and development projects. Beginning with a Bell Telephone Laboratories study in 1955, the Navy had brought forward the concept of a fleet air-defense system designated Eagle-Missileer, which included a large, subsonic, long-endurance, radar-equipped Missileer aircraft that would be armed with high-performance, air-to-air, long-range Eagle missiles. The system had originally been conceived for fleet air defense, but the Navy broadened the concept of Eagle-Missileer to include its use in the defense of a Marine amphibious objective area, especially in the early phase of such an operation before ground control for other type air superiority systems could be brought ashore. The Eisenhower budget for fiscal 1962 did not include funds for the whole system, but $57.7 million was included for continuing development of the Eagle missile in the expectation that it could be employed on some other aircraft. In his review of Eagle-Missileer, McNamara concluded that the system would ultimately cost $3½ billion, that the Navy was developing the Typhon ship-to-air defense missile, and that the triservice fighter would be more profitably developed to meet the air defense needs of the Navy and the Marines. He accordingly cancelled the development of Eagle, thus ending Eagle-Missileer.[32]

The Office of the Secretary of Defense also gave close attention to the Air Force's aircraft nuclear propulsion (ANP) program. This program had begun in 1945 when the Army Air Forces had directed the old Air Technical Service Command to investigate all possible military applications of nuclear energy, but study projects in cooperation with the Atomic Energy Commission were very modest until 1950. Even then, ANP was subject to fluctuating support. As had been seen, early planning for the B-70 visualized it as an aircraft with long-endurance nuclear-cruise power and a chemically-fueled supersonic dash capability. In 1957 the Air Force had recognized that such a weapon system was beyond the current state of the art and that the effort to set up ANP "requirements" that were apparently beyond the realm of technological possibility had in fact resulted in opposition within the scientific community.[33] ANP was continued as an experimental project, and it received close scrutiny in 1959. At this time General White visualized that a very long endurance aircraft with consequent very long range, which would be equipped with air-to-surface missiles, would vastly complicate hostile defenses since it would compel an enemy to guard against attack from any direction. As a result of the long study, two types of nuclear power plants showed technical feasibility: the first was a direct cycle which would provide direct heat to a turbo-jet engine; the other would be an indirect cycle that would transfer heat to an engine through pipes filled with liquid metal. Either installation would require heavy shielding to protect the crew against radiation. The direct air cycle system could have produced a flyable aircraft, but it would not have been a very good plane and the system would also have exhausted some small amounts of radioactive matter into the atmosphere. After studying ANP in 1959, the Joint Chiefs of Staff took the position that there was no specific military requirement for a nuclear-powered aircraft, but they noted that they would like to see a research project continued in the hope that a militarily useful aircraft could be developed. General White agreed that a nuclear aircraft was not "vital" and was not ready for full weapon system development. Looking back at the ANP program in March 1960, Lieutenant General R. C. Wilson, Air Force Deputy Chief of Staff for Development, thought that the Air Force probably should have concentrated earlier on the direct cycle engine that could have provided a not-very-good but nonetheless flyable aircraft. By this time, however, the Air Force had missed the chance to have an early-flying nuclear powered plane, and Wilson thought that it would be just as well to try for what would be a more useful plane.[34]

Air Force research and development expenditures on ANP were never very much in any one year, but through fiscal year 1961 it had expended $511.6 million on the project, and the Atomic Energy Commission had invested a further amount which brought the total expended on ANP to approximately $1 billion. On the basis of a study provided to him by the Director of Defense Research and Engineering on 20 March 1961 Secretary McNamara judged that the

ANP project had suffered from "chronic optimism," that it would cost an additional $750 million to $1 billion to complete, and "that there appeared to be little military potential to the present development." "While it is true," McNamara stated, "that with an even larger effort some kind of nuclear-powered flight could have been accomplished by now, the aircraft involved would have had little or no military value. It would almost inevitably have been subsonic and limited to an altitude of about 35,000 feet." McNamara was unwilling to accept the proposition that the nation which first achieved nuclear-powered flight would attain considerable world prestige. "In any event," he added, "there is a real question as to whether defense projects should be pursued solely to provide prestige value." Based upon McNamara's recommendation, President Kennedy announced on 28 March 1961 that the military ANP project would be cancelled and that work on the nuclear powerplant and airframe would be abandoned. The Atomic Energy Commission would continue to carry on scientific research in the fields of high temperature materials and high performance reactors.[35]

The Air Force was shocked by the sudden cancellation of the ANP project and gave a good amount of attention to what had gone wrong. In his assessment of ANP in May 1961, Under Secretary of the Air Force Joseph V. Charyk noted that the Air Force had felt it necessary in order to attain support for the project to spell out detailed military requirements which really did not make too much sense in terms of the state of the art. "I believe," Charyk said, "that some of our major errors have been in attempting to hold back development until we could completely spell out a military requirement. This has led to two difficulties. On the one hand . . . we have been very late in starting because we could not completely spell out the details of a potential military system so that when we began the actual development, we were behind. We had to accelerate the program. We had to conduct the program on a high concurrency, expensive basis. At the other end of the spectrum in order to permit development to proceed we have attempted to create a military requirement. . . . As a result we brought into being a fairly massive, expensive program which . . . we were not in a position to exploit as a full-scale weapon system development."[36] Later on, in 1963, General LeMay stated that the Air Force had "not lost faith in atomic power." "The trouble is that," he continued, "while we can build an atomic powerplant that will power an airplane . . . the power we are going to get out of the powerplant is not competitive with what we can do with chemical fuel, and if they are not competitive against the enemy threat, you are just not in business."[37]

As has been seen, the Air Force generally agreed with Secretary McNamara's decisions to defer development of the mobile Minuteman mission in the spring of 1961 and his later decision to cancel its development. The mobile Minuteman cost substantially more than the silo-based model, and the concept of the mobile Minuteman had had

more validity when it had seemed that the Soviets might have fielded far more intercontinental missiles than the United States.[38] The Air Force was less prepared to accept McNamara's opinion that the ANP project had suffered from "chronic overoptimism." As previously noted, General LeMay took abrupt objection to McNamara's conclusion that many of the subsystems planned for the RS-70 were technically infeasible and certainly beyond the state of art. During 1962 McNamara also became convinced that the "cost history" of the Skybolt missile was "particularly poor."[39] Each of these case histories evidently added to McNamara's assessment of failings in the research and development effort of the Defense Department. By early 1962 McNamara believed that the old traditions of cost-plus-fixed-fee contracts had created a psychological situation wherein neither the services nor their contractors had paid much attention to costs or cost estimating. He believed that if sufficient attention were given to the design of a weapon system it could become a low-risk, realistically-costed undertaking that could be developed on a fixed-price, incentive-type contract.[40] Each of these assessments began to manifest itself in Department of Defense research and development programs, particularly in the handling of the research and development contract for the TFX aircraft.

When Secretary McNamara directed the Air Force to submit requests for development proposals for the TFX in the autumn of 1961 he recognized that the Air Force and the Navy had not completely reconciled their divergent thinking on the aircraft's characteristics, but he was hopeful that contractor proposals could bring a further refinement of work requirements. As directed, the Air Force sent out requests for development proposals in September 1961 and additionally established a TFX system source selection board with representatives from the Air Force Systems Command, the Air Force Logistics Command, the Tactical Air Command, and the Navy. A senior Navy admiral also sat with the Air Force Council after 24 January 1962 when it considered recommendations from the TFX selection board. After preliminary evaluations of proposals from interested companies, Boeing and General Dynamics were awarded 90-day design contracts. The results of these contracts were evaluated in April and June 1962, and after the latter evaluation Secretary Zuckert and Secretary of the Navy Fred Korth remanded the proposals to the system source selection board with a directive that the board would work with both competitors as if each of them had been chosen as the prime contractor. In a fourth evaluation made on 8 November 1962 the Air Force Council with the concurrence of the Navy representative found both the Boeing and General Dynamics proposals to be acceptable but voted unanimously that the Boeing design proposal had "clear and substantial advantage." Among other features in favor of the Boeing proposal, it included thrust reversers and a location of air intake scoops at a high level in order to minimize the ingestion of foreign objects into the engines. The Air Force Council and the Navy representative believed that these features would make the Boeing design

most suited for employment in austere operating conditions. Admiral Anderson and General LeMay indorsed the recommendation that Boeing be selected as the TFX contractor.[41]

In reviewing the TFX recommendation on 21 November 1962, Secretaries McNamara, Zuckert, and Korth agreed that both the Boeing and General Dynamics proposals were acceptable and that either would offer a capability far beyond that of contemporary fighters. The three secretaries nevertheless directed that the General Dynamics proposal would be accepted because it proposed the greatest degree of commonness in Air Force and Navy versions, contemplated the use of conventional materials, provided a higher confidence in structural design, and offered a better possibility of providing the aircraft desired on schedule and within programmed dollar costs. On 24 November, the Department of Defense announced that the General Dynamics Corporation, with Grumman Aircraft as an associate, has been selected as the prime contractor for the development of the F-111A for the Air Force and the F-111B for the Navy.[42] In an interview in which he justified this decision on 16 April 1963, Secretary McNamara called attention to the Air Force's earlier inability to provide "realistic cost estimates" for Skybolt and stated that according to his own calculations he was sure that Boeing's predicted costs were less realistic than those of General Dynamics. McNamara also believed that Boeing's planned use of titanium, thrust reversers, and top-mounted inlet ducts, as well as its proposal to hollow out certain structural parts to reduce the weight of the Navy version, would add elements of risk to the development of the TFX. In short, Boeing's proposal pushed the state of the art, thereby posing greater developmental risks and promising greater costs. McNamara thought that the greatest risk in the TFX program lay in the variable-sweep wing that was common to both proposals and that it would be unwise to incur additional peripheral risks involved in Boeing's proposal. Secretary Zuckert favored the General Dynamics proposal for these same reasons, and he emphasized that General Dynamics had a distinct edge over Boeing in the higher degree of commonness promised for the Air Force F-111A and the Navy F-111B.[43] Zuckert believed that the careful definition of the program that preceded the Department of Defense decision to purchase a test quantity of 23 F-111 TFX aircraft would permit a reasonably constructive degree of optimism that the program would go ahead within estimated costs on schedule.[44]

In the course of Senate investigations of the TFX contract negotiations held by the Permanent Subcommittee on Investigations of the Committee on Government Operations, a civilian aviation consultant testified that many "old-pros" in the Navy and Air Force still believed that interservice competition tended to generate more effective weapons.[45] High-ranking Air Force officers, however, expressed great faith in the TFX. In his best professional judgment, General LeMay had believed that the Boeing proposal would provide the most advanced aircraft (and he had attempted to convince

Secretary Zuckert of this belief), but he defended the right of the civilian secretaries to make the final decision on the matter.[46] "Now it is true," he said in regard to the TFX, "that we could have done a little bit better on our side of the fence, as the Navy could have done a little better on their side, if we had gone our separate ways. But the money that we are saving in doing it this way more than offsets that."[47] Speaking as Air Force Director of Operational Requirements, Major General W. W. Momyer enthusiastically described the TFX as an aircraft with characteristics that would make it suitable for the gamut of war running from counter-insurgency to general conflict. "When you consider that within this tactical fighter," Momyer said, "we will be doing all the jobs that in World War II we did with B-17's, B-24's, B-25's, B-26's, P-51's, P-47's and you look at this machine in terms of this kind of flexibility, I think the state-of-the-art has come a long way in enhancing our tactical ability."[48] Since all subsystems identified for the General Dynamics TFX were essentially in-being, the plane was considered to be a very low-risk weapon system and the development of it could be contracted on a fixed-price basis. To General Schriever this procedure had obvious advantages, but he cautioned that it also had some disadvantages. Under the fixed-price contract it would be difficult to incorporate improvements in subsystems that might be made simultaneously with the development of the TFX airframe. The plane which would enter the operating inventory four or five years in the future would thus represent the state-of-the-art that had existed when its design was frozen at the beginning of its development. "I personally am of the opinion," Schriever stated, "that you ought to move forward in technology and improve your capabilities."[49] As a matter of fact, however, the development of the TFX would not be completely frozen in its original design stage. Even though the development of the F-111A was kept on schedule and the first flight of the F-111A was completed ahead of schedule in December 1964, it proved possible to make a reconfiguration of the plane so as to add external fuel capacity to it, thus enhancing its range and providing a possibility that the plane could later be developed in a FB-111A bomber configuration. The F-111B development program was extended to allow more time for the development of a Phoenix fire control missile system.[50*]

