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IDEAS, CONCEPTS, DOCTRINE:
A HISTORY OF BASIC THINKING IN THE UNITED STATES AIR FORCE
1907 – 1964

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IDEAS, CONCEPTS, DOCTRINE:

A HISTORY OF BASIC THINKING IN THE UNITED STATES AIR FORCE

1907 - 1964

by

Robert Frank Futrell

Volume I

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This publication has been reviewed and approved by competent personnel of the preparing command in accordance with current directives on doctrine, policy, essentiality, propriety, and quality.

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To the memory of

BRIGADIER GENERAL KENNETH N. WALKER, 1898-1943

who taught the credo

"A WELL ORGANIZED, WELL PLANNED, AND WELL FLOWN AIR FORCE ATTACK WILL CONSTITUTE AN OFFENSIVE THAT CANNOT BE STOPPED."

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F O R E W O R D

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 aerospace 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 dedicated professional men who were attempting to discover the capabilities and limitations of new forms of air and aerospace power and to relate these new characteristics of military power to the defense of the United States and its national interests. The story begins with the first heavier-than-air flight in 1903 and arbitrarily closes at the end of 1964. Acceptance of this terminal date prevents a coverage of Air Force thinking about counterinsurgency warfare and the military operations in Southeast Asia, which were not yet fully developed by the close of 1964.

The existing state of professional historical art does not provide much guidance as to the way a history of military ideas ought to be approached. Edward Mead Earle's, Makers of Modern Strategy, Military Thought from Machiavelli to Hitler,* is a monumental study of military thinking that is worthy of emulation, but Earle's volume is a series of case studies of the ideas of the "Great Captains," drawn from their formal writings. The authors of Earle's book focus attention upon a relatively few individuals and assess their specific contributions to the art and science of warfare. A study of Air Force thought, on the other hand, involves a consideration of the views of a substantially large number of men, most of whom accomplished little formal writing. While air officers have not been prolific writers, they have expressed their beliefs freely, especially before Congressional committees and commissions. In fact, one may almost say that the Air Force has developed with an oral rather than a written tradition. Speeches, lectures, and testimony of Air Force leaders have provided the richest source of data for this study of the ideas, concepts, and doctrine of the Air Force. It should be noted that each quotation from or citation to a National War College, Army War College, and Air War College lecture has been appropriately cleared with the lecturer, since such lectures are considered privileged, even though they may have been unclassified as to military security. To a man, these lecturers have been generous and enthusiastic in granting approval to quote or cite their work.

*Edward Mead Earle, ed., Makers of Modern Strategy, Military Thought from Machiavelli to Hitler (Princeton: Princeton University Press, 1944).

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In developing the narrative the author has been constantly concerned with the problem of how the matters under consideration could be presented in the most meaningful manner. Since ideas and concepts are frequently interpretations of facts and not facts themselves, a thinker may predict meanings before events transpire, or, even more likely, continue over a period of years to draw interpretative meanings from the factual happenings of the past. Fundamentally, ideas often lack a temporal quality, and a history of ideas lacks the neatness of a history of past events. It is possible that this history of air ideas, concepts, and doctrine should have been presented as an anthology of pertinent discourse, with accompanying commentary. This technique, however, would have obscured a proper recognition of the circumstance wherein the developing Air Force was itself an excellent manifestation of air ideas. The notion of an anthology was nevertheless so persuasive that the author has as often as possible allowed the thinkers to speak for themselves and to work their dialogue into the narrative. This practice frequently makes for tedious progress when citations are lengthy, and short quotations run the danger of lifting thoughts out of context. Still, summarization of a man's words in contemporary language can easily distort original meanings. The record will show, for example, that "Air Superiority" had different meanings to different thinkers during the course of Air Force history. As a matter of practice, the author has sought to present the story of the way things were and what men were thinking in a developing time frame, without attempting a high-gloss interpretation of either the events or the thoughts.

In the course of the unfolding story, the reader will perceive that Air Force thinkers have seldom addressed themselves to purely theoretical matters but have usually tended to respond to specific situations. Since the United States has always been a defense-minded nation, the nature of the hostile threat has been the greatest stimulant to military thinking. Air Force thinking has also been reactive to the activities and ideas of other defense services, and it is frequently necessary that Department of Defense, Army, and Navy positions and actions be noted in order that Air Force thinking may be better understood. The Air Force focus of the narrative dictated that the views of others be presented in shorter compass. Since this procedure inevitably oversimplified the views of the Office of Secretary of Defense and the other Services, an informed reader ought to consult the works of such military thinkers as Generals Ridgway, Taylor, and Gavin, and, certainly, Robert S. McNamara's, The Essence of Security, Reflections in Office (New York: Harper & Row, 1968). The informed reader will also wish to see the books by Air Force Generals Twining, LeMay, and Power, which were published after the text of this historical study was put in final form.

Many persons have assisted in the preparation of this history by providing support, helpful criticism, and pertinent suggestions.

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The author is especially indebted to the sixty eminent authorities who are cited in the text and who not only permitted quotations from their War College lectures but often provided additional information and words of encouragement. Maj. Gen. Haywood S. Hansell, Jr., Brig. Gen. Don Z. Zimmerman, and Brig. Gen. Noel F. Parrish have read the narrative and provided a wealth of background knowledge which has prevented some errors of fact and interpretation. In the Secretary of Air Force Office of Information between 1966 and 1969, Maj. Gen. William C. Garland, Mr. Flint O. DuPre, and Mr. Francis W. Jennings shepherded the manuscript through a very intensive three-year-long review conducted by the Directorate of Security Review, Office of the Assistant Secretary of Defense, Public Affairs. In this same period, Maj. Gen. Richard A. Yudkin, Director of Doctrine, Concepts and Objectives, Hqs. USAF, also gave continuing assistance in the task of securing the OSD clearance for open publication of the manuscript. The Commander, Aerospace Studies Institute, Maj. Gen. Robert N. Ginsburgh not only secured the ultimate OSD clearance but has provided for the publication of the manuscript. As USAF Historian, Dr. Albert F. Simpson extended personal guidance to the author in every step of the undertaking. Miss Marguerite K. Kennedy, Chief, Archives Branch, Historical Research Division, greatly facilitated research. The following deserve special thanks for their part in preparing the final manuscript for publication: Mr. R. E. Vaughn for his technical assistance; Mr. Herbert L. Sparrow for handling the administrative details; Mrs. Mary F. Hanlin for coordinating and supervising the project; Mrs. Alice T. Sikes, Mrs. Lillian M. Osburn, Mrs. Bettye Maynard, and Mrs. Frances Dupree for typing the final draft; and Capt. Donald M. Bishop and Mr. Robert Mueller for proofreading the final copy.

Where many persons have provided information and assistance toward the writing of this history, the author assumes the responsibility for the errors of fact or interpretation that doubtless have escaped into print. Like other Air Force historical studies, this history is subject to revision, and additional information or suggestions for correction will be welcomed.

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CHAPTER 1

SOME PATTERNS OF AIR FORCE THOUGHT

"A very knowledgeable reporter stated recently," said General Curtis E. LeMay, Chief of Staff United States Air Force, on 21 September 1961, "that in the early 1950's he felt he knew what the Air Force stood for, but today he doesn't." LeMay continued: "His statement puzzled me. It also alarmed me because understanding our doctrine and concepts is basic and important to our very existence."[1] In these words, General LeMay called attention to a matter which had concerned Air Force officers for many years. In December 1957, General Thomas D. White, who was then USAF Chief of Staff, had stated: "The Air Force has so recently achieved its full stature as to be something of a doctrinal mystery in comparison with the older, more familiar services."[2]

Unlike the United States Navy--which appeared to operate in accordance with a seemingly complete set of seapower principles recorded by Admiral Alfred Thayer Mahan--or the United States Army--which drew its principles from generations of American and foreign military scholars--an Air Force officer speaking in 1955 could only conclude that "the Air Force as a service does not have a set of ideas against which it is operating, at least not a complete set of ideas."[3] "The Air Force," stated an Air University staff study in 1948, "has never maintained a complete and current compilation of those concepts, principles, policies, tactics, techniques, practices, and procedures which are essential to efficiency in organizing, training, equipping, and employing its tactical and service units."[4] Provoked by an Army officer's magazine article entitled " Air Power Needs Its Mahan," Maj. Gen. John DeForest Barker, Deputy Commander of the Air University, observed in 1953: "We definitely need a body of air principles backed by the historical evidence of air employment."[5]