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From the handling of research and development projects during his first two years in office, Secretary McNamara evolved a new rationale, organization, and procedures for defense research and development which was explained and put into effect in 1963-64. In

*The FB-111A bomber would prove practicable in development, but the Navy would obtain authority to discontinue development of the F-111B aircraft.

explaining the new rationale early in 1963, McNamara pointed out that the Kennedy administration had markedly reduced the Soviet threat to the United States by building nuclear and non-nuclear forces. As a general rule, he was willing to observe that most developmental work "would add only marginally to our combat strength." In the past, developments such as the A- and H-bomb and the ICBM had added new and unique dimensions to military capabilities and had justified great costs and risks. "When the potential payoff is extremely great," McNamara stated on 7 February 1963, "correspondingly great costs and risks are justified. But developments which meet this test are rare. The typical development promises, if successful, to achieve a capability that can also be achieved in other ways, usually including the more extensive or imaginative use of existing weapons. In such cases, the urgency is not as great. We believe that the substantial increase in the defense program initiated during the last 2 years has put us in a position where we can now afford to move more carefully in the initiation of new major weapon system developments."[51]

Based upon this rationale and observations of past mistakes, Secretary McNamara and Dr. Brown effected management changes in the defense research and development area. "Poor planning, unrealistic schedules, unnecessary design changes and enormous cost increases over original estimates," McNamara believed, "have continuously disrupted the efficient operation of our research and development program. Most of these difficulties have resulted from inadequate prior planning and unwarranted haste in undertaking large-scale development, and even production, before we have clearly defined what is wanted and before we have clearly determined that a suitable technological basis has been developed on which to build the system. We have often paid too little attention to how a proposed weapon system would be used and what it would cost, and, finally, whether the contribution the development could make to our forces would be worth the cost."[52] In McNamara's view, the actual costs of major weapon systems had commonly increased from 300 to 500 percent over the original estimated costs because original cost estimates were unrealistically optimistic, because of insistence that weapon systems meet performance standards that went far beyond essential military requirements, because of insufficient definition at the outset of what a contractor was being tasked to develop, because inadequate and unsatisfactory procedures had often been employed in selecting major contractors, and because of reliance on cost-plus contracts which provided no incentives to a contractor to reduce costs."[53]

Within the Department of Defense the phases of research and development were restructured in a manner believed to represent a logical progression from ideas to the development of military hardware for operational employment. Research and development was broken down into sequential steps: (1) Research (basic and applied), where effort was directed toward expansion of knowledge in physical and environmental sciences; (2) Exploratory development, where work was directed toward the solution of specific military problems short of

actual development of experimental hardware; (3) Advanced development, where experimental hardware for technical or operational testing was produced; (4) Engineering development, where developments were engineered for service use prior to receiving approval for production and deployment; and (5) Operational systems development, which involved continued development, test, evaluation, and design improvement of projects which had already entered a production-deployment stage.[54] McNamara looked upon the first three steps as being designed to provide in an orderly manner "the basic technical building blocks" which would permit large-scale systems developments to be undertaken as they were identified and without a need to engage in costly and inefficient crash programs. "By planning the non-system part of our defense research and engineering effort in the large, without tying it to a particular systems development," McNamara suggested, "we should be able to effect some degree of standardization which, through repeated use of the same components, should increase reliability and reduce costs."[55]

As ideas progressed to the development of hardware for experimental tests in the advanced development step of research and development, Secretary McNamara directed that no large system development project would be undertaken before the completion of a program definition phase. This activity involved in-house or contractor studies whose purpose was to define a program, develop designs, determine costs and potential military worth. "To the greatest extent possible," McNamara emphasized, "we want to do our thinking and planning before we start 'bending metal.' Pencils and paper, and even the feasibility testing of 'pacing' components, are a lot cheaper than the termination of programs." McNamara was quite willing that the program definition phase of an important project would run as long as a year and cost anywhere from $2 to $5 million. Only by careful program definition could the Department of Defense ensure that necessary programs could be expeditiously accomplished or less worthwhile programs rejected. Although the time consumed by program definition might seem a delay, McNamara believed this was not necessarily true. "I have observed," he said, "that in most cases careful and comprehensive prior planning actually saves time as well as money and results in more effective and more dependable weapons."[56]

In the aftermath of the TFX source selection controversy, Deputy Director of Defense Research and Engineering John H. Rubel proposed that military source selection boards should be changed into military evaluation boards and that the Secretary of Defense and the Secretaries of the Military Departments should be authorized to make decisions on source selection, which, of course, they did anyway.[57] This suggestion was not accepted, but the new Department of Defense rationale and procedures on research and development nevertheless greatly increased the role of the Office of the Secretary of Defense in the field. Acting closely together, Secretary McNamara and Dr. Brown exercised close scrutiny over the defense research, development,

test and engineering budget: "When we make our reductions," Brown explained, "we go quite far down on the marginal utility curve. We cut out all the programs that we think do not make very much sense. Then we cut a little more. We cut to the point where we feel that one can argue convincingly on either side of a question, that one should do it or one should not do it. Further cuts, of course, get more and more painful because they are cutting into things that we feel there is no question should be done."[58] As Director of Defense Research and Engineering, Dr. Brown not only had much to say about the initiation of projects, but he also maintained close supervision over what was being done in the research and development efforts underway in the services. He provided guidelines for the implementation of programs and controlled the rate and direction of activity by releasing funds in incremental authorizations. In response to a question put to him in February 1964, Lieutenant General Ferguson, Air Force Deputy Chief of Staff for Research and Development, testified that there was more concentration of authority in Dr. Brown's office than ever before in the past.[59]

Something of the new concentration of authority in the Office of the Director of Defense Research and Engineering was revealed in the quest for a counterinsurgency (COIN) aircraft during 1963-64. The Air Force response to the problem of providing an aircraft that could operate in a primitive area was to use obsolescent aircraft and converted trainer aircraft: it accordingly requested and received authority to modify T-37 and T-28 training planes for COIN employment. The Army, however, wanted a COIN aircraft that could perform helicopter escort, limited close air support, armed surveillance, light logistics duty, and that could carry and drop four to six fully-equipped paratroopers. The Chairman of the Joint Chiefs of Staff strongly supported the requirement for a special COIN aircraft, and Department of Defense studies indicated what were described as significant cost advantages in developing a new COIN aircraft. As Dr. Brown described the problem, the major decision was to determine whether the plane should be developed by the Air Force, the Army, the Navy, or by the Advanced Research Projects Agency. While ARPA was quite anxious to get the task, Brown did not want to put the small agency in the airplane development business. The Air Force, he noted, did not want to develop the plane, since it would duplicate obsolescent aircraft that could be used for COIN work, although possibly not as efficiently as a specially designed plane. Brown thought that the Army ought not to develop a plane that, as he said, was "at least marginal in terms of the agreement on what size aircraft can be managed by the Army." Except for the Marines, the Navy did not have any large use for a COIN aircraft, but since the choice resolved down to it, the Department of Defense placed the request for developmental funds for the COIN aircraft in the Navy's budget and directed that the Navy's Bureau of Weapons would develop the plane.[60] After testing modified T-28 and T-37 planes, the Air Force decided that these planes did not possess advantages for counter-insurgency tasks that were better than the A-1 planes already in use.

The Navy program, however, developed a Counterinsurgency/Light Armed Reconnaissance Aircraft (COIN/LARA), and in October 1964, the North American Aviation Company was awarded a contract to provide seven prototype planes for operational evaluation.[61]

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At times during the 1950's the Air Force research and development program had included five or six fighter projects, three or four ballistic missiles, three cruise missiles, a couple of transport aircraft--all progressing simultaneously toward weapon systems. By the early 1960's, however, the majority of these projects were completed and emphasis in Air Force research and development shifted from weapon systems to exploratory development.[62] Although editorials and articles decried "the Topsy-like, uncontrolled growth of R&D," Lieutenant General Ferguson pointed out that the apparent funding increase in research, development, test and engineering (RDT&E) funds had come when test and engineering accounts (previously a part of production appropriations) had been included within research and and development funds. Taking into account a 12 percent increase in cost of living, Ferguson demonstrated that research and development funds had actually increased only 6 percent in the 1957-65 time period. In fiscal year 1961 RDT&E funds amounted to 15 percent of the total defense budget; in the departmental requests for fiscal year 1965 the ratio of RDT&E funds to the total budget was 13 percent, and not all of the requested funds would be approved by Congress. "The real 6 percent increase in R&D funds in the last 9 years," Ferguson warned, "provides little flexibility to cope with the complexity of choice we have today."[63] While Ferguson was unwilling to accept the glib assumption that the nation's research and development effort had reached what was being described as a "technological plateau," he noted: "If I could identify a quantum jump, I am sure that we would jump right into it."[64] Apparently more impatient than Ferguson, General LeMay described the Air Force's research and development funding for 1965 as "skimpy." "I think," he said, "we are going to keep on moving, maybe not at the same rate, but in a lot of things we are just scratching the surface."[65]

In February 1963, Secretary Zuckert could not conceive that an arms stalemate could exist in the world "with technology moving as fast as it has moved and, presumably, will move in the years to come."[66] A year later he called the idea of a "technological plateau" an "over-simplification," and he added: "I think at the moment we are in a little bit of what might be called technological shock because the missile development has come upon us and come to fruition so quickly the people have not really had the time to digest this situation, nor has there been the fermentation of ideas so that we can be at all precise about what the next generation of weapon systems will be like."[67] At least two prominent scientists, however, not only apparently accepted the concept of a "technological plateau"

but projected it even further. "Both sides in the arms race," wrote Dr. Jerome B. Wiesner and Dr. Herbert F. York in an article published in October 1964, "are thus confronted by the dilemma of steadily increasing military power and steadily decreasing national security. It is our considered professional judgment that this dilemma has no technical solution. If the great powers continue to look for solutions in the area of science and technology only, the result will be to worsen the situation. The clearly predictable course of the arms race is a steady open spiral downward into oblivion."[68]

Something of the difficulty that had begun to affect a research and development program that promised to be expensive was illustrated by the story of the mobile medium range ballistic missile (MMRBM). In 1957 the Air Force had faced the prospect that by 1963-65 Soviet forces would possess SS-3 (700-mile), SS-4 (1,100-mile), and SS-5 (2,200-mile) transportable tactical missiles that would possess relatively high accuracy and would be able to react rapidly against tactical targets in Europe and the Pacific. The Air Force's Matador and Mace tactical missiles were obsolescent, cruise-type vehicles that were tied to fixed positions, and the Army's 385-mile range Pershing missile was out-ranged by the Soviet tactical missiles. Under these circumstances, the Air Force issued a special operational requirement for a follow-on missile to the Mace that would possess high accuracy under all-weather conditions and exceptional mobility. It was planned that the new tactical missile would primarily be employed against the kind of targets that might appropriately be attacked by fighter-bombers.[69]