Such testimony by qualified Air Force officers clearly indicated that Air Force thinking about its fundamental ideas and beliefs had not been systematically recorded. These and other Air Force authorities, however, believed that the Air Force required a recording of its fundamental beliefs. In the midst of World War II, an Army Air Forces staff officer pointed out: "In any field of endeavor, private or public, the first essential is a body of working principles and the next is a clear concept of the manner of following those principles with the means at hand. Without such principles and concepts being clearly expressed, at least in the minds of the users, it is not at all possible to attain coordination and efficiency, and it is not reasonable to expect, as is desirable, that all workers to the common end will have in mind the same possibilities and objectives. In military matters, especially those of the magnitude of the operations of the present war, where mistakes and inconsistencies cost thousands of lives and millions of man-hours, it is all the more important that there be clearly

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expressed guiding principles which are clearly understood by all planners, as well as by all who are charged with the handling of forces in the field."[6]

A study conducted by an Air War College seminar in 1951 concluded that the United States Air Force had a vital requirement for a codification of its doctrine. Prior to World War II virtually all of the senior Air Corps officers and many of the lesser ranking officers had been able to pass through the Office of the Chief of Air Corps, exchange views with the division heads, and draw from their conversations "the essence of air doctrine." During and after World War II, however, the Army Air Forces and the United States Air Force had grown into a large and very complicated organization, with many thousands of officers. Still, if an officer in the field were to point his efforts along constructive lines he had to know "the over-all policies and objectives of the Air Force." "Without a well-established doctrine," the seminar concluded, "the efforts of all but a few key personnel, who can remain sensitive to the changes as they occur, are to a very considerable extent negated."[7]

The reasons why the Air Force has been hesitant to engross its fundamental beliefs demand some explanation. "Air activities have most often attracted men of active rather than literary leanings. . . . The Air Force has never boasted a high percentage of scholars," pointed out Colonel Noel F. Parrish in 1947.[8] So far as writings by senior commanders were concerned, Professor W. Barton Leach described the Air Force as "The Silent Service."[9] "As you know," wrote General Barker in reference to the provocative article regarding the Air Force's need to develop a Mahan, "the scholarly life is not particularly respected in the profession of arms." "I don't believe, however," Barker continued, "that we can ever detail an officer to do a work of this sort. Mahan, as with all great thinkers, was inspired. Of course he had to spring from an environment which allowed him to study long and deeply the problems of sea power. His many years on shipboard were devoted to these exhaustive studies--but he would have been playing poker . . . and reading fiction if he hadn't been inspired to learn all he could of naval history and give it pattern and meaning."[10]

Other factors also hampered the expression of fundamental Air Force beliefs. Prior to World War II the subordinate position of the Air Force to the Army is said to have hampered air publications, as did the fact that the Army's manuals system was unsuited to the needs of the Air Force. Because of the lessons of this war, Maj. Gen. Follett Bradley urged that there was no need for a Mahan of air power. "We do not need a Mahan of air power," Bradley wrote, "so much as an oracle of combined operations--triphibious, if you like. The true expositor of military things to come must . . . know thoroughly the changes in sea power as taught by Mahan, and in land warfare as taught by Clausewitz, which have been wrought not only by new weapons but by air power itself. He must evaluate correctly the effect of air power in combination with land and sea power on a battle, a campaign and a war, and he must know something of the technique by which that effect is produced."[11] An Air

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University study in 1948, however, stated that the "outstanding obstacle to writing air force doctrine in the past was the rapidity of the development of air power . . . from a limited supporting role to its present position of pre-eminence in warfare."[12] In some cases, senior Air Force officers were said to have discouraged the preparation of air doctrine because they felt that air doctrines were too short-lived to warrant publication. Word of mouth generally sufficed to keep senior air commanders well abreast of Air Force policy, and it was much easier "to scrap the worn out doctrine that remains unpublished than it is to drop a doctrine that has been published." But the basic shortcoming of "verbal doctrine" was that it remained vague. "It is this reluctance to publish as official anything imperfect," stated an Air War College study, "that restrains our commanders from the dissemination of current doctrine. Until we accept the fact that all doctrine is imperfect . . . and that it is highly changeable we cannot hope for the issuance of doctrine." This same study noted that in 1951, "The air leaders of today are not so old that they can easily forget the punishment meted out to the doctrinaires of the past."[13]

Air Force thinkers have not only found it difficult to face the task of codifying the Air Force's fundamental beliefs, but as the foregoing quotations reveal they have employed a diversity of discourse to categorize these fundamental beliefs. "There appears to be a fine line of demarcation between concepts and doctrine on the one hand, and doctrines and principles on the other hand," concluded the Air War College study in 1951. "It is difficult to differentiate between concepts which existed in the minds of some far-sighted individuals in the Air Force and the doctrine which was accepted as official by the War Department. Also doctrine is easily confused with strategy."[14] Adding additional complexity to any attempt to analyze basic Air Force thought patterns is the fact that the terms used to categorize fundamental Air Force beliefs apparently varied with the persons using them and certainly varied with the time period in which the terms were employed.

It is not too hard to imagine why early Air Force thinkers began to refer to their fundamental ideas as "doctrines." The term "doctrine" had an old meaning in military establishments as a teaching, or, in a collective sense, a body of teachings. In teaching the art of war, however, Marshal Ferdinand Foch laid great emphasis upon doctrine, and the writings of the hero of the Marne and the Yser strongly impacted upon the post World War I U.S. Army. Where commanders in the past had preferred to remain mysterious--to handle armies like pawns on a chess board--Foch had taught at the Ecole de Guerre that commanders should instead make their intentions known to their subordinates. "We have, then, a <u>doctrine</u>;" he explained, "all the brains have been limbered up and regard all questions from an identical point of view. The fundamental idea of the problem being known, each one will solve the problem in his own fashion, and these thousand fashions, we may be very sure, will act to direct all their efforts to a common objective."[15] In the introduction to his study entitled <u>The Principles of War</u>, Foch promised: "In the course of

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the practical applications our strategical studies will lead us to, you will also arrive at what we call the doctrine or mental discipline, which consists first in a common way of objectively approaching the subject; second, in a common way of handling it, by adapting without reserve the means to the goal aimed at, to the object." Teachings derived from history, Foch emphasized, would come "out in the shape of a theory of war which can be taught . . . and in the shape of a doctrine, which you will be taught to practice."[16]

When he published his first book in 1921, Brig. Gen. William Mitchell referred to "our doctrine of aviation."[17] In the draft of what could well be called the Air Force's first doctrinal manual, prepared for instructional purposes at the Air Service Field Officers' School in 1921, Major William C. Sherman wrote: " In deriving the doctrine that must underlie all principles of employment of the air force, we must not be guided by conditions surrounding the use of ground troops, but must seek out our doctrine . . . in the element in which the air force operates."[18] Although the Air Service and Air Corps were unable to make much of an impact upon the War Department's official Field Service Regulations and Training Regulations, the Chief of the Army's Air Arm, in common with the other chiefs of Army arms and services, enjoyed certain liberties in issuing the doctrinal literature for the Air Service and its successor Air Corps. The War Department General Staff emphasized, however, that doctrine should be formulated only by the chief of an Army arm or service.[19] "Doctrinal literature originates with the highest authority," said an Army Air Forces staff officer in 1944, "and states in general the over-all policy to be followed."[20]

Given agreement on the proposition that air doctrine derived from the highest authority in the Air Force, there was less agreement as to its precise nature. In 1938 the Air Corps Board stated: "Principles change not at all, or but slightly, over considerable periods. Doctrines generally change slowly, but will change as different applications of principles bring forth different beliefs and teachings. Methods are influenced both by doctrine and technical improvement and will change more rapidly than doctrines. The most satisfactory Field Service Regulation would be one dealing only with principles and expressed in terms that would never change. However, air warfare is relatively new and there is much difference of opinion as regards principles of employment."[21] In 1943, however, an AAF staff officer defined doctrine as "a body of fundamental principles expressing the logical possibilities and objectives of air warfare, as well as its general limitations. Like any other doctrine, especially one for a weapon so new as the air arm still is, it is only natural that the AAF doctrine should include speculative as well as proven truths, but they are all necessary to provide a basis for initial decisions in the design of airplanes and in the training of personnel to accomplish the desired end." This same officer defined "policies" as "derivatives of doctrine and the expressions of decisions based upon doctrine."[22]

By 1948 the growth of the Air Force during World War II and the achievement of separate status by the United States Air Force

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led Air University thinkers to suggest that the time was opportune to undertake that part of their mission which charged the institution to prepare, review, and revise all USAF publications pertaining to "basic doctrine."[23] As this work progressed, the Air University acknowledged the definition of doctrine provided by the Joint Chiefs of Staff: "A compilation of principles and policies, applicable to a subject, which have been developed through experience or by theory, that represent the best available thought, and indicate and guide but do not bind in practice. Its purpose is to provide that understanding within a force which generates mutual confidence between the commander and his subordinates in order that timely and effective action will be taken by all concerned in the absence of instruction." [24] Looking backward at Air Force experience, the Air University students of doctrine noted that there had been an implication that doctrine represented an official view and that once stated some general efforts had been made to follow it. These students recognized, however, that the Air Corps and Army Air Forces had not always been guided by "prevailing existing doctrines" which had been influenced by the War Department General Staff. They accordingly undertook to find Air Force doctrine through "a logical analysis of historical fact" rather than through official statements, organizational designs, or other apparent factors that might appear to contradict the actual doctrine which was practiced.[25]

The vigorous efforts of the Air University to define USAF basic doctrine in the early 1950's did much to clarify the semantic thought patterns of the Air Force. "In this attempt to strike out on our own," said Colonel William W. Momyer, Air War College Deputy Commandant for Evaluation, "we have encountered many obstacles that were certainly anticipated, and others that could not be foreseen. Of course, we have encountered . . . prejudice in respect to what constitutes doctrine."[26] In the foreword to the final product, published as Air Force Manual 1-2, United States Air Force Basic Doctrine, on 1 April 1953, General Hoyt S. Vandenberg, USAF Chief of Staff, noted: "Basic air doctrine evolves from experience gained in war and from analysis of the continuing impact of new weapons systems on warfare." The purpose of the basic doctrine manual was to provide and impart to all Air Force personnel a basis for understanding the use of air forces, in peace and in war, and to serve as a background for the preparation of succeeding operational doctrine manuals that would cover the tactics and techniques of employing air forces.[27] In preparing the contents of the basic doctrinal manual, the Air University evaluators found that they had to relate doctrine to the hoary principles of war, to the roles and missions of the U.S. armed forces, to tactics and strategy, and to a relatively new Air Force term called "concept."

As a part of its Army heritage, the United States Air Force received the age-old principles of war that were derived from the writings of Napoleon, Clausewitz, and Jomini and had been best summarized in modern times by Great Britain's Maj. Gen. J. F. C. Fuller. The American version of the principles of war had first

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appeared in War Department Training Regulation 10-5 of 1921. When he published his personal opinions on aviation in a book entitled Air Warfare in 1926, Major Sherman included a chapter which applied the principles of war to air warfare. The principles were also discussed in the Air Corps Tactical School text on "Air Warfare" dated 1 March 1936. In September 1943, Colonel Ralph F. Stearley wrote a paper on the applicability of the principles of war to air power which was published as AAF Memorandum 200-7, October 1943. Colonel Stearley stated that the nine fundamental principles of war (which applied to all forms of military power) were the principles of co-operation, objective, offensive, mass, movement, economy of force, surprise, security, and simplicity. Colonel Stearley also stated that the application of principles of war to the preparation for war and the direction of war constituted "strategy," whereas their application to specific operations comprised "tactics." In an article on "Air Power and Principles of War," published in 1948, Colonel Frederick E. Calhoun of the Air University suggested that air power had strengthened the validity of the first eight principles but he argued that air warfare could not be simple and that the ninth principle should be replaced by "capacity," or "constant combat readiness."[28]

In the early 1950's, the principles of war were accepted by the Army and were taught by the Air Force. The Navy's attitude, however, was that the principles were permissible as maxims, precepts, factors, guides, or even basic considerations, but it questioned whether they could be accepted as principles. The Navy did not list the principles in its U.S. Fleet publications, but the basic thoughts of the principles were taken cognizance of in these doctrinal publications.[29] The Royal Air Force distinguished between the principles of war, which it considered not to be principles but guides or "aides-memoir," and doctrines which were derived from them.[30] Possibly in line with the Navy and RAF thought, the Air University did not include a specific discussion of the principles or war in its proposed manual on USAF Basic Doctrine which was printed in October 1951.[31] In Washington, however, a USAF committee which revised the draft manual and published it as AFM 1-2 on 1 April 1953 nevertheless inserted a section on "Air Forces and the Principles of War."[32] An Air War College officer protested that the consideration of the principles of war was a "dissertation" which was hardly doctrinal, but General Otto P. Weyland, the commander of the Far East Air Forces, stated that this section was too brief and ought to be developed and elaborated.[33] Later editions of AFM 1-2 prepared at the Air University did not include specific discussions of the principles of war, but there was a continuing recognition that these principles applied to air power as well as to the other forms of military power.[34]

In drawing up the statement of USAF basic doctrine, the Air University preferred to relate the role of the Air Force to the national objectives and policies of the United States rather than to what was thought to be a possibly transitory statement of Armed Forces organization and roles and missions which emanated from the

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National Security Act of 1947. Lt. Gen. Idwal H. Edwards, the Commander Air University, insisted in June 1952 that "current decisions on matters of organization and roles and missions . . . are not basic doctrine."[35] On the other hand, the Air University included a list of national objectives and policies that was much too precise to be acceptable to the Air Staff in Washington: accordingly, the basic air doctrine manual published on 1 April 1953 accepted the broad proposition that the Air Force supported the nation's objectives and policies, without attempting to say what they were.[36] As a matter of fact, the Air University believed that the nature of modern war and the national objectives and policies worked closely together to determine the correct use of military aviation.[37] In a speech on 4 December 1957, however, General Thomas D. White strongly asserted a contrary view, when he said: "Air Force doctrine is not a thing apart nor a code sufficient unto itself. The Air Force is a national instrument and evolves no doctrine, makes no preparation other than those clearly and unmistakably called for or anticipated by the national policy."[38] The requirement that USAF doctrine must support national objectives and policies necessarily marked it as distinct from pure air power doctrine, which would enunciate through theory and logic immutable principles which characterize air power as different from land power and sea power.[39]

An Air War College study in 1951 noted that doctrine was easily confused with strategy on the one hand and with tactics and techniques on the other hand. The Air University found little difficulty in distinguishing doctrine from tactics and technique, for the latter depended quite manifestly upon specific equipment and special situations and were designed to implement specific actions within the broad framework of basic doctrine. Strategy was also judged to be concerned with specific situations, although on a tremendously broader scale than tactics. Brig. Gen. Alfred R. Maxwell, an Air Force author on the subject, stated that the tools of strategy were a sound plan, adequate forces, appropriate execution, and guidance by proper principles. "Strategy," wrote Maxwell, "is the act of infusing into a plan and/or applying a central idea, design, or timing which will give the greatest possible advantage in a campaign or situation. The strategy is the specific design used."[40]

Prior to World War II, the Air Corps Tactical School's teachings had frequently gone beyond the somewhat narrow confines of officially-approved doctrine,[41] but, probably because it held that the principal characteristics of doctrine were that it would be "reasonable" and "progressive,"[42] the Air Corps Tactical School did not differentiate between the doctrinal and the non-doctrinal in its teachings. As early as March 1943, however, AAF officers were referring to ideas which did not have the proven validity of doctrine as "concepts." "No concept, particularly one pertaining to a new weapon," wrote Colonel Charles G. Williamson on 3 March 1943, "can reasonably be stated as a fixed and permamently inviolable rule, but must be accepted as a guide until actualities justify, in the mind of the proper authority, a change in concept."[43] Writing in the winter of 1948, Maj. Gen. Robert W. Harper, Deputy Commander of

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the Air University, described General Billy Mitchell as being among the "visionaries and missionaries" of the Air Force. "For atomic warfare," Harper wrote, "new concepts of Air Power will have to be formulated."[44] Early in 1951, USAF regulations charged the Air University with the responsibility for developing doctrine, but the Air University specified that the Air War College's mission consisted of "the conduct of special studies and evaluation which will provide sound air power concepts" and "the preparation . . . of doctrinal manuals." The first objective of Air War College evaluation was: "To develop doctrines and concepts for the employment of air power."[45] In September 1951, General Edwards stated that the Air War College had the mission of "promoting sound concepts on the broad aspects of air power in order to assure the most effective development and employment of the air arm."[46]

By the autumn of 1951, Air Force usage already suggested that "concept" was more visionary, more dynamic, and more comprehensive than "doctrine," but an Air War College study of Air Force ideas proposed to establish "concept" at an orderly position in Air Force thought. "In the field of ideas," stated this study, "there is evidently a degree of general acceptance ranging from the first nebulous ideas of an individual, up successively through concepts, doctrines, and principles. The point at which an idea becomes a concept, a concept a doctrine, and a doctrine a principle is not always clear. Thus at any one time our Air Force doctrine may be said to be partly concept, partly doctrine, and partly principle."[47] In his pioneer book on U.S. Military Doctrine, Brig. Gen. Dale O. Smith, who had worked with the Air War College students in the preparation of their study, accepted the proposition that Air Force thought progressed from ideas, to concepts, to doctrines, the last having gained enough official support to be taught at service schools or to be accepted at the highest military staff levels. General Smith additionally proposed that a service doctrine which was accepted by the President, the Congress, or the people of the United States became an executive, a legislative, or a national "policy."[48]