Speaking before a NATO Parliamentarians conference in November 1960, General Norstad stated that midrange ballistic missiles, with great mobility, should be made available to the North Atlantic Treaty Organization, and at the NATO Council meeting the following month the United States asked consideration of the concept that a multilateral force might be established with the medium-range ballistic missiles. On 3 October 1961, the Department of Defense directed the Air Force to assume responsibility for the MMRBM system.[70] Secretary McNamara envisioned that the weapon system might be deployed on trucks or ships, would be capable of quick reaction and great accuracy, and would not require extensive ground support equipment.[71] The Air Force envisioned that the MMRBM would be a relatively small solid-fuel missile that could be mounted in a vehicle about the size of a furniture van. The missile was to be capable of being fired within a matter of minutes, and the vehicle that transported it could be kept moving about at random over the highways of Europe.[72] The range of the MMRBM would be between the 385 miles of the Pershing and the 2,500 miles of the A-3 Polaris. Where the problem of safetying the MMRBM had delayed its earlier acceptance, a new nuclear-lock command and control system would prevent its accidental or irresponsible employment. At the time that the MMRBM was authorized the Air Force already had a program underway looking toward the development of a stellar inertial guidance system for missiles, and

the bulk of the effort under this contract was committed to the MMRBM development effort. Where the old Snark cruise missile had been able to direct its slow-moving course by observing the stars, the envisioned system would be able to locate the position of the ballistic missile and navigate it on course even in its boost phase.[73]

On 29 March 1962 Secretary McNamara authorized the Air Force to proceed with a program definition phase of an MMRBM capable of employment either from land vehicles or surface ships. In fiscal year 1963 the Department of Defense asked for $100 million for the MMRBM, and Congress appropriated $80 million. In fiscal year 1964 the Department of Defense asked for $143 million for the missile, and speaking in support of the request Secretary McNamara gave it strong backing. "I personally am anxious," he said, "to see us pursue this development as an insurance program, assuming that there is evidence which leads us to believe we can accomplish the objectives we have outlined, that is . . . the high degree of mobility, the low weight, and the high accuracy."[74] Once again, however, Congress did not approve the full amount of money requested for the missile. Since only a part of the fiscal 1963 appropriations for the MMRBM had been allocated, Congress doubted that the full amount requested for fiscal 1964 could be spent and reduced the appropriation to $73 million. McNamara did not reclama this reduction because other more important things had also been reduced and because he sensed that the mood of Congress was shifting away from generous research and development appropriations.[75] A member of the House Armed Services Committee who visited Paris in September 1963 nevertheless reported that members of the NATO staff seemed intent on impressing him with the fact that the development of the MMRBM was a vital requirement.[76]

Early in 1964 Secretary McNamara still could not tell Congressional committees of any definite plans for the deployment of the MMRBM missiles, but he urged that it would be important to proceed with their development because the missile would be capable of very rapid deployment, would fill a range gap, and because there was the possibility that they might be deployed "in lieu of certain of our other strategic weapons." Alleging its inability to discover any plan for the deployment of the MMRBM, the House Armed Services Committee cut the requested authorization for its development from $110 million to $40 million, thus in effect deleting the missile but continuing the development of the stellar inertial guidance system.[77] In the Senate Committee on Armed Services, both Chairman Russell and Senator Symington observed that the MMRBM left them "very, very cold." Speaking to Dr. Brown about the missile, Russell said: "I think it will go up in smoke before it is developed along with the $700 to $800 million you are going to spend on R&D." Senator Allen J. Ellender was even sharper with Brown: "You scientists," he said, "are having a heyday there at the Pentagon. It strikes me that some stop ought to be put to it."[78] Secretary Zuckert subsequently testified that the Air Force was "strongly behind the MMRBM" because of its promised flexibility, and General LeMay pointed out that both

General Norstad and General Lemnitzer had pressed for the development of the missile.[79] In the end, however, the fiscal 1965 budget voted by Congress carried only $40 million for a continued development of the guidance system that would have been used by the MMRBM. In the autumn of 1964, the Air Force accordingly notified the MMRBM contractors that their development contracts would not be renewed.[80]

The case of the MMRBM marked the beginnings of what appeared to be a new Congressional attitude toward defense research and development. Speaking of Congress and its actions toward the mobile missile in 1963, Secretary McNamara observed that "all of a sudden the mood of Congress shifted from one of giving me more money than I wanted to spend to one of giving me less money than I felt essential."[81] On the other hand, influential Congressmen blamed the Department of Defense and the Air Force for not providing an adequate plan of employment for the MMRBM. In the dialogue on Capital Hill early in 1964, Dr. Brown defended the MMRBM by stating that McNamara had "a visceral feeling that this is a very important program." But Representative Daniel Flood replied that such a "visceral feeling" was not enough.[82] Some members of Congress--including Senators Russell and Symington--associated the MMRBM with NATO requirements and with the multilateral force proposal that had made little headway in attaining political acceptance in Europe.[83] Other members of Congress noted that serious people in authority were stating that world tensions appeared to be lessening. To General LeMay this latter belief promised eventual disaster. "The Russians have told us over and over again. . .," he warned, "that they expect to take over the world, and they are going to do it by any way they can see to do it. The thing that worries me more than anything else is that they will act peaceful and act like decent and ordinary people until we get lulled into sleep, and get off balance, and then we will get hit. . . . The more world tensions decrease, the more alert we should be."[84]

2. Threats and Opportunities in Space

"The United States," stated General White in April 1958, "must win and maintain the capability to control space in order to assure the progress and preeminence of the free nations. . . . This is necessary because until other ironclad methods are devised, only through our military capability to control space will we be able to use space for peaceful purposes. I visualize the control of space as the late twentieth century parallel to the age-old need to control the seas and the mid-twentieth century requirement to control the air."[85] That same month Lieutenant General Putt made the same plea. "We have always strived," he said, "to try to fly higher and higher. One could control the atmosphere by just being able to fly a little bit higher than the other fellow. So I think the same thing will occur in space."[86] Answering a rhetorical question regarding the military advantage of space power, Brigadier General H. A. Boushey,

Air Force Deputy Director of Research and Development, stated: "For years our job has been to achieve, and at times to exercise, a dominant capability to deliver firepower against an enemy by military operations above the surface of the earth. In doing this job we have been, and still are, guided by one major premise, that a decisive margin of advantage goes to the nation whose delivery vehicles can attain the greatest speed, the greatest range, and the greatest altitude."[87]

At the dawn of the space age, Air Force visionaries evidently found it difficult to conceive the precise applications through which a control of space might be exercised. "To control space, noted General White, "we must not only be able to go through it with vehicles that travel from point to point, but we must stay in space with human beings who can carry out jobs efficiently."[88] "First of all," added Brigadier General Boushey, "I do not believe that machines alone, controlled from the earth, can establish a capability to dominate space. . . . On the spot exercise of human intelligence, judgment, and discrimination will be needed for effective control of space." Boushey additionally urged that the moon would be the ultimate "high ground" both for launching further explorations of the solar system and for the dispatch of missiles against an aggressor on earth. "As regards the moon," Boushey said, "I personally believe it could, at some future date, be used as a secure base to deter aggression. Lunar landing sites, perhaps located on the far side of the moon, which could never be viewed directly from the earth, could launch missiles earthward. They could be guided accurately during flight and to impact, and thus might serve peaceful ends by deterring any would-be aggressor." The visionary moon-base proposal was promptly attacked by Dr. Lee A. DuBridge, President of the California Institute of Technology, who dismissed lunar-based deterrence as a "Buck Rogers" stunt.[89]

In a more conservative vein Lieutenant Genral Putt suggested in April 1958 that "control of space could start initially at a relatively short distance away from the surface of the earth."[90] As has been seen, General White early in 1959 introduced the new concept of "aerospace," or the concept that "air and space comprise a single continuous operational field in which the Air Force must continue to function." While the "aerospace" term seemed strange at first, it met increasing acceptance. By February 1960, Congressman Overton Brooks, Chairman of the House Committee on Science and Astronautics, accepted it. "Frankly," he said, "I think we are straining at a gnat when we question the word 'aerospace.' If we can come up with a better word, that is something else."[91] Shortly after this, the Joint Chiefs of Staff accepted "aerospace" as a word for joint usage and defined it as: "Of, or pertaining to, the earth's envelope or atmosphere and the space above it; two separate entities considered as a single realm of activity in launching, guidance, and control of vehicles which will travel in both realms."[92]

During 1959 the Air Force began to bridle its thinking about space. In April, Lieutenant General Schriever defended "in-the-blue" thinking, but he asserted that the value of a base on the moon, assuming that it was technologically possible, would have to be determined in relation to other ways in which some other weapon system might be able to do the same job at perhaps lesser costs. In an address before the National Press Club on 11 January 1960, General White agreed that there had been "excessive talk about manned expeditions to the Moon, Venus, Mars, and beyond--as though these ventures were well within our present capability." On 4 February in answer to his own question as to how far manned vehicles would be sent into space, White said: "The answer, as I see it, is--as far as they need to go in regular operations. I feel that initially our systematic missions will operate at rather shallow altitudes--relatively speaking--within a few hundred miles of the earth. Our immediate operational concern is events which may occur on earth and in the zone immediately above it. We don't provide anything by operating farther away then we need to go."[93] Based on these ideas, the Air Force logically accepted the concept that space systems "should complement or replace current inventory systems and should be employed within existing concepts." The Air Force position on the relationship of space to military potential held: "Space systems should be developed when required to perform an essential military mission if they will provide a unique, more effective or more economical means for performing the mission."[94] Both in testimony before a Congressional committee in February and in an article which he published in April 1960, Lieutenant General R. C. Wilson explained that an Air Force space system had to be judged by the criterion of its relative effectiveness and could not be developed to perform particular functions unless "it offers the only means of doing the job; or . . . it is the best way to do the job and is not excessively expensive (for example, very early warning of hostile ICBM launchings); or . . . it offers a more economical way of doing a job (as may well be true of a communications satellite system)."[95]

Since the Air Force did not compartment its development program into astronautics and aeronautics, or space and non-space, it could not logically develop a space plan as a separate plan. Certain programs nevertheless met the "relative effectiveness" criteria: these included missiles, navigation and communications satellites, and the Discoverer, Midas, and Samos programs that were aimed at the exploitation of early warning and reconnaissance capabilities. In this respect, the Air Force did envision development objectives both generally and in terms of growth potential of programs underway in 1960. The development objectives included reduction of costs and time required for launchings, improvement of guidance systems, increases in component reliability, and extension of the effective lifetimes of orbital satellites.[96] While the Air Force did not have a long-range space plan similar to NASA's 10-year plan, Dr. York noted in March 1960: "We do have some ideas about how

various of these programs might develop in the future, but we don't believe that considering our mission we can develop a plan for space-related programs independently of the overall defense program."[97] In supporting the Eisenhower defense budgets for fiscal 1960 and fiscal 1961, Dr. York stressed that the objectives of defense efforts in space were "the development, production, and operation of space systems where it can be demonstrated with reasonable certainty that the use of space flight will enable us to accomplish our basic defense mission, and . . . the development of components which will be needed in systems which cannot be clearly defined at this time but which will develop as the future unfolds in this new sphere of activity."[98]