General usage thus accepted the proposition that a concept was a hypothesis which had not received the acceptance required by doctrine,[49] but there was less agreement as to whether doctrine was confined to the service level of the Armed Forces. In 1957, for example, Colonel Wendell E. Carter contemplated a "national doctrine" which would grow out of the deliberations of the Joint Chiefs of Staff and would dictate how the wars would be fought.[50] In this same year, Professor Henry A. Kissinger visualized that "strategic doctrine" enabled society "to act purposefully as a unit . . . by reducing most problems to a standard of average performance which enables the other members of the group to take certain patterns of behavior for granted and to plan their actions accordingly." "By explaining the significance of events in advance of their occurrence," Kissinger asserted, strategic doctrine "enables society to deal with most problems as a matter of routine and reserves creative thought for unusual or unexpected situations." Kissinger thought that this strategic doctrine should desirably issue from the

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Joint Chiefs of Staff and the National Security Council.[51] Apparently willing to broaden the definition of doctrine, an Air War College study completed in 1958 identified a need for a U.S. military doctrine which would represent "some substantial consensus of the whole body politic, and particularly among all military personnel, as to objects of military enterprise."[52]

Early in the 1950's the Air University maintained the proposition that "USAF doctrine, developed within the parameters of the more valid concepts of air power, is intended for practical purposes to be used as a guide for organization, development, equipment, and employment of the United States Air Force."[53] Some Air Force officers, however, were more skeptical of the role of doctrine in Air Force development. "The Air Force," General Nathan F. Twining, Acting USAF Chief of Staff, stated in 1952, "is not bound to any fixed doctrine or concept. It grew out of scientific achievement."[54] When he approved AFM 1-2 on 1 April 1953, General Vandenberg thought it necessary to warn that: "The dynamic and constant changes in new weapons make periodic review of this doctrine necessary."[55] Looking backward at past events, General Laurence S. Kuter admitted that he could not suggest that doctrine had ever been the controlling factor in setting the rate of development of air power. Instead, he recognized a "mutual interdependence of doctrinal, technological, political, and other elements."[56] While there was general agreement that Air Force doctrine ought to be forward looking, Maj. Gen. Lloyd P. Hopwood, a former Commandant of the Air Command and Staff College, expressed dismay at the idea that doctrine could not be anything more than descriptive of an existing state of the military art. "We try to make our doctrine and strategy conform to glamorous hardware," Hopwood wrote, "instead of studying modern conflict to find acceptable solutions from which to establish the hardware requirements we need."[57]

According to an observer of the times, men of the Air Corps in the 1920's and 1930's "talked and lived airplanes and air power." "All the way from the hangar line to the old Air Corps Tactical School," recalled Maj. Gen. Robert F. Tate, "you heard talk about air power."[58] In the late and early 1950's the men of the new Air University also pledged themselves to search for the fundamental ideas of air power. This effort yielded the first edition of AFM 1-2, which was subsequently revised and issued in final form as AFM 1-2, United States Air Force Basic Doctrine, on 1 April 1955.[59] Based heavily on the demonstrated capabilities of air power in World War II and in the Korean war, the 1955 edition of AFM 1-2 might have continued to be current for many years, except for the ironic fact that it appeared at the very moment when technological developments were taking shape that would render it obsolete.

Somewhere, somehow in the late 1950's, the quest for Air Force doctrine began to go stale in the very years in which dynamic studies were needed to integrate new aerospace ideas into the main body of Air Force thinking. One school of thought assumed

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that Air Force doctrine already written into the AFM 1- series was immutable, inflexible, and so fundamentally sound as to require neither justification nor further analysis. Another school of thought assumed the fatalistic idea that technology was developing so fast that doctrine obviously could not keep pace with the new capabilities. Following the Department of Defense reorganization of 1958, not a few Air Force leaders rationalized that the Air Force might as well not have any doctrine that was not enunciated by the Secretary of Defense: these people urged that a "unified doctrine" would flow down from above and direct the activities of the three armed services.[60] In 1958 the Air University forwarded a proposed revision of AFM 1-2 which was designed to reflect the impact of new weapons and organizational changes, but the revision proved unacceptable within the Air Staff because of a divergency of opinion as to whether the manual should reflect basic proven doctrine or should attempt to project into the future.[61] Holding to the time-proven definition of doctrine, Colonel Orin H. Moore, a long-experienced student of Air Force doctrine, asserted that in a future local war the Air Force would employ its proven doctrine of the past but that it would wage a general nuclear war according to concepts of aerospace power.[62] Maj. Gen. Dale O. Smith now agreed that Air Force doctrinal manuals apparently could not keep pace with technological advances; but he nevertheless urged that true Air Force doctrine--which was definable as military thought on how to conduct war--might well be the often unspoken and sometimes unconscious beliefs which truly guided Air Force actions. "Actions, not pronouncements," Smith said, "are the real indicators of doctrine."[63]

Spurred into action by the protest of Lt. Gen. W. E. Todd, Commander Air University, that the 1955 edition of AFM 1-2 was "so far out of date that it has practically become archaic," the Air Staff approved and published on 1 December 1959 a new edition of the basic doctrine manual which included some changes in wording to incorporate ideas of aerospace weapons.[64] In explanation of the significance of the new edition of the manual, General White stated that: "Military doctrine must provide distinct guidelines, drawn from both foresight and experience, for the conduct of current and future operations." Despite the impact of new weapons, White asserted: "The predominant characteristics of air forces (now aerospace forces) have changed only in degree. Range, mobility, flexibility, speed, penetrative capability and firepower delivery--the characteristics that continue to make aerospace forces unique among military forces--must be developed to the maximum to guarantee national security."[65] In 1961 the Air Force additionally provided that bi-monthly Air Force Information Policy Letters for Commanders and monthly Supplements to the Information Policy Letter for Commanders--both of which included excerpts or full texts of statements by national leaders on matters of special interest and value to Air Force members--would provide "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."[66]

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Based upon the belief that written doctrine had failed to provide useful guidelines for the future development of the Air Force, there was a sentiment among research and development officers in the late 1950's that the Air Force should abandon the old predilection toward doctrine and seek a broader field of continuing investigation which might be termed "militology" or "military science." Such a field of investigation would examine the basic tenets of military success and would weld together the bits and pieces of military thought which had been described as objectives, policies, principles, strategy, tactics and techniques, long range plans, general operational requirements, doctrines, and concepts. The objective of such an intensive study of military science would be to produce "models" or theoretical projections of military concepts and principles of military influence.[67] The Air Force, however, was unwilling to give up efforts to define basic doctrine: on 14 August 1964 it would issue a completely new AFM 1-1, United States Air Force Basic Doctrine. In the forword to this manual, General LeMay noted: "Basic doctrine evolves through the continuing analysis and testing of military operations in the light of national objectives and the changing military environment. . . . 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."[68]

As this introduction indicates, the Air Force from its beginning has been engated in a never-ending quest for Air Force doctrine. In essence, this doctrine--as defined by General Smith--comprises "the fundamental beliefs held by Air Force people which underlie the development, deployment, and employment of aerospace power in peace or war." General Smith has also suggested that Air Force doctrinal changes have been caused by shifting circumstances arising from analyses of: (1) the principles and aims of American society and government; (2) the threats to the American system and way of life, internal and external; (3) advances in technology and weaponry; (4) the impact of many levels of leadership, both friendly and enemy; (5) assessments of proper courses for Americans to pursue; and (6) the place of aerospace power in these systems of values and predictions.[69]

At the same time that it is possible to see that the Air Force has developed in accordance with a closed-circle relationship between developments in the national policies of the United States, the nature of the enemy threat, the state of technological developments, and the dicta of Air Force doctrine, it is nevertheless true that the Air Force never perfected semantic thought patterns that encompassed the totality of its rationale. While no history can capture the totality of Air Force rationale, an investigation of the manner in which the Air Force has attempted to manage research in the broad field of ideas, the thoughts of Air Force leaders as to the nature of international conflict and military power, the characteristics of air power and aerospace power, and the major functions of air and space endeavor can serve to provide better understanding of the main currents in Air Force ideas, concepts, and doctrine.

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CHAPTER 2

EARLY DAYS THROUGH WORLD WAR I, 1907-1926

1. The Beginning of Army Aviation

In reminiscences about their epic controlled-power flight at Kitty Hawk, North Carolina, on 17 December 1903, Orville and Wilbur Wright always contended that they meant the airplane to be a contribution to international communications, trade, and good will. When they made their first efforts to sell a plane, however, the Wright brothers looked to the U.S. War Department. "The series of aeronautical experiments upon which we have been engaged for the past five years," Orville Wright wrote on 18 January 1905, "have ended in the production of a flying machine of a type fitted for practical use. . . . The numerous flights. . . have made it quite certain that flying has been brought to a point where it can be made of great practical use in various ways, one of which is that of scouting and carrying messages in time of war."[1] Writing directly to the Secretary of War on 9 October 1905, Orville Wright renewed this earlier informal offer "to furnish to the War Department practical flying machines suitable for scouting purposes."[2] Still again, on 15 June 1907, he wrote: "We believe that the principal use of a flyer at present is for military purposes; that the demand in commerce will not be great for some time."[3]

Without military expenditures for its development, it is quite likely that the airplane would not have become a safe and usable vehicle. "Had it not been for the support of the military for military purposes," Dr. C. C. Furnas, Chancellor of the University of Buffalo and a knowledgeable scientist, would conclude in April 1958, "we would even now I am sure not have safe commercial aviation."[4] In 1898, while the Spanish-American War was in progress and well before the Wrights' first flight, the War Department's Board of Ordnance and Fortification had secretly allocated $50,000 to Dr. Samuel P. Langley, who had been subsequently unable to produce a promised flying machine. When this information became generally known, both Congress and the press had been extremely critical of this so-called wastage of public funds.[5] Possibly as a result of this experience, the Board of Ordnance and Fortification declined to enter into negotiations with the Wrights in October 1905 "until a machine is produced which by actual operation is shown to be able to produce horizontal flight and to carry an operator."[6]

Because of interest expressed by President Theodore Roosevelt, aviation matters received added emphasis in the War Department in 1907. On 1 August, Brig. Gen. James Allen, the Army's Chief Signal Officer, established an Aeronautical Division within the Signal Corps, and the Board of Ordnance and Fortification reopened negotiations with the Wright brothers. In a letter to the Board on 10 October, Allen was skeptical of the value of the Wright plane. "The military

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uses of a flying machine of any type," he thought, "will be only for purposes of observation and reconnaissance, or, as an offensive weapon, to drop explosives on the enemy." For either purpose, he believed that the airplane would be less efficient than the dirigible balloons which were already being used by France, Germany, and England. "For the purpose of dropping explosives on an enemy," he asserted, "a high speed aeroplane is hardly suitable. . . . In passing over the enemy's works a flying machine should travel at least 4000 feet above the earth. . . . Traveling at the rate of thirty miles an hour at this altitude, even after considerable practice it is not thought a projectile could be dropped nearer than half a mile from the target."[7] Even though the airplane lacked range, load-carrying capability, and came out second-best in an effectiveness comparison with the dirigible, the Board of Ordnance and Fortification nevertheless instructed General Allen on 5 December 1907 to solicit bids for the delivery of a heavier-than-air flying machine designed to carry two persons, with sufficient fuel for a flight of 125 miles, and with a speed of at least 40 miles an hour.[8]

The Signal Corps specifications for its first airplane did not include an operational requirement which it would be expected to satisfy. As a result, when the first Wright plane was eventually accepted on 2 August 1909, the Army had a new item of experimental equipment which needed a mission. In his student thesis at the Fort Leavenworth Army Service School in 1907, Lt. Benjamin D. Foulois had predicted that large fleets in the air would operate well in advance of ground troops and that these opposing air fleets would be the first military forces to engage at the outbreak of a war.[9] In 1911, Lt. Thomas DeWitt Milling tested an experimental aircraft bombsight, and in the following year Milling and Captain Charles DeForest Chandler first fired a Lewis machine gun from an airplane. Even these early aviation enthusiasts, however, recognized that "the very limited flight performance of aircraft in 1912 had not demonstrated any military value other than reconnaissance."[10] U.S. Army Field Service Regulations of 1910 merely noted that for purposes of reconnaissance: "The dirigible balloon or flying machine is used as the commander directs."[11]

During hearings in the spring of 1913 held by the House Military Affairs Committee on a bill to create a separate Air Corps as one of the line components of the Army, Assistant Secretary of War Henry S. Breckinridge explained the War Department position that military aviation was "merely an added means of communication, observation and reconnaissance" which "ought to be coordinated with and subordinated to the general service of information and not erected into an independent and uncoordinated service." Significantly enough, Lieutenant Foulois agreed that it was too early for a separate Air Corps; Lt. Henry H. Arnold was sure that the Signal Corps was doing all it could to advance aviation; Lieutenant Milling considered the proposed change premature. "The offensive value of this thing has yet to be proved," argued Captain William Mitchell. "It is being experimented with--bomb dropping and machines carrying guns. . . but there is nothing to it so far except in an experimental way."[12]

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During a period of strained relations with Mexico, Army aviators were ordered to Texas City, Texas, in February 1913 to work with the 2d Division. Early in March, this detachment was provisionally organized as the 1st Aero Squadron.[13] Issued on 19 March 1914, a new edition of U.S. Army Field Service Regulations addressed the subject of the use of combined arms and of aviation. These regulations, which would continue to be in effect when the United States entered World War I, assigned the predominant combat role to the infantry: "The infantry is the principal and most important arm, which is charged with the main work on the field of battle and decides the final issue of combat. The role of the infantry, whether offensive of defensive, is the role of the entire force, and the utilization of that arm gives the entire battle its character. The success of the infantry is essential to the success of the combined arms." Aircraft--captive balloons, dirigible balloons, and aeroplanes--served to provide information. For strategical reconnaissance, the dirigible had the greatest practical value, but aeroplanes were said to be more dependable for field service with a mobile army since dirigibles required substantial shelter from winds while they were on the ground. "In forces of the strength of a division, or larger," the regulations stated, "the aero squadron will operate in advance of the independent cavalry in order to locate the enemy and to keep track of his movements."[14]

* * * *

Feeling the threat of hostile neighbors, European nations accelerated the development of aeronautics during the early 1900's. At the Hague Conference in 1899 the European nations had been willing to accept an American proposal and impose a five year prohibition against "the discharge of projectiles or explosives from balloons or by other new methods of similar nature." The American delegate had rationalized: "The balloon. . .can carry but little; it is capable of hurling . . . indecisive quantities of explosives, which would fall, like useless hailstones, on both combatants and noncombatants alike."[15] But in 1907, when the Second Hague Conference declaration extended this moratorium on aerial bombing, no major powers except the United States and Great Britain proved willing to ratify it. While there were ominous predictions that a future war would begin with air bombardments of belligerent capitals, the opposing powers, for the most part, hurriedly developed aviation as an added means of reconnaissance. As the war approached, however, a new strategic concept began to take hold: military commanders in Germany, France, and Russia began to discount the prospect that any means of reconnaissance could dispel the fog of war in an all-out modern conflict. First Germany and then France and Russia accepted the strategic concept of offense a l'outrance--a headlong offensive that would attain victory before an enemy could maneuver or react and before battlefield reconnaissance would be worthwhile.[16]

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Reflecting popular fears of aerial bombing, the first days of World War I were marked by many false alarms of hostile air raids. Apparently in a sincere error, the German declaration of war handed to France on 3 August 1914 alleged that French aircraft had bombed the railroad near the German city of Nurnberg on the day before. As hostilities began on the western front the air orders of battle were faily evenly matched: each side had about 180 airplanes; the Germans had 12 Zeppelins, where France and Britain together had 13 of these dirigibles. The much-feared Zeppelin did not perform well in early fighting: the Germans lost one Zeppelin when it was attempting to bomb the forts at Liege on 6 August and two others were shot down on 21 August when they attempted to reconnoiter under low clouds in the Belfort area. In the confusion of the active field campaign, neither the attacking German armies nor the Anglo-French defense forces made effective use of reconnaissance aircraft.[17]