Two days before the launching of the first Soviet Sputnik in October 1957, Soviet Major General G. I. Pokrovsky had predicted: "The struggle in and for outer space will have tremendous significance in the armed conflict of the near future."[99] By mid-1959 Lieutenant General R. C. Wilson was willing to speak in public of "a growing Soviet potential to wage war from an environment in space--possibly from satellite vehicles circling the earth at various altitudes, from space stations on the so-called stationary orbits, or perhaps eventually from a military lunar base."[100] At the height of his presidential campaign on 10 October 1960, Senator Kennedy also gave voice to fears that the Soviets might be winning the space race. "We are in a strategic space race with the Russians, and we have been losing," he declared. "Control of space will be decided in the next decade. If the Soviets control space they can control earth, as in past centuries the nations that controlled the seas dominated the continents."[101]

Believing that opportunities and threats in space were beginning to come into focus, Lieutenant General Schriever requested Mr. Trevor Gardner on 11 October 1960 to assemble a group of the nation's leading scientists and executives, similar to the von Neumann committee of 1954, that would study and recommend a space development program for the future. Acting without delay, Gardner assembled the Air Force Space Study Committee that same month, and the committee (whose members included Dr. Harold Brown) submitted its unclassified report on 20 March 1961. The report provided assessments of the Soviet space threat, recommendations on Air Force organization, and requirements for Air Force space activities. Among its findings, the committee believed that the Air Force role in space was "envisioned too narrowly" and that a "dogma" prevailed within the Air Force "that technical developments, particularly those involving any substantial application of resources, must be justified by a specific weapon system which is in turn tied to a close military requirement." By committing itself to systems development, the committee believed that the Air Force was treating space systems requirements just as if it knew the framework of strategy and space technical boundary conditions that would exist in the future. "The development of urgently needed technical capabilities such as boost, rendezvous,

maneuverability, and communications," the committee recommended, "are essential to the speedy attainment of effective military use of space. The premature initiation of 'systems' produces inefficiencies and may severely limit or foreclose the opportunity for the full development of such fundamental capabilities."[102]

When he appeared before the Senate Committee on Armed Services on 11 April 1961, Secretary Zuckert voiced official concern that the Soviets, who had established a superior space capability which gave them the promise of machines to work in space, might attain mastery and dominance of space. "The lesson," Zuckert warned, "is that through and from space, earth can be dominated. . . . This Nation and her allies have no choice but to extend our influence into space to the end that no nation shall be disfranchised in space, and no nation shall be disfranchised on earth through dominance of space by another."[103] At the time Zuckert was speaking, there were rumors from Moscow that the Soviets had put the world's first human cosmonaut into orbit, and on 12 April the Soviet Union announced that Air Force Major Yuri Gagarin had encircled the earth in a 5-ton Vostok satellite. "This first manned orbital flight," General White stated, "bears out the Air Force's previous estimates of the extremely high priority of Soviet space efforts and their concentration on the near-earth region as the logical area for the near-term expansion of military aerospace power."[104] In remarks at his retirement ceremony on 30 June 1961, White reminded his listeners that in the course of history the people who had controlled the land had controlled the world; then the people who had controlled the seas had controlled the world; and then the people who had controlled the air had controlled the world. "I make this prediction," he concluded. "In the future the people who control space will control the world."[105]

On numerous occasions after he became Air Force Chief of Staff, General LeMay anticipated that the entry of the United States into space would follow the same parallel that had occurred in the air. In 1961 LeMay said that the United States was "at about the same position . . . in regard to space technology as we were in aerodynamics along about 1908, 1910, or 1911, along in there."[106] In a parallel to the experience in aeronautics, the Air Force had developed the first satellites for a primarily passive, peaceful, and defensive employment designed to enhance command and control and to reduce the danger of surprise attack. But just as had been the case with the aviation experience in World War I, LeMay anticipated that an enemy would not be able to countenance a loss of surprise and security and anticipated that "an aggressor will seek ways and means to eliminate our defensive systems." He concluded: "A nation that has maneuverable space vehicles and revolutionary armaments can indeed control the world. For peace or for aggression."[107] Continued Soviet space spectaculars added weight to LeMay's warning. On 6-7 August 1961, Soviet Air Force Major G. S. Titov orbited the earth 17 times in 25 hours. In December 1961, Premier Khrushchev told the world: "You do not have 50- and 100-megaton bombs. We have bombs stronger than

100 megatons. We placed Gagarin and Titov in space and we can replace them with other loads that can be directed to any place on earth."[108]

Spurred on by President Kennedy's statement to Congress on 25 May 1961 that the United States would take "a clearly leading role in space achievement" and by an appreciation of the Soviet threat in space, the Air Force undertook preparation of a 10-year space plan which attempted to identify, as best as could be done based upon careful analysis, what could and should be done to meet military requirements in space with a commitment of limited resources.[109] As issued in September 1961, the Air Force Space Plan represented the best thought within the Air Staff and was intended to provide basic guidance to the research and development community. Lieutenant General Ferguson described the general concepts of the plan in Congressional testimony. The plan described Air Force space policy as a part of the national space policy but characterized it as being more specifically designed to insure that space remained free for mankind. It recognized that space systems would have to be considered in relation to all other weapon systems. The space plan noted that space systems for geodetic mapping, target identification and location, warning of ballistic missile attack, navigation, and weather surveillance had already been justified, and it posed an urgent requirement for the development of a satellite inspection system and for a broad range of space technology of military interest. Space systems, for example, promised a break-through in defense against ballistic missile attack, a means of deployment of command and control systems in deep space, and fast retaliation strikes from space bombers in low orbits. In a summary of desired military characteristics of space technology, the plan pointed out that there was need for more powerful, cheaper, and quicker-reacting space boosters, for rendezvous, docking, and transfer capabilities in space, and for the development of reusable space vehicles which would be able to make aerodynamic landings within specific geographical areas after performing space missions. Finally, all evidence pointed to a role for man in space. "Man," said Lieutenant General Ferguson, "has certain qualitative capabilities which machines cannot duplicate. He is unique in his ability to make on-the-spot judgments. He can discriminate and select from alternatives which have not been anticipated. He is adaptable to rapidly changing situations. Thus, by including man in military space systems, we significantly increase the flexibility of the systems, as well as increase the probability of mission success." The plan noted that cooperative arrangements between the Air Force and NASA were mutually advantageous, but it pointed out that simultaneous research on "purely military aspects" of space technology was essential because "some operational and technical needs are not common to both the civil and military effort."[110]

The preparation of the Air Force Space Plan may also have been intended to reassure Congress that the Air Force was not dragging

its feet in regard to space. Early in 1961 the House Appropriations Committee criticized the Air Force's Dyna-Soar program as lacking in imagination and boldness. As has been seen, this program was designed to test the concept of a manned space glider in orbit, but pending the availability of a more powerful booster the Air Force planned to test the vehicle in a number of short launches down the Atlantic missile range. The House committee specifically recommended development of a higher-thrust booster. In its appropriations for fiscal year 1962, Congress voted $185.8 million specifically for Dyna-Soar--$85.8 million more than had been requested by the executive branch.[111] While Secretary McNamara was not going to allow the expenditure of the additional Dyna-Soar funds, the maturity of a launch vehicle agreement between the Department of Defense and NASA nevertheless promised to permit a more imaginative Dyna-Soar program. Extending over a period of three to four months, representatives of Defense and NASA debated requirements to a new booster that would provide military thrust capabilities and would also serve to back up the Saturn booster that NASA was developing to use in manned orbital programs. At the end of this prolonged study and discussion, the Department of Defense gained authority in December 1961 to proceed with the development of a thrust-augmented Titan rocket that would be known as Titan III. Where the Saturn was a relatively-complicated, liquid-fueled rocket, the Titan III would employ solid and storable fuels, thus permitting shorter reaction time, and would afford a means of launching loads weighing up to 25,000 pounds. The first flight of the Titan IIIA--a modified Titan missile plus an upper stage--was expected in 1965, and the Titan IIIC--the Titan IIIA with two, 120-inch strap-on solid motors--was scheduled to fly in 1966.[112] Since the Titan III would be powerful enough to put Dyna-Soar into orbit, the Air Force requested and received authority in December 1961 to reorient the Dyna-Soar program. Although unmanned Dyna-Soar flights were planned earlier, the first manned Dyna-Soar flight was visualized for July 1966.[113] From the Air Force point of view, the Dyna-Soar would be a useful experimental vehicle. Its aerodynamic characteristics would allow a pilot great flexibility in selecting the time as which he might choose to deorbit and where he would land. While Dyna-Soar could lead to the development of a vehicle with military applications, it would initially complement the NASA Mercury and Gemini vehicles which would have a ballistic type of reentry.[114]

The Air Force was confident that its Space Plan issued in September 1961 represented "a comprehensive study of the potential Soviet threat, the status of our technology relative to space applications, and the long range objectives and needs of the Air Force . . . derived from a national viewpoint."[115] On the other hand, Secretary McNamara and Dr. Brown did not accept the Air Force thinking. "The requirement for military operations in outer space," McNamara said on 29 January 1962, "is not at all clear at the present time." While he saw some rather limited requirements for

warning, navigation, and communications satellites, the military purpose for other space operations was not yet clear. "Therefore," McNamara concluded, "our program is directed to (a) achieving a technology which will permit us to engage in military operations in outer space if the requirement does develop in the future, and (b) developing certain of the basic equipment required for such military operations, specifically boosters for launch vehicles sufficiently large to place into outer space equipment of the size we might possibly require."[116] Speaking as Director of Defense Research and Engineering, Brown explained: "At this stage of development, it is difficult to define accurately the specific characteristics that future military operational systems of many kinds ought to have. We must, therefore, engage in a broad program covering basic building blocks which will develop technological capabilities to meet many possible contingencies. In this way, we will provide necessary insurance against military surprise in space by advancing our knowledge on a systematic basis so as to permit the shortest possible time lag in undertaking fullscale development programs as specific needs are identified."[117]

In testimony before Congressional committees early in 1962 Air Force spokesmen viewed the Soviet military threat and the military potential of space with a higher degree of urgency than did the Office of Secretary of Defense. "Every time we have made a significant advance," Secretary Zuckert stated, "we seem to have found a way for using it for a military purpose. I think it is important to take seriously the space capability the Russians have developed in such a short period of time and to realize after this period of time military possibilities seem to be opening up. As the years move on, these military possibilities could well become a reality."[118] The Air Force chiefly feared that the Soviets might exploit their technological lead in order to establish a control over space. Lieutenant General Ferguson explained one way in which control might be exercised in space by discussing in open Congressional testimony the Bambi (ballistic missile boost-intercept) concept of a satellite system for antiballistic missile defense. When launched, ballistic missiles emitted tremendous heat which could be detected by infrared sensors, and Bambi contemplated the maintenance on station of a number of orbital vehicles that would search for, home on, and destroy hostile missiles in their vulnerable boost phase. If an unfriendly nation got into space with the Bambi concept, it could obviously establish an effective space blockade.[119]

In an address on 28 March 1962, General LeMay expressed an opinion that "beam-directed energy weapons" would be able to transmit energy across space with the speed of light, thus effecting a technological disarmament of nuclear weapons. "Whatever we do," he warned, "the Soviets already have recognized the importance of these new developments and they are moving at full speed for a decisive capability in space. If they are successful, they can deny space to us."[120] On 29 March, General Schriever described the basic

capabilities fundamental to potential military space weapon systems as: "The ability to orbit, maneuver, rendezvous, de-orbit, reenter, and land on a routine basis; the ability to support manned space flight; the ability to transfer men and materiel between spacecraft in orbit; the ability to guide, navigate, and communicate in deep space operations."[121]