The employment of reconnaissance aircraft became more effective as the German attack continued, and when the exhausted opposing armies entrenched late in 1914 aerial vehicles became virtually the sole source of intelligence. In some measure, aircraft reconnaissance added to the stalemate of trench warfare since neither opposing army could make large local build-ups of munitions and reserves without being detected and countered. Both the Allies and the Central Powers exploited fixed-balloons for front-line observation and aircraft for deeper-in reconnaissance. Success of local campaigns depended upon blinding the opposing intelligence service: thus both sides developed fighter aircraft and employed them over active sectors in barrage patrols designed to sweep enemy aircraft from the skies. The appearance of a technologically superior Fokker fighter aircraft over the front lines in June 1915 gave a working air superiority to the Central Powers and demanded extreme efforts on the part of the Allies to develop higher performance pursuit aircraft and better tactics. By 1917 the Germans also developed an armed Junkers strafing aircraft which was especially designed for attacks against troops and equipment. As the ground war stalemated German Zeppelins began psychological bombing attacks against England in January 1915. On the Allied side in 1916, the Italian aircraft manufacturer, Count Caproni di Taliedo, prepared a memorandum for Allied Headquarters which proposed to destroy German and Austrian naval vessels by bomber attack against fleet bases. In January 1917, Count Caproni argued that his large triplane bombers, if built in sufficient numbers, could destroy Austria's factories, thus ending the war with Italy's main opponent.[18]

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Recognizing that the United States was lagging in aeronautics, Congress, in a measure approved on 3 March 1915, established the National Advisory Committee for Aeronautics (NACA) as an independent agency for the "scientific study of the problems of flight with a

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view to their practical solution." This action was hardly taken, however, before the new evidence emerged to show the low state of readiness of Army aviation. On the Mexican border in March and April 1916, the 1st Aero Squadron valiantly attempted to support Brig. Gen. John J. Pershing's punitive expedition against the Mexican outlaw Pancho Villa, but a combination of poor flying machines and severe operational weather made it impossible for the squadron to provide desired observation to the ground forces.[19] As the United States reluctantly began to arm itself, the National Defense Act of June 1916 included a modest expansion of the personnel of the Signal Corps Aviation Section, and large appropriations for Army aviation were included in the fiscal year 1917 appropriation. Looking toward industrial mobilization, Congress authorized establishment of the Council of National Defense on 29 August 1916, and one of the groups comprising the Council of National Defense would serve as the nucleus for the creation of the Aircraft Production Board on 16 May 1917. The Aircraft Production Board would work in conjunction with the Joint Army-Navy Technical Board in the selection and procurement of the aircraft chosen for large-scale production.[20]

2. The American Air Service in World War I

When the United States entered World War I on 6 April 1917, the American Army did not possess a single modern combat aircraft but the beginnings had been made for an industrial mobilization. As a non-belligerent, the United States had not shared Allied war secrets, and it badly needed information upon which to base its war plans. In the first place, the hard-pressed Allies wanted rapid support from American industry. In a cable to President Woodrow Wilson on 26 May, Premier Alexandre Ribot of France asked that an American "flying corps" of 4,500 planes, 5,000 pilots, and 50,000 mechanics be sent to France during 1918 in order to "enable the Allies to win the supremacy of the air." If it were to meet this requirement, the United States would have to produce 16,000 planes and 30,000 engines by 1 July 1918. Congress immediately appropriated funds for the requisite production, but, for some reason, Ribot had not specified what type planes ought to be produced.[21]

In order to determine specific American aircraft requirements and to coordinate Allied patent problems, Secretary of War Newton D. Baker sent an Aeronautical Commission, headed by Major Raynal C. Bolling, a newly-commissioned leader in civil aeronautics, to Europe in June 1917. In the federal service earlier in 1917, Bolling had worked closely with Major Foulois in providing justifications for the $640 million Congressional appropriation for the production of aircraft and expansion of the Air Service, and Secretary Baker apparently believed that his background in business would enable him to deal with Allied war producers.[22] The report of the Aeronautical Commission filed by Bolling on 15 August 1917 provided the doctrinal and technical bases for building the Air Service, American Expeditionary Forces. Bolling reported general agreement that the United

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States would immediately require aircraft for use in training, aircraft for use strictly in connection with the operation of American ground forces in the field, and, after these immediate requirements were met, "fighting airplanes" and bombers which would be "in excess of the tactical requirements of its Army in France." Since he did not know how large the U.S. Army field force would be, Bolling was unable to suggest the extent of the air force component of the field force, but he recommended that the air force which could be used "independently of United States military forces" should be about 37.5 percent fighting airplanes, about 25 percent day bombers, and about 37.5 percent night bombers. The composition of the bomber force would actually vary according to the number of fast fighting machines which the enemy operated on a given portion of the front at a given time. In extended discussion of the bomber force which he desired to put into action in 1918, Bolling explained that day bombardment required faster aircraft which would desirably be employed freely "if it should be possible to drive from the air practically all the enemy fighting machines." By bombing at night, however, large and slow airplanes could carry large numbers of bombs. "Could night bombing be conducted on a sufficiently great scale and kept up continuously for a sufficient time," Bolling stated, "there seems good reason to believe that it might determine the whole outcome of military operations. Up until the present time, the trouble seems to have been that all bombing has been carried on intermittently and sporadically because of a lack of attention to the subject and provision for large enough numbers of the right kinds of airplanes."[23]

While American aviation pioneers had thought of aviation as a combat arm, the idea of a massive independent bombing force which was so readily accepted by the Aeronautical Commission was relatively new, even in Europe. Shortly after arriving in Europe, Bolling had conversations with General Sir David Henderson of the British Air Board, who divided aviation into three categories: service aviation allocated to ground forces, fighter aviation in requisite quantities (preferably a three-to-one numerical superiority) to drive the enemy out of the air, and bomber aviation in maximum amounts that a country was able to produce "to use against the enemy in bombarding him out of his position and cutting off his communications and destroying his sources of supply."[24] As a result of a visit to Italy, the Bolling commission was evidently favorably impressed with Italian bombing raids against Austria, and the commission recommended that the United States should purchase Caproni biplanes and the license to manufacture Caproni triplanes.[25] The strongest influence upon the Bolling commission, however, was undoubtedly Lt. Col. William Mitchell. While serving on the War Department General Staff in 1915, Mitchell had made a directed survey of America's aviation needs. While assigned to the Signal Corps Aviation Section in 1916, Mitchell had taken flight instruction at his own expense and had become an aviation enthusiast. Sent to Europe

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as an observer, Mitchell arrived in Paris four days after the United States entered the war. In May 1917, Mitchell spent a number of days in a visit at the headquarters of Maj. Gen. Hugh Trenchard, the Royal Air Force commander in France. Mitchell learned that Trenchard's policy was to unify all aviation under one commander, to place the minimum number of airplanes necessary for the use of ground troops in action with each army, and to concentrate the bulk of bombardment and pursuit so that he could "hurl a mass of aviation at any one locality needing attack." When General Pershing arrived in Paris to take command of the American Expeditionary Forces on 13 June, Mitchell assumed the duty of Chief of Air Service, American Expeditionary Forces. In this position, Mitchell worked intimately with the Bolling commission while it was preparing its recommendations to Washington.[26]

Back in Washington, the Joint Army-Navy Technical Board accepted the Bolling commission recommendations as being essentially sound, and the idea of conducting an air war against the Germans apparently caught the fancy of the American people. Unfortunately, fanciful statements made by Secretary Baker and other people in authority as to the tremendous numbers of American planes that would deluge the Western Front caused the Germans to redouble their air production effort in what they called their Amerikaprogramm but did very little to mobilize the American productive effort.[27] According to the War Department organization, the Signal Corps Aviation Section (which was variously redesignated as the Aeronautical Division, the Airplane Division, the Air Division, and the Air Service Division) was responsible for the recruitment and training of aviators and aviation personnel. Separately responsible to the Secretary of War, the Aircraft Production Board (which was enlarged and redesignated as the Aircraft Board by Congressional authority in October 1917) was in charge of aircraft requirements and of the placing of contracts for aircraft and air materiel production. The Joint Army-Navy Technical Board was responsible for making final decisions as to the types of aircraft to be procured, but in August 1917 General Pershing demanded and received final authority to determine aircraft types. After this, the position of the Joint Army-Navy Technical Board speedily deteriorated.[28] When it was evident early in 1918 that extravagant fighting-plane programs could not be met, the Aircraft Board and the Aviation Section of the Signal Corps became the targets of bitter public criticism and Congressional investigation. After preliminary War Department steps had been taken during April, President Wilson on 21 May 1918 transferred aviation matters from the Signal Corps to the Division of Military Aeronautics, which was to be headed by Brig. Gen. William L. Kenly, and to the Bureau of Aircraft Production, headed by Mr. John D. Ryan who additionally continued to be chairman of the Aircraft Board.[29]

In Europe much of the same confusion as was occurring in Washington marked the organization of the Air Service, American Expeditionary Forces. Promoted to colonel, Mitchell served as Air