While Air Force spokesmen explained requirements for space operational capabilities, Secretary McNamara had defined the limits of the Department of Defense space program in his statement on 29 January 1962 that the program would seek "to achieve a technology which will permit us to engage in military operations in outer space if the requirement does develop in the future."[122] On 23 February 1962 McNamara wrote a long classified memorandum to Zuckert specifying desirable features of military systems to be investigated in space and setting down ground rules under which he felt the Air Force ought to consider experiments with both manned and unmanned space flight for military purposes.[123]

In the major effort to provide an acceptable, integrated Air Force Space Program as envisioned by Secretary McNamara, the Air Force drew heavily upon its own resources, as well as those of the scientific community and of the not-for-profit contractors. As a result of these studies, the Air Force assembled an Air Force Space Program, which Lieutenant General Ferguson described early in 1963 as a "bound book" that spelled out "in quite readable English" two basic objectives: "1. To augment, by use of space systems, the existing military capabilities of U.S. terrestrial forces, and 2. To develop a military patrol capability for the protection of U.S. interests in space." "The various elements of the proposed Air Force space program," he stated, "would combine to form a stream of advance toward useful military capabilities in space, some of which can be realized almost immediately, others being dependent upon further technological progress." He pointed out that key elements in the program--the Titan III launching system and the Dyna-Soar--were already approved. An additional key element which was recommended for the program would be the development of a military orbital development system (MODS), which would include a military test station that would be put into low orbit and to which men would shuttle back and forth to explore problems of sustained operations in space. This concept had been proposed in the 1961 space plan, but it was programed in terms of technology in the 1962 program. Beginning in fiscal year 1964, the Air Force proposed to allocate $177 million to the beginning of the development of the MODS space station and for the acquisition of Blue Gemini vehicles--an Air Force acquisition of NASA-developed technology--which would permit an early beginning of Air Force training in space flight.[124]

While the Air Force was drawing up its space program, the Soviets continued to display an interest in expanding their military technology into space. On 11-12 August 1962 the Soviet Union placed two astronauts into orbit within a 24-hour period, the orbits of the

two Vostok vehicles being so carefully calculated that they approached to within three miles of each other. Appearing in public print, Marshal V. D. Sokolovsky's Military Strategy portrayed Soviet activities in space as being peaceful and reactive to the American space threat, but the volume noted: "An important problem now is warfare with artificial earth satellites, which can be launched for diverse reasons, even as carriers of nuclear weapons." It also stated: "Soviet military strategy takes into account the need for studying questions on the use of outer space and aerospace vehicles to strengthen the defense of the socialist countries. . . . It would be a mistake to allow the imperialist camp to achieve superiority in this field. We must oppose the imperialists with more effective means and methods for the use of space for defense purposes."[125] Under a Moscow dateline of 23 February 1963, Marshal S. S. Biryuzov announced: "It has now become possible at a command from earth to launch rockets from satellites at any desirable time and point of the satellite's trajectory." Biryuzov added that the Soviet Union had a superiority in rockets and in nuclear weapons over the western nations.[126]

Accepting the fact that the United States was behind in space technology, Lieutenant General Ferguson defended the Air Force Space Program as "a prudent one in a dangerous world."[127] The Air Force program, however, was based on guidance provided in January 1962, and new Department of Defense thinking began to appear even before the program books were printed. In a speech on 5 September 1962, Deputy Secretary of Defense Gilpatrick stated: "An arms race in space will not contribute to our security. I can think of no greater stimulus for a Soviet thermonuclear arms effort in space than a United States commitment to such a program. This we will not do."[128] In another address on 9 October 1962, Deputy Director of Defense Research and Engineering John H. Rubel reminded his audience that the Department of Defense was not a "Department of Space" and that defense space projects must further a basic defense mission. While defense expenditures for space technology had been very large, Rubel noted that "we have not evolved any very new ideas for military operations in space during the past several years." Such ideas might be forthcoming, but Rubel emphasized that technical and policy decisions concerning the development of systems for military use were not being made on general or philosophical grounds "or in furtherance of abstract doctrinal concepts." He pointed out: "Polaris does not augment America's 'sea power' in the Mahan sense, nor was it started and supported because anyone thought it would. Minuteman does not augment America's 'air power' in the conventional sense any more or any less than Polaris does, nor is it either supported or opposed because it is essentially a 'land' system, owing its survival to dispersal and hardening under ground. Doctrinal abstractions such as 'sea power' or 'air power' or 'aerospace power' are often useful for analysis and discussion of the patterns as history reveals them. But these doctrinal abstractions do not

translate well into new programs and projects. Here technology takes over, and technology . . . tends to obsolete such concepts and abstractions rather than the reverse." In conclusion, Rubel stated the considerations that affected defense research and engineering: systems must meet clear-cut military requirements; decisions must be governed "by what we ought to do, not just what we can do, although new developments often affect both;" developments must be feasible and worthwhile in relation to urgency and effectiveness; and there was a need to insure technological growth in all fields of military interest and concern.[129]

In commenting to a journalist on Mr. Rubel's address, an anonymous officer who was said to be very familiar with military space affairs believed that the size of the defense space research and development program was not the issue but rather the lack of doctrinal concepts which could "guide the men charged with the responsibility for weapons development and procurement in properly selecting what is needed." In this officer's view, doctrinal concepts were not abstract; they were courses of actions and of the conduct of operations; they were "the blueprints for the use of certain environments in a certain way."[130] When Secretary McNamara was asked to explain what Rubel meant by his references to "doctrinal abstractions," he replied: "I interpret the quote . . . to mean that Mr. Rubel believes that if we develop weapons systems for space, they are likely to be new weapons systems, not merely extensions of current weapons systems designed primarily for earth-bound use, and to that extent . . . I fully share Mr. Rubel's view." When asked to comment on General White's asserting that "those who control space will control the world," McNamara responded: "I don't understand what it means. . . . I have heard of no space weapon in concept form or otherwise which offers potential greater than other weapons in our inventory."[131] In reply to another specific question, McNamara described the Bambi antimissile satellite as "nothing more than a paper study of a very esoteric system."[132] A little later, Dr. Brown was also asked about White's belief that the world could be controlled from space, and he replied: "I would not subscribe to that statement partly because I am not quite sure what control of space means. I do not see that it is really feasible to control space because a country will always have an advantage in space over its own territory because it can easily operate from the ground up into space. I do not see a way, for example, in which space can be controlled to the extent that one can prevent ballistic missiles from being fired here from going through space and coming down there. If a country could do that it would indeed be in a fair way to control the world, and we continue to work on ideas that might have that effect. But I think in the end it is not going to be feasible."[133] Brown also thought that it was "conceivable but not likely" that space might become an area in which armed conflict might take place: it might be possible, he said, to knock out a hostile space vehicle with "another thing based in space." I

believe," he added, "that is not very likely because you can probably do it better from the ground . . . ."[134]

In the preparation of the Department of Defense budget requests for fiscal year 1964 which took place during calendar year 1962, Secretary McNamara demanded that any space project undertaken for military purposes would mesh with the efforts of NASA in all vital areas and would "promise, insofar as possible, to enhance our military power and effectiveness." The defense space program thus was divided into three categories of projects: projects for which there was a clear military requirement such as satellites for mapping, communications, navigation, detection of nuclear testing, and weather forecasting; projects related to developmental work on probable future military requirements such as missile warning systems and additional communications; and research and development work related "to the development of certain capabilities which would be required were we subsequently to find it necessary to put man into space in conjunction with some military requirement that might arise in the future." As previously noted, McNamara refused to accept the Air Force requirement for the manned orbital development system and the Blue Gemini both because they did not mesh with the NASA program and because they would duplicate Gemini and Dyna-Soar. In the Department of Defense budget request for fiscal year 1964 which was submitted to Congress in January 1963, McNamara estimated that $1,650 million was for space and that the military space program amounted to more than 20 percent of the total research and development budget.[135] While McNamara followed normal usage in referring to a "military space program," Dr. Lawrence L. Kavanau, Special Assistant (Space) in the Office of the Director of Defense Research and Engineering, subsequently explained that a military "space program" actually could not exist as a separate entity under McNamara's criteria since most space projects had to compete with other systems on a functional and cost basis within the total defense program structure.[136]

In presenting the Air Force position on space to Congressional committees early in 1963, Lieutenant General Ferguson pointed out that while the Soviets faced formidable free-world air, sea, and land defenses "the advent of human space activity exposes an open flank" in which "the Soviet strategist may well hope to attain strategic ascendancy."[137] Dr. I. A. Getting, President of the Aerospace Corporation, was even more fearful of the space race. "In the exploitation of space," he was quoted as saying, "we appear to be risking unilateral disarmament."[138] In rebuttal, Secretary McNamara insisted that he knew of many things in space that the United States was doing that he had no information the Soviets were doing and that, on the other hand, he knew of nothing that the Soviets were doing that the United States was not undertaking. He further observed: "I do not believe the Soviets are utilizing space for military purposes to nearly the extent that we are today. I say that because our operations in space for military purposes are truly quite extensive."[139] Secretary McNamara could find no logical

reason for placing weapons of mass destruction in orbit. "I haven't had recommended to me," he said, "the introduction into space of any weapon that I can recall, nor am I aware that we have developed a weapon which offers sufficient potential to warrant being placed in space.[140] Both LeMay and Ferguson accepted the viewpoint that the employment of orbital weapons against earth targets appeared to have no immediate tactical advantages in comparison with intercontinental ballistic missiles, but they were not willing to rule out a future possibility that such weapons might not prove practicable. The main advantage of orbital weapon systems would be the reduction of the time that a missile thus launched would require to strike a target.[141]

In his presentations about space, Lieutenant General Ferguson also placed great emphasis upon the importance of man as an essential element of future space systems. "The Air Force," he stated early in 1963, "is convinced that man will have an important place in aeronautical and space systems of the future. . . . We firmly believe that manned operations provide more assurance of mission success because of the proven ability of man to reliably cope with unanticipated military problems. In addition, military equipment gains in flexibility and capability and at the same time is less complex with a human operator aboard. Finally we can think of no way to build into automated military equipment the determination of a military man to perform his missions in spite of unforeseen obstacles or national deficiencies."[142] While a manned orbital military space station would be an "important building block" in the Air Force space program,[143] Ferguson submitted that the program had even more important objectives: "the goal of manned military space operations," he emphasized, "is the ability to launch into orbit with minimum delay, to perform the required mission, and quickly return to a secure area, preferably in the United States. Such operations, to be effective, must not be limited by restrictive recovery plans such as are used by Mercury and Gemini. Reliable and routine recovery of the pilot and his reusable spacecraft with its special equipment is a must."[144] Based upon this concept, the Air Force judged that the experimental Dyna-Soar was "a most critical part of the national space program."[145]

From his public statements, Dr. Brown was known to have personal doubts about the usefulness of man in space.[146] Early in 1963, Secretary McNamara also began to express doubts on the subject. "As for the requirement for a manned military operation in space," he explained, "it is not clear to me what we gain by putting a man in space for military purposes. I do not see the future clearly. It may be that certain of our requirements in space cannot be met without a man there. It may be that in order to inspect properly unidentified satellites we might have to have a man in a U.S. satellite in space. I think it is rather unlikely we would require a man for those purposes, in part because a man greatly complates the operation in space. You have to put so much in space just to

allow a man to exist that it greatly adds to the complexity of the operation. Today it appears to us we can achieve military capabilities in space more quickly without a man than with a man. But as our knowledge of space operations advances this conclusion may prove false and I believe, therefore, we should have boosters with a sufficient capability to put into space satellites that will allow men to operate within them and we should have an understanding of the strains on the man and the extent of his capability in that space environment."[147] At the very least, Dr. Kavanau reported that the subject of man's usefulness in space was controversial within the Office of Director of Defense Research and Engineering.[148] To Mr. Rubel the question resolved down to a matter of taking first steps first. "We could not," he believed, "define a mission in space until we had done the very first things necessary to put the man up there and find out what his functional capabilities were, what his functional limitations were, what the relative costs and advantages of having him there are . . . so that the first step in any program, even if we could define with the greatest precision right now exactly what military mission he would perform . . . would be . . . to do the bioastronautic work and perform the tests and experiments necessary to get the fellows up there and find out their capabilities."[149]

Moved by an uncertainty as to the worth of man in space and by a belief that NASA's Gemini program had outstripped the Air Force's Dyna-Soar program, McNamara began to question the advisability of continuing with Dyna-Soar. In view of the NASA-DOD agreement permitting defense representatives to sit on the Gemini planning committee, McNamara asked the Air Force on 18 January 1963 to consider the possibility of cutting back the Dyna-Soar program and proceeding with Gemini.[150] To Mr. Rubel a close examination of Dyna-Soar made much sense: the program was laid out to cost $800 million and probably would cost more; the X-20 vehicle of the Dyna-Soar project was of a "very advanced character" and "technically far out;" and, finally, answers were needed to the question of why--considering Gemini--the Air Force ought "to support such a large effort at the same time you have another one going to put man in a near space orbit at very great expense when we know so little about what is involved in the support of life and the limitations and capabilities of man in space."[151]

During the Department of Defense examination of Dyna-Soar in the summer and autumn of 1963, the Air Force submitted that the X-20's lifting maneuver and radiative-cooling design made it substantially different from the ballistic characteristics of Mercury and Gemini. The X-20 would explore regimes of flight from mach 5 to mach 25, and its flexibility in orbital recovery would open a wide recovery "window" (the time-space when a deorbit decision had to be made). Its ability to maneuver would permit it to land at a selected point within an area in excess of 10 thousand square miles, as compared with a few thousand square miles for the Gemini. Since

the X-20 would not require great numbers of naval vessels and as many as 20,000 people required to recover the Gemini, it promised a substantial saving in recovery forces. "We feel," General LeMay stated, "that if we are ever going to do anything useful out in space, we must be able to get out there cheaply and be able to return at a precise time and spot on the globe, which means controlled reentry."[152] In essence, the Air Force assumed that the X-20 Dyna-Soar was going to be an initial step into what would become a large, manned military mission in space, and Secretary McNamara refused to accept this assumption, until he could get some hard evidence. At a briefing given by the X-20 Systems Program Office in Denver on 23 October, McNamara asked many more questions about the manned space mission than about the Dyna-Soar, and he subsequently justified the decision to terminate Dyna-Soar by describing the X-20 as "a narrowly defined program, limited primarily to developing the techniques of controlled reentry at a time when the broader question of 'Do we need to operate in near-earth orbit?' has not yet been answered." While maneuverability was admittedly of great interest, McNamara felt that the maneuverability of the X-20 would not be needed until man's capabilities in space had been demonstrated and were actually being used in a semi-routine manner. By such a time--if such a time eventuated--a much more capable vehicle than the X-20, which could carry only one person and had very limited flight endurance and payload capacity (75 cubic feet/ 1,000 pounds), would obviously be required. Speaking of Dyna-Soar, McNamara said: "I think this is a good illustration of what happens when we start on a program with a poor definition of our end objective."[153]

Believing that Dyna-Soar should be terminated but that national security demanded the development of manned military space flight technology, the Office of the Secretary of Defense worked closely with NASA officials to devise a substitute program. When Secretary McNamara announced the cancellation of Dyna-Soar on 10 December 1963, he simultaneously proposed the initiation of a Manned Orbital Laboratory (MOL) study and expansion of an unmanned Aerothermodynamic Structural Systems Environmental Test (ASSET) project. The MOL project was to be directed specifically to determining man's utility in performing military functions in space. This system would be made up of a modified Gemini capsule coupled to a pressurized cylinder that would be equipped as an orbiting laboratory. It would be launched by a Titan IIIC. Viewed in concept, a 2-man MOL crew would be seated in the Gemini B capsule during launch; would move back into the laboratory section after the vehicle was in orbit; for return to earth the astronauts would reenter the Gemini, detach it from the laboratory section, and employ the capsule as the reentry vehicle. With provisions for about 30 days in orbit and ample working space, the MOL promised to provide a much more comprehensive

test of military man in space than either Gemini or Dyna-Soar.* Employed in unmanned flight, the relatively small ASSET vehicle would be able to answer many flight questions regarding aerodynamics, structures, and aeroelasticity much more economically than a full-scale Dyna-Soar, but ASSET would lack maneuvering capability, orbital capability, and horizontal landing capability.[154]

In justifying the cancellation of Dyna-Soar early in 1964, Secretary McNamara estimated that the cost of the cancelled program would be about $400 million including termination charges, and he further estimated that about $100 million of the cost could be considered to be salvageable in the form of added knowledge about reentry controls. He confessed that he had been remiss in not having cancelled the project earlier. To his way of thinking, Dyna-Soar was another example of "the problem that we have had in this space age, when there has been tremendous pressure on all parties to initiate large projects with rather ill-defined purposes."[155]

Neither Secretary Zuckert nor General LeMay concurred in the cancellation of Dyna-Soar. LeMay admitted that the MOL and ASSET programs would be 'of great significance," and Zuckert said that the idea of a military orbital laboratory had been "an important cornerstone" of the Air Force space program. He also recognized the finality of McNamara's decision on Dyna-Soar. But he insisted for the record that approximately $373 additional million would have financed Dyna-Soar through its initial flight in July 1966. Since half of the Dyna-Soar project had already been funded, LeMay thought that the cancellation of the project would not represent a realistic saving. He explained: "the capability of returning from space in a precise, maneuverable, pilot-controlled manner is of fundamental importance to the conduct of practical and routine manned military space operations. Dyna-Soar was vigorously supported by the Air Force because it provided the most promising approach to such a capability. It is our considered judgment that the problem of precision return will some day have to be resolved."[156]

* * * *

The Kennedy administration had come into office with the evident belief that the United States was in danger of losing a space weapons race with the Soviet Union, but much of the fear of Soviet technological superiority evidently disappeared in 1962 and 1963. "When Khrushchev pulled out of Cuba," Senator Russell observed, "it settled any issue in my mind as to where superiority is today." Secretary McNamara agreed. "I share your views completely," he told Russell. "I think all of Khrushchev's actions indicate the

*Although research on the MOL was undertaken, the MOL project would be cancelled by the Department of Defense on 10 June 1969 for reasons described as "primarily monetary."

conclusion that he knows we can completely destroy his society today should he attack us from the ground, the sea, the atmosphere, or space."[157]

Even though the Department of Defense policy in regard to space research and development appeared to be changing early in 1963, Secretary McNamara flatly denied the allegation that the United States was unilaterally foregoing the development of offensive space systems in the hope that the Soviets would do likewise. He was also sure that the Soviets were not exercising voluntary restraint on military space programs. "I don't believe," he stated in February 1963 in reference to the Soviets, "they are exercising voluntary restraint on anything. They are seeking every possible form of power that will give them an advantage over us."[158] As already noted, however, both the United States and the Soviet Union accepted the United Nations resolution of 17 October 1963 which called upon all nations to refrain from orbiting weapons of mass destruction in space. This resolution did not prevent research and development on orbital weapons, but Dr. Brown subsequently stated that no more than three or four people in one of the contract organizations were studying the matter in the United States during fiscal year 1964. Brown expected similarly small efforts in fiscal year 1965, for two reasons: "First, it is not a very good idea. . . . Second, there now is a U.N. resolution . . . not to put bombs in orbit." In Brown's judgment orbital weapons "are not very great threats to us in the near future, and . . . they are unlikely ever to be. Such weapons would be largely antipopulation in nature and would not appear to alter Soviet military posture sufficiently to justify several obvious difficulties in their deployment." In summation on an orbital weapon system, Brown observed that "apparently neither the Russians nor we believe it is a very important strategic weapon or a very valuable strategic weapon considering how much it would cost and how little it would do beyond what can be done by ballistic missiles."[159]

When he explained the defense research and development budget request for fiscal year 1965 to Congressional committees early in 1964 Secretary McNamara repeated his belief that the Soviets did not have any precedence over the United States in defense space efforts. "I believe," he stated, "Our military space program is at least as extensive as theirs today."[160] In this budget McNamara continued to emphasize the requirement that military space projects must mesh with NASA efforts and must hold "the distinct promise of enhancing our military power and effectiveness." About half of the defense space research and development effort was directly related to relatively well recognized and understood military requirements, such as satellite communications and navigation systems. The balance of the defense space effort was "aimed at creating a broad base of new technology, devices, and in some cases systems for possible future application."[161] The policy of creating a broad base of space technology without necessarily developing military systems was reminiscent of earlier policies of the 1930's and 1940's which had sought to maintain an aeronautical potential in being for use in a

mobilization effort in the event of need. Based upon the availability of the Titan IIIC large-thrust military booster and the building-block approach to space technology, Lieutenant General Ferguson ventured a "horse back guess" that a required space weapon system probably could be developed with an absolute minimum leadtime of three years.[162] The demonstration of a satellite intercept capability "in just about a year" of work in 1963-64 provided an illustration of how the broader space technological base might permit the United States to respond to requirements. The satellite interceptor was put together to include a Thor booster and guidance components that had been developed for other purposes.[163]

Although they accepted the evolutionary approach to military space technology, Air Force leaders continued to give credence to Soviet space threats to the security of the United States. "History records," noted Lieutenant General Ferguson in March 1963, "that an acceptable peace in any medium has been maintained only through the existence of ready military strength applicable to that medium. Unfortunately, it also records that every medium affording military possibilities has been used for military purposes."[164] General LeMay stated that the United States certainly should be thinking about a strategic space force, even if the time was not right for it. "A military capability for defense," he warned, "is the product not only of technology, but also of training and operational experience." Emphasizing "the factor of time by which space threats and counter-threats are governed," LeMay pointed out that "if an unforeseen threat emerges in the new medium of space, months or years will be required to devise, develop, and render operational the necessary defense against the new threat." Unlike the divided civil and military space programs in the United States, LeMay personally believed that the Russian space program was "entirely military."[165] In one of his first public addresses following his retirement from the Air Force in February 1965, LeMay emphasized that the ability of the United States to evaluate Soviet intentions had never been outstanding. Very nearly all Soviet acts of aggression had been accompanied by an element of surprise. "It is in the area of space," he concluded "that Soviet technological developments are most likely to bypass this generation of US weapon systems."[166]

3. Future in Prospect: Project Forecast and Air Force Manual 1-1

"Beyond the immediate future," Secretary Zuckert remarked in February 1963, "the picture is not as clear as we would like it to be. The natural uncertainties inherent in forward planning are complicated by such imponderable factors as the life expectancy of today's manned strategic bombing systems, the complications in the planning and employment of an all-missile strategic system, the question of an appropriate defense structure, and the uncertainties as to the nature of development of military activity in space."[167] Both Zuckert and LeMay evidently recognized that the time had come

for the Air Force to take stock of its capabilities and to look to its future potential. In March 1963, LeMay directed General Schriever, as Commander, Air Force Systems Command, to make "a comprehensive study and analysis of the Air Force structure projected into the 1965-1975 time period."[168]