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Officer AEF until 3 September 1917, when Pershing installed General Kenly as Chief of Air Service AEF and made Mitchell Air Service Commander, Zone of Advance. On 27 November, Brigadier General Foulois, accompanied by a headquarters staff, arrived in Paris with orders to relieve General Kenly, who returned to the United States. Mitchell had respected General Kenly, but he referred to the Foulois staff as "carpetbaggers." General Pershing described the officers who came to France with Foulois as "good men running around in circles." In an effort to restore order, Pershing on 29 May 1918 finally installed an engineer officer and West Point classmate, Brig. Gen. Mason M. Patrick, as Chief of Air Service AEF. At this time, Foulois was appointed Chief of Air Service, First Army, but he instead asked to serve as assistant to Patrick and recommended Mitchell for the combat position, to which Mitchell was assigned on 27 July 1918. Thereafter, new combat air posts were formed as new Army organizations reached France. In October 1918, Colonel Frank P. Lahm became Chief of Air Service, Second Army. Relieved by Colonel Thomas D. Milling at First Army in October, Mitchell was promoted to brigadier general and appointed Chief of Air Service, Army Group.[30]

The priority task of the Air Service AEF was to provide the trained air units which were assigned to American divisions, corps, and armies as they arrived in France. Considered to be an integral combat arm of the ground forces, the air units assigned to the front were commanded in the full sense of the word by the commanding generals of armies, corps, and divisions to which they were assigned. "The Air Service," stated General Patrick, "originates and suggests employment for its units but final decision is vested in the commanding general of the larger units, of which the Air Service forms a part." In most instances, however, Patrick acknowledged that ground commanders lacked experience with aviation and depended heavily upon their Air Service officers.[31] In order to guide the air effort in the autumn of 1917, Colonel Mitchell drew up what was probably the Air Service's first formal statement of doctrine when he issued a paper entitled "General Principles Underlying the Use of the Air Service in the Zone of Advance A.E.F." In a preface, Mitchell stated that the outcome of war depended primarily upon the destruction of an enemy's military forces in the field. No one of the Army's offensive arms could bring about complete victory: the mission of the Air Service was to help other arms in their appointed missions. Mitchell divided aviation into two general classes: "tactical" aviation, which operated in the immediate vicinity of troops of all arms, and "strategical" aviation, which acted far in advance of troops of other arms and had an independent mission. According to Mitchell, tactical aviation consisted of observation, pursuit, and tactical bombardment. Observation squadrons performed visual and photographic reconnaissance, adjusted artillery fire, and provided liaison services. Pursuit aviation attained "mastery of the air" in air battles, and, when necessary, created diversions by

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attacking enemy personnel on the ground. Tactical bombardment operated within 25,000 yards of the front lines. Its objectives were to assist in the destruction of enemy materiel, to undermine the morale of enemy personnel, and to force hostile aircraft to arise and accept combat by attacking enemy airdromes. Mitchell considered that strategical aviation included pursuit, day-bombardment, and night-bombardment squadrons. The radius of action of strategical aviation units was usually more than 25,000 yards in advance of friendly troops, and the object of strategical aviation was "to destroy the means of supply of an enemy army, thereby preventing it from employing all of its means in combat." Such would be accomplished, Mitchell stated, by destroying enemy aircraft, air depots, and defensive air organization, as well as enemy depots, factories, lines of communications, and personnel.[32]

The issuance of Mitchell's "General Principles" apparently coincided both his assumption of duty as Air Service Commander, Zone of Advance, and with the first arrivals of U.S. Air Service squadrons in France. The 1st Aero Squadron arrived overseas on 3 September 1917, where it was equipped with Salmson aircraft and trained as a corps observation squadron before it was assigned to the front on 8 April 1918. By the time of the Armistice on 11 November 1918, the American Air Service in France would comprise 45 squadrons, including 6 army observation, 12 corps observation, 20 pursuit, 6 day-bombardment, and 1 night-bombardment squadron. Twelve of these squadrons were ultimately equipped with American-built DH-4 aircraft; the other squadrons flew Salmson, Spad, Breguet, or Sopwith Camel planes purchased from the French and British. After training in the inactive Toul sector of the Western Front, American Air Service units were employed in support of the U.S. I Corps at the Marne and Vesel Rivers in July and August 1918. The greatest American air action, however, came in support of the U.S. First Army in the St. Mihiel and Argonne-Meuse offensives beginning in September 1918. For the St. Mihiel offensive, Mitchell had the services of British and French as well as American squadrons: altogether he had the use of 701 pursuit, 323 day bomber, 91 night bomber, and 366 observation aircraft, a total of 1,481 planes of which about one third were American. The air action in these battles illustrated the value of concentrated air forces, but the employment of aviation continued to be planned in terms of the ground mission. Thus Air Service officers spoke of the desirability of attaining "aerial supremacy," but they considered that this was possible only in certain selected sectors for limited periods of time. The major mission of pursuit aviation was described as being "to keep clear of enemy airplanes an area about 10,000 yards deep in front of the line of battle." This was the area in which corps and division observation aircraft worked, and thus the objective of pursuit aviation was defined as "the destruction of the enemy air service and the protection of our own observation aircraft." The primary object of day-bombing attacks was said to be "the destruction of the enemy's morale, materiel, and personnel." In this effort it was found that "the ratio of the

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effect of lowering the enemy's morale over that of destruction. . . estimated as about 20 to 1." Bombing and strafing of ground targets proved advisable only when air supremacy was attained: this lesson was learned by hard experience. According to Colonel Milling, the American Air Service's day-bombing force sustained about 60 percent losses during the Battle of St. Mihiel when it was closely escorted by pursuit aircraft. Being tied to the bombardment planes, the pursuit aircraft always had to fight on the defensive. The solution, which cut losses to 8 percent, was a double offensive wherein the bombardment planes carried out their attacks against ground targets and the pursuit aircraft aimed their attacks against enemy fighters which always arose to meet the bombardment planes. Even bombardment missions were thought of in terms of the high priority observation function, since these missions "invariably drew enemy pursuit from the rest of the front, rendering it safe for our corps observation."[33]

In the battles of France the employment of tactical aviation by the Air Service officers was generally in accordance with the plan of the ground battle. At the end of World War I, General Patrick believed that experience had "clearly demonstrated the fact that the work of the observer and observation pilot is the most important and far-reaching which an Air Service operating with an Army is called upon to perform."[34] Colonel Lahm agreed that "the main function of aviation is observation and that all hinges on that program," and Colonel Milling emphasized that: "The Air Service is of value to the military establishment only insofar as it is correlated to the other arms."[35] Prepared under the direction of Colonel Edgar S. Gorrell in the spring of 1919, a "Tentative Manual for the Employment of Air Service" stated that "in the future, as in the past, the final decision in war must be made by men on the ground, willing to come hand to hand with the enemy. When the Infantry loses the Army loses. It is therefore the role of the Air Service, as well as that of the other arms, to aid the chief combatant, the Infantry." This manual also noted that "the greatest value of the Air Service to date has been in gathering information of the enemy and of our own troops." As a final basic consideration relative to air attack, the manual observed that "the morale effect on ground troops is out of all proportion to the material destruction wrought."[36]

* * * *

In the summer of 1917 the members of the Bolling Aeronautical Commission had enthusiastically supported a plan whereby American "strategical" bombers and fighters would be employed against Germany. When the Bolling mission broke up on 15 August 1917, Bolling was promoted to the rank of colonel and given the title of Assistant Chief of Air Service, Line of Communication. Major Edgar S. Gorrell, a young aeronautical engineer who had come to France

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with Bolling, was detailed in charge of the Air Service Technical Section in Paris. In this position, Gorrell was in charge of initiating purchases of air materiel in Europe, and his studies led him to believe that the United States should purchase or build a sufficiently large number of night-bombers to carry out a "systematic bombardment" of Germany. Gorrell believed that a force of from 3,000 to 6,000 bombers would be adequate for this purpose. What the influence of Count Caproni had been on the original Bolling mission report may only be speculative, but in October 1917 both Bolling and Gorrell were in active correspondence with the Italian aircraft manufacturer. Sometime during October, Caproni collaborated with his friend Captain Giulio Douhet in the preparation of a "Memorandum on the 'Air War' for the U.S. Air Service" which urged that mass attacks made at night by long-range Allied bombers against industrial targets deep within Germany and Austria could definitely overwhelm the enemy by substantially reducing his war production at the same time that Allied production was increasing. That same month, Caproni gave Gorrell a little book signed by Nino Salveneschi and entitled Let Us Kill the War; Let Us Aim At the Heart of the Enemy. Evidently written by a journalist to represent Caproni's views, this small English-text book was a further exposition of the concept of strategic bombardment. In November 1917, Bolling personally advised Howard Coffin, the Chairman of the Aircraft Production Board in Washington, that the United States ought to give a higher priority to the production and procurement of bomber aircraft than to observation and fighter aircraft.[37]

When General Foulois arrived in Paris in November 1917, he divided the Air Service, Zone of Advance, into Tactical Aviation and Strategical Aviation and placed Lieutenant Colonel Gorrell in charge of the latter organization, which was to be a planning staff pending the arrival of bombardment squadrons. For staff support, Gorrell obtained Majors Harold Fowler and Millard F. Harmon and borrowed Wing Commander Spencer Gray, a British Royal Navy Air Service officer. These men drew up a proposal for a bombing campaign which they submitted to Foulois on 28 November 1917. This paper pointed out that the Germans were reported to be building great numbers of large Gotha bombers in preparation for a bombing campaign. The Gorrell plan therefore stated that it was "of paramount importance that we adopt at once a bombing project. . . at the quickest possible moment, in order that we may not only wreck Germany's manufacturing centers but wreck them more completely than she will wreck ours next year." The plan proposed that the bombing attacks would be mounted by day and night from airfields in the Toul-Verdun area against industrial plants around Dusseldorf, Cologne, Mannheim, and in the Saar Valley. Up to 100 squadrons should be directed against each of these targets in turn, the idea being to keep a given target under a sustained bombardment up to five hours at a time. Such an assault would overwhelm target defenses, wreck manufacturing works, and shatter the morale of workmen.[38]

In Great Britain popular dissatisfaction with the ability of the

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air defenses to deal with Zeppelin and Gotha attacks against London forced a reorganization of aviation affairs. On the advice of a board headed by Lieutenant General Jan Christian Smuts (with strong support from Winston Churchill), the British Government set up a separate Air Ministry in December 1917. In the culmination of this reform in April 1918, the Royal Flying Corps and the Royal Naval Air Service would be recombined into the Royal Air Force, but, as a more immediate action, General Trenchard was directed to concentrate a bomber force at Nancy and commence attacks against German industrial centers. Since the British were already operating from Nancy, the American Air Service agreed with Trenchard's suggestion in December 1917 that American bomber squadrons arriving in France would initially operate with British units. Here matters stood on 5 February 1918 when Colonel Gorrell was transferred to the AEF General Staff. On 26 March, moreover, Colonel Bolling was killed by German soldiers while he was reconnoitering the ground front.[39]

Although Gorrell's successor in Strategical Aviation busied himself making plans for the eventual reception of American bombardment squadrons, the establishment of the British Independent Air Force at Nancy under command of General Trenchard on 5 June 1918 forced a reconsideration of American planning. Since the British independent Air Force received its orders from the Air Ministry rather than from the Allied Commander-in-Chief, Marshal Ferdinand Foch, the American Expedtiionary Forces ruled that American bomber squadrons could not operate integrally with it. General Pershing's chief of staff also notified General Patrick that all Air Service officers "must be warned against any idea of independence and. . . that every force must be closely coalescent with those of the remainder of the Air Service and with those of the Grand Army." Believing that the use of the term "Strategical Aviation" had led persons to think that this activity was independent, General Patrick directed in June 1918 that the activity would be known as the "G.H.Q. Air Service Reserve."[40] Marshal Foch believed that the enemy's army was the enemy's strength, and he maintained that bombers should attack the enemy's economy only as a secondary function. The military representatives of the Allied Supreme War Council on 3 August 1918 accordingly established an Inter-Allied Bombing Force which was to operate against the German economy only after requirements of the armies in the field had been met or in lulls between ground battles.[41]

While the Allies moved toward acceptance of strategic bombing, the amount of effort which could be deovted to attacks against Germany's economy was not large. From 6 June 1918 to the Armistice, the RAF Independent Force consisted of only nine squadrons, some of which were equipped with planes which had been obsolete for several years. In these months, the Independent Force dropped some 550 tons of bombs on about 50 targets. Trenchard recognized that his effort was spread very thinly, but his major hope was to disrupt enemy morale.[42] Had the war continued, the American Air Service would

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have joined the strategic bombing effort. Back in the United States, however, indecision as to the bombers which would be produced and then slowness in production denied the Air Service a bomber force. In line with the original Bolling recommendations, the United States initially undertook to manufacture Caproni bombers, but it was also decided to produce British-designed Handley-Page bombers. Since it would be difficult to ship the bombers across the ocean, Handley-Page parts would be manufactured in the United States and the planes would be assembled in Great Britain. On 28 June 1918, an Air Service Night Bombardment Section was opened in England to superintend the equipment and training of a night-bomber force, but none of the expected Handley-Page aircraft became available before the Armistice. A single American night-bomber squadron, equipped with improvised DH-4B and old Farman FE-2B aircraft, was committed to the front on 9 November 1918. Looking backward at the failure of the "strategical aviation" program, Colonel Gorrell observed that "entirely too much optimism was felt for the American Production Program" and that "the Air Service failed to secure the approval of the General Staff of its plans for the employment of this aviation and consequently suffered from the fact that its plans for the use of the Strategical Air Service were not synchronized properly. . . with the ideas of G.H.Q."[43]

* * * *

In view of the divided War Department authority for training and operations and for aircraft production it was not remarkable that American air unit programs were subject to frequent revision during the course of World War I. In August 1917, the Aviation Section secured approval for a program including 345 combat squadrons, of which 263 were intended for use in Europe by June 1918. Because of lagging aircraft production early in 1918, however, the War Department approved a program of 120 combat squadrons to be at the Western Front by January 1919. In August 1918, the War Department and General Pershing finally agreed on a program calling for 202 squadrons to be at the front by July 1919. This force would have included 60 pursuit, 49 corps observation, 52 army observation, 14 day-bombing, and 27 night-bombing squadrons, plus 133 balloon observation companies. Since aircraft production was beginning to achieve success late in 1918 it appeared probable that this program objective could have been met had the war continued.[44] When hostilities ended on 11 November 1918, however, 45 American air squadrons, with 740 airplanes, 767 pilots, 481 observers, and 23 aerial gunners, were actually assigned to the Air Service AEF. On the Marne, at St. Mihiel, and in the Argonne, American pilots shot down 781 officially-confirmed enemy aircraft and destroyed 73 enemy observation balloons. American losses in air battles included 289 airplanes and 48 balloons brought down by the enemy. The American squadrons participated in 150 bombing raids, during which they dropped more than 275,000 pounds of explosives.[45] During the war,

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11,760 airplanes were manufactured by the United States, and, as of 11 November 1918, the Air Service AEF had received 6,287 planes--4,791 from the French, 261 from the British, 19 from the Italians, and 1,213 from the United States.[46] Viewed in themselves, the statistics of American Air Service activities in World War I were somewhat less than impressive. According to his memoirs, General William Mitchell was not entirely happy that the Armistice had come before aviation had proven itself. Mitchell would recall that by the spring of 1919 he had expected to see great bombardment attacks against Germany's economy and even a paratroop employment of the 1st Infantry Division behind German lines. "I was sure that if the war lasted," Mitchell recollected, "air power would decide it."[47]

3. The Mitchell Era: From Air Service to Air Corps

"It is important for the winning of the war," stated the report of Field Marshal Jan Christian Smuts' committee on air organization and home defence to the British Prime Minister on 17 August 1917, "that we should not only secure air predominance, but secure it on a very large scale; and having secured it in this war we should make every effort and sacrifice to maintain it for the future. Air supremacy may in the long run become as important a factor in the defence of the Empire as sea supremacy."[48] In the United Kingdom, the finding of the Smuts committee that the Royal Flying Corps and the Royal Navy Air Service had been bitterly struggling over limited supplies of planes, engines, and personnel available led to the establishment of the Air Ministry in December 1917 and the Royal Air Force in April 1918. Information of the British action reached the United States without delay and caused a renewed congressional and popular demand for an American Air Service altogether separate from the War and Navy Departments.

Within the War Department, it was evident that the separation of responsibilities between the Division of Military Aeronautics and Bureau of Aircraft Production presented an inherent organizational defect. In a memorandum written on 6 June 1918, Colonel Henry H. Arnold, Assistant Director of the Division of Military Aeronautics, stated that the division must control the determination of the design of the equipment with which it was to operate. Arnold did not care who handled supply, but he urged that the Division of Military Aeronautics could not properly be held accountable for operational and military efficiency as long as the Bureau of Aircraft Production was responsible for the quality, design, and production of military aircraft. In order to alleviate some of the criticism of military aeronautics organization, Secretary Baker on 28 August 1918 appointed Mr. John D. Ryan as Second Assistant Secretary of War and Director of Air Service. Since Ryan continued to head the Bureau of Aircraft Production