The LeMay directive set in motion a major Air Force study which came to be known as Project Forecast. To escape the disruptions of the Pentagon, Schriever concentrated the study of future Air Force technological opportunities and requirements in the Air Force Systems Command's Space Systems Division complex at Los Angeles, California. In a period of some nine months of sustained effort, representatives of some 40 government activities, including 27 Air Force organizations, the Army, Navy, and Marine Corps, and ten other Federal agencies participated in Forecast. Twenty-six universities and colleges provided members from their faculties and research staffs. Seventy corporations and ten non-profit research agencies also provided a strong civilian technical input and consultant services to the investigation.[169] Between 400 and 500 individuals were engaged at various times and in some capacity in the study.[170]

In its organization Project Forecast sought to provide an orderly screening of the widest range of technological possibilities provided by 12 Technology Panels in terms of the estimate of the hostile threat provided by a Threat Panel and of the present and future national policies of the United States as identified by a Policy Panel. These screened inputs were used by five Capability Panels which synthesized them into military weapons and support systems which promised to provide a military capability to serve in a future conflict environment. After all potential weapon and support systems were identified, an Analysis, Evaluation and Synthesis Panel selected preferred systems after a consideration of their cost effectiveness characteristics. A special Cost Panel provided cost estimate data to all panels and participated heavily in the work of analysis, evaluation, and synthesis. A special Personnel Resources Panel was established to examine human skill requirements that would be required by advanced weapons and support systems.[171] Drawing upon top technical imagination, the study process sought to examine every technological possibility that might exist in the post-1970 time period and to determine the enhancement of military capabilities that might be derived from it for employment in general war, limited war, continental defense, intelligence and reconnaissance, or supporting functions.[172]

One of the first findings of Project Forecast was that technology was just as dynamic as it had been since World War II and that a "technological plateau" did not exist. One Forecast panel identified more than 40 different future aircraft systems that could be developed. But while technology was dynamic, new weapons would be extremely costly to develop. "I do not think," Secretary Zuckert observed after hearing Forecast briefings, "there is going to be any dearth of ideas about new weapon systems of the future. I think . . . that

the problem will be a matter of selecting the ideas we can afford to pursue."[173] Even before the project was completed the Air Force began to feed Project Forecast findings into its planning. Thus the requirements for the CX-Heavy Logistics Support aircraft included in Air Force development planning for fiscal year 1965 were shaped by Forecast data.[174] Forecast also pointed out that with improvement of local enemy defenses, particularly short-range surface-to-air missiles, both strategic and tactical delivery systems would require a standoff strike capability to survive in a future general or limited war environment. During 1964 the Air Force developed the requirement for a short-range attack missile (SRAM) which would be much smaller than the discontinued Skybolt and could be employed by either B-52's or tactical fighters and used either to suppress hostile defenses or to attack primary targets. The fiscal 1966 research and development budget included funds for a project definition phase research on the short-range attack missile.[175]

In the process of trying military systems capabilities against stated national policy goals, Project Forecast spotlighted deficiencies in the capabilities and stated attendant requirements. Current intercontinental ballistic missiles were not well suited to destroy military targets while limiting collateral damage to a surrounding area. A worldwide pattern of potential conflict demanded a degree of global air mobility that did not exist. The Air Force was not as well prepared as current technology could provide to participate in low levels of limited war, particularly in underdeveloped areas. An anti-ICBM capability would be essential to ensure the maintenance of strategic deterrence. A manned strategic aircraft system would be required throughout the spectrum of conflict in situations where ballistic missiles would not be used. Members of Forecast also examined a number of potential new systems which might be employed against a submarine-launched ballistic missile threat, and they stated their belief that the United States should build forces capable of coping with the problem of potentially hostile space satellites.[176]

In addition to the identification of special weapon and support system opportunities and requirements, Project Forecast drew attention to five areas of technology in which progressive research and development could promise what General Schriever described as "potentially enormous payoff." Over the years the Air Force had made reasonable investments in the development of aluminum compounds, titanium, columbium, and other advanced materials that had been tested in the X-15, but Project Forecast recommended that even greater sustained efforts be made to pursue technical advances in the fields of oxide-dispersion-strengthened metals, metal and metalloid fibre techniques, and new families of organic and inorganic polymers. This work could yield a virtual breakthrough in materials that would be light in weight, would possess a very high tensile strength, and would be able to withstand very high temperatures. The application of these new materials as well as a new technique in

jet propulsion promised to provide a whole new era of air-breathing propulsion technology. The keystone to the development of a useful vertical takeoff and landing aircraft, for example, had long been recognized to be the development of engines with greater propulsive efficiency, and the new materials and propulsion techniques recommended by Forecast promised to hasten the development of an operationally effective VTOL aircraft.[177]

By the process of examining individual advances in separate technical fields as a whole, Project Forecast was able to foresee a "cascading" effect of various collective gains in the field of flight dynamics and flight vehicle design. Thus proper combinations of individual advances could provide new generations of flight vehicles that could possess virtually any operational capability that could be desired by a military or a civil air planner. Other significant developments could spring from forward projections of guidance and computer technology. As an unclassified example of possibilities in these fields, Forecast visualized the development of a new generation of computers that could be employed by a user in terms of his requirements without a vast commitment of man hours necessary to program them. While the full description of the technological possibilities foreseen by Forecast remained classified, General Schriever summed them up by saying: "In a number of technical areas, such as materials, propulsion, flight dynamics, guidance, and computer technology, we identified many promising technological opportunities."[178]

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Looking backward at his service as Air Force Secretary which had begun in January 1961, Mr. Zuckert observed: "It took some time for some of our old attitudes and outlooks to change; adjusting to new hardware still seems to be easier than adjusting to new ideas and new methods." As a matter of fact Zuckert suggested: "New hardware was welcomed with more enthusiasm than were new ideas in the realms of strategy, concepts, and doctrine." Especially in 1961, Zuckert believed that some Air Force leaders "were still approaching top-level problems of national security in terms of the concepts, doctrine, and study methods of the early 1950's. There were too many who took a parochial view of the big problems of planning, programing, and budgeting; who refused to believe that national policy and strategy were what the Administration said they were--not what an element of the armed forces thought they ought to be. I suppose this was a hangover from the ten or more years when we had been the principal guarantor of Free World security and in many ways the favored service. In those years our nuclear superiority had made the issues of strategy more clear-cut than they were after the U.S.S.R. achieved nuclear parity."[179]

On the basis of his commentary, Zuckert evidently conceived that Air Force doctrine should be designed to support national policy and strategy, which was a somewhat different concept from a pure

aerospace power doctrine based upon the absolute capabilities and limitations of aerospace forces in peace and in war. Reflecting aspects of pure aerospace doctrine, the Air Force basic doctrinal manuals of the 1950's described the military effects that any military force might produce upon another nation as being deterrence, persuasion, neutralization, denial, destruction, and capture. The predominant characteristics of aerospace forces had been proven to be range, mobility, speed, penetration, fire power, and flexibility.[180] In the aftermath of the Defense Reorganization Act of 1958 the Air Force recognized that it needed to provide new doctrines and procedures for organizing, equipping, training, and employing Air Force forces, but the task proved to be by no means easy. As it was published on 1 December 1959, Air Force Manual 1-2, United States Air Force Basic Doctrine, represented a minor revision of the older manual on the same subject to include "aerospace" terminology. With the publication of the revision of the basic doctrine manual, the Air Force Director of Plans determined that the corollary Air Force Manuals 1-3 through 1-11 would be reorganized into four manuals on the subjects of offensive functions, defensive functions, air support functions, and organization, training, and equipping of forces to fulfill specified combatant functions. The responsibility for preparing the four new corollary manuals was assigned respectively to the Strategic Air Command, the Air Defense Command, the Tactical Air Command, and the Air University. In 1960 the Air Force Directorate of Plans, in cooperation with the Air Photographic and Charting Service and the Air University, also undertook to prepare a training film on Air Force basic doctrine. In 1960-61 the responsible commands prepared drafts of the specified manuals and a scenario was written for the training film, but in the latter half of 1961 the Air Force Plans Directorate suspended action on all of the projects pending a maturity of the New Frontier strategy. In terms of the developing New Frontier strategy, Air Force Manual 1-2 appeared to place excessive emphasis upon massive retaliation and mass-destruction and did not give adequate emphasis to the application of precisely measured power in limited or general war.[181]

During Project Forecast Major General Jerry D. Page headed the Policy Panel which sought specifically to identify the goals of national policy that would influence development decisions within the Air Force. The panel did not attempt to determine what national policy should be, but it sought to define and interpret the meaning of national policy as it was. The panel believed that the first goal of policy was deterrence of war, general or otherwise, and that the importance of a deterrent capability at any level of intensity would be directly proportional to the damage an aggressor could expect to sustain at that level. Maintenance of superior strategic forces could deter a general nuclear war, but at levels of conflict below nuclear holocaust--limited wars, insurgency wars, insurrections, civil unrest--other objectives would become important. The Policy Panel stated that these objectives would be the maintenance of

multiple options and flexibility of forces for crisis management under varying lesser conflict situations; maintenance of the survivability of forces against uncertainties; realistic arms control measures that would not leave the United States vulnerable; controlled response and damage limitation in order that an enemy would not mistake the intent of prescribed military action; and the maintenance of thresholds of negotiation and war termination capabilities that would ensure the accomplishment of United States objectives. Some of these goals would be factors in preventing the outbreak of hostilities; others would be applicable in wartime, when the overriding objective would be to control the hostilities and to conclude them successfully at the lowest level of intensity. The main thrust of United States military policy appeared to be the creation of a stable military environment.[182]

The thinking of Project Forecast's Policy Panel permitted a clarification of Air Force basic doctrine. Secretary Zuckert accepted the Forecast checklist of policy objectives and stated on 10 February 1964 that they would be employed in the design of the Air Force force structure for the future.[183] Working under the direction of Major General Page during the winter of 1963-64, Lieutenant Colonel Richard C. Bowman, Lieutenant Colonel George H. Sylvester, and Major William E. Simons shared authorship of the draft of the new basic Air Force manual which was coordinated through the Air Staff and published as Air Force Manual 1-1, United States Air Force Basic Doctrine, 14 August 1964.[184] The authors of the new manual had served on the Project Forecast Policy Panel, and the thinking in the manual generally followed Forecast findings. As described in the manual the nature of modern conflict was related to the ten-point checklist of characteristics of forces which had been set forth in Project Forecast. The general characteristics and requirements of aerospace forces were specified as being flexibility (derived from range, mobility, responsiveness, and tactical versatility), survivability, central direction of command and control, penetration ability, selective target destruction capability, and recovering and recycling ability. Separate chapters described the employment of aerospace forces in general war, in tactical nuclear operations, in conventional air operations, and in counterinsurgency. In its conclusion the new manual stated a concept of national security: "Since the United States seeks a world free from aggression, its military forces must develop capabilities which clearly signal to a potential enemy that war at any level cannot produce a meaningful advantage. However, the nature of modern war has altered the use of force to the extent that total victory in some situations would be an unreasonable goal. Where enemies with capabilities to destroy our urban centers are involved, we should seek military objectives more realistic than total defeat of the enemy."

With the publication of Air Force Manual 1-1 the Air Force had adapted its doctrine to the concept of national security that had emerged from the new strategic situation in which thermonuclear

weapons and an assured delivery capability in the hands of potential enemies had altered the use of total military power. In an additional exposition of the new rationale, the Air Force Deputy Directorate of Advance Planning published a statement on "National Policy and Conflict Management" in November 1964.[185] In categorizing future conflict this statement distinguished between all-out thermonuclear holocaust in which national annihilation would be the apparent objective and all other conflicts of lesser intensity. All-out counter-city thermonuclear war would be the least likely form of conflict between the United States and the Soviet Union, since it was inconceivable that either nation would rationally and deliberately embark on a course of national suicide. All-out thermonuclear war could be deterred as long as the United States maintained a retaliatory capability that could survive a surprise attack with certainty, an ability to penetrate whatever defenses the Soviets might have or might build, and warheads large enough to assure damage levels of a very high order of magnitude. Under this condition no surprise attack could possibly look attractive to Kremlin planners. And it would be equally inconceivable that the United States would initiate such a war.[186]

While all-out counter-city nuclear holocaust would be unlikely provided the United States maintained necessary deterrent capabilities, a wide spectrum of lesser conflict remained available to the Communists, who had pledged that they would use military force to attain their objectives in cases in which potential gains would exceed risks that would be involved. One distinctive characteristic of the lesser forms of conflict would be that in each case hostile military forces would be the legitimate objective of military action. Since the sole purpose of these military actions would be to achieve a particular political end, the United States would seek to use its military force to gain military advantage over the enemy's military force and thereby facilitate the attainment of its political goals. In order to deter lesser conflicts the United States would require a capability and a determination to present the enemy with a confrontation in which the risks would be greater than the gains that he might expect to achieve through a particular act of aggression. In order to maintain this capability the United States would require forces that would permit it the option of escalating any lesser conflict all the way to the top of the upper end of the spectrum of conflict. Thus while military capabilities would have to be keyed to the concept of providing military advantage at the upper end of the spectrum of conflict, the United States could not permit any significant gaps to exist in its capability to handle lesser conflicts. The maintenance of this force posture would prevent an enemy from escalating a conflict to a portion of the spectrum of conflict where the vital interests of the United States or its survival might be placed at stake.[187]

When viewed against the spectrum of future conflict, the Deputy Directorate of Advance Planning suggested that the Air Force's

checklist of ten national policy objectives assumed understandable meaning. Deterrence was the credible capacity to discourage and thereby prevent aggression and was the number one national objective. Crisis management involved the ability to endure periodic and even prolonged international crises without either relinquishing the political objectives or allowing the situation to deteriorate into open conflict. It would require excellent intelligence, superior military forces capable of demonstrating without actually being employed in a hostile sense, enduring survivability, and strong nerves. Realistic arms control suggested that future forces would be designed with an eye to their stabilizing effect, their immunity to accidental or premature employment, and their possible role in monitoring and inspection functions. Next to deterrence, controlled response was probably the most important item on the checklist. It prescribed the kind of military action required in the event that deterrence should fail. It insured that military objectives would be kept in tune with political objectives and that exactly the right amounts of force would be employed to win political objectives. It suggested that there were responses other than a spastic one which would be more in the interest of national security. The subject of multiple options would seek to provide a national decision maker with a number of choices for responding to any particular contingency. Such options would be available when the national military posture was sufficiently flexible to permit alternative targeting plans, incremental applications of force, employments of force in both strategic and tactical missions, and responses to unforeseen contingencies. The damage limitation objective involved the employment of military action in pursuit of political objectives without bringing destruction to the things that the nation was trying to preserve by going to war. Enemy capabilities which were threats to the United States or its Allies would be targeted for precise priority counterforce attacks. By intentionally avoiding widespread collateral destruction to the enemy, the United States would provide the enemy with a strong incentive to avoid deliberate attack on its own population centers. If hostilities occurred, the United States would be interested in attaining negotiation thresholds which would be advantageous points on the ladder of conflict escalation. In order to prevent the expansion of a lesser conflict to a level of unrestrained conflict, the United States would seek to terminate a conflict at the lowest threshold at which it could attain its political objectives. The objective of war termination imposed requirements for intelligence capabilities, forces that could recover and recycle for a continuing employment in a degraded environment, reliable command and control, and continuing military capabilities for a post-hostilities period. The Deputy Directorate of Advance Planning stated that the ten-point checklist was being used by the Air Force to analyze its future weapon system requirements and further predicted that it would become "a well-thumbed reference to Air Force planners in the years ahead."[188]

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In many ways the retirement of General Curtis E. LeMay as Air Force Chief of Staff on 1 February 1965 marked the end of an era in the Air Force. General LeMay was the last major commander of World War II to retire from active duty. "Our country owes a debt of gratitude to Curt LeMay," witnessed Secretary Zuckert. "He has been one of the great leaders of our time--in war and in peace. The Strategic Air Command . . . stands as a testimony to his genius as an organizer, manager, and leader. For seven years, he served as Vice Chief of Staff and Chief of Staff of the Air Force. During those years, the precision which he had created in SAC was infused into all of our operating and support commands. That precision was accompanied by growing flexibility, by new ideas, and new ways of thinking about military problems. . . . With his retirement, we enter a new era in which we will owe much to the many foundations of our strength for which he was responsible."[189]

As it was published in August 1964, Air Force Manual 1-1, United States Air Force Basic Doctrine manifested an intention to look forward. The older basic doctrine manuals had stated: "Basic doctrine evolves from experience and from analysis of the continuing impact of new developments."[190] The new manual held: "Basic doctrine evolves through the continuing analysis and testing of military operations in the light of national objectives and the changing military environment."[191] The older manuals had taught that the United States Air Force was "the primary aerospace arm of the United States" and that: "Of the various types of military forces, those which conduct operations in the aerospace are most capable of decisive results."[192] The new manual stated: "Aerospace Forces are one part of a national military establishment maintained to support national policy objectives in our relations with foreign powers."[193] As Secretary Zuckert viewed the matter, Air Force leaders were willing to abandon their old disbelief that "there was any war which couldn't be won by air power alone," but they rightly knew that air power was "the supreme deterrent to general war" and "that there was no war which could be won without air power."[194]

CHAPTER 15

THE NEVER-FNDING QUEST FOR AIR FORCE DOCTRINE

In the foreword to Air Force Manual 1-1, United States Air Force Basic Doctrine, General LeMay observed: "It is probable that new interpretations will continue to be needed if Air Force doctrine is to be responsive to changing national policy requirements, the potential military threat, and developments in military technology."[1] Despite the efforts of a long line of air power thinkers--Mitchell, Trenchard, Douhet, Sherman, Ken Walker, Seversky, Hansell, O.A. Anderson, Kuter, Momyer, Dale O. Smith, Slessor, Page--the Air Force had not found its Mahan, and it no longer appeared likely in 1964 that an everlasting code of basic aerospace power doctrine could be refined and published for the guidance of the Air Force.

Both the record of the past and the portent of the future reveal that basic United States Air Force doctrine is a product of the pure capabilities and limitations of aerospace power, the developments in technology which affect these capabilities and limitations, the changing circumstances of the hostile threat, and the national policies of the United States. Since none of these factors remain constant, Air Force basic doctrine must continue to be responsive to change. While Air Force basic doctrine cannot fail to be responsive to the nature of the hostile threat and to the requirements of national policy, the record of the past nevertheless reveals a danger in relating basic doctrine too closely to either hostile threats or national policies, both of which are subject to fairly rapid change. The collapse of the German Luftwaffe provided an object lesson of the failure of the world's once most powerful air force to accomplish ultimately needed national requirements because Adolf Hitler had designed it to support a national policy of limited blitzkrieg warfare. And if U.S. Air Corps planners had limited their doctrinal thinking to the support of a national policy of isolation that prevailed in the United States during the 1930's, the United States would not have possessed capabilities for strategic air warfare that proved so providential during World War II and its aftermath.

Based upon the experience of the past, United States Air Force basic doctrine cannot ignore the dictates of national policy and the enemy threat since military power must be useful in the accomplishment of national purposes, but the basic doctrine must also seek to accomplish the ultimate attributes of aerospace power--notwithstanding existing limitations of technology. Viewed in terms of tiny fabric-covered planes, the doctrines of Mitchell and Douhet were largely dreams, but developments in technology unforeseeable in their times largely substantiated their predictions. While existing technology apparently envisions no practical means i- which

space can be "controlled" by peacefully-inclined nations, Air Force basic doctrine cannot safely ignore the fact that in the future the nation may vitally require capabilities to operate in space and even to "control" space in much the same manner that "control of the air" or "air superiority" was exercised in the past.

Even though doctrines change with constant re-evaluation, these doctrines are the bedrock which provide a foundation for any meaningful military organization. This was the case with the United States Air Force. During World War II Army Air Forces leaders possessed a commonly-held doctrine of war, which (as Marshal Ferdinand Foch had predicted much earlier) permitted them to solve their various problems, each in their own fashion, while directing their individual actions toward a common objective. This doctrine was a product of professional study both of the history of warfare and of the potential effect of air vehicles on military science and strategy. The lessons of World War II laid the basis for the organizational manifestation of air power doctrine that came to be in 1947 the United States Air Force. In the 1950's thoughts of a transcendent strategic air accomplishment of national military purposes indicated for a time that a unitary national military establishment and doctrine might supersede the Air Force and the other military services, but the new national strategy of "controlled flexible response" marked a return in 1961 to an emphasis upon the separate services and looked toward the development of a combined doctrine of war related to air, sea, and land media of operations. It is thus incumbent upon the Air Force to continue to develop doctrines applicable to the aerospace media and to ensure that these doctrines are suitable for incorporation into a national military doctrine for unified operations. Without clearly developed aerospace, sea, and ground war doctrines, the formulation of effective unified military doctrine is all but impossible.

Viable Air Force doctrine has always been and ought to continue to be a unique product of professional experience and responsibility. There is a certain merit in any man having to stand prepared to meet a payroll, and for military leaders combat is the payoff. From William Mitchell onward past experience indicates that productive air power thinkers tend to become reactive when they leave positions of responsibility. Although civilian scholars have an ability to influence military thinking, these scholars--even those in government-financed "think factories"--lack an ultimate responsibility for ensuring that their ideas will be sound enough to meet rigid requirements of future battles. Similarly, boards and commissions of responsible civilians, such as were extensively employed during the 1950's to provide guidance on military matters, are able to render informed opinions, but they lack an ability to work for the acceptance of their recommendations within the military establishment.

During the course of its history the Air Force has never found a proper organizational location for a function which it requires in order to refine, test, evaluate, and promulgate air doctrine. Certain

characteristics of Air Force doctrine bear upon the nature of the organization which must accomplish doctrinal responsibilities. Air Force doctrine must represent the judgment of the highest level of authority, must comprehend national policies and technological advances, and must be generally compatible with the evaluated doctrines of the other Armed Services. On the other hand, a doctrinal organization should be relatively free from the press of daily staff work which would detract from its primary mission, be able to muster the services of experienced men in sufficient numbers to permit a mutual stimulation of thought, possess adequate library and laboratory facilities, be prepared to maintain a broad and continuing look at the entire Air Force, and be capable of generating basic ideas and concepts and of testing and evaluating them to determine their doctrinal significance. Finally, usable doctrine should be communicated in a meaningful manner to all Air Force personnel and should be made the subject for study, discussion, and continuing evaluation in Air Force educational institutions.

When all has been said, it is possible that this history of Air Force ideas, concepts, and doctrine can offer only one significant conclusion. The narrative has revealed that men who believed and thought and lived in terms of air power were the makers of the modern Air Force. According to an observer of the times, men of the U.S. Air Corps "talked and lived airplanes and air power." "All the way from the hangar line to the old Air Corps Tactical School," recalled Major General Robert F. Tate, "you heard talk about air power."[2] Without a similar belief and thought and dedication to aerospace power on the part of the men and women of the modern United States Air Force, the future survival of the United States could well be in jeopardy.

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FOOTNOTES

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FOOTNOTES

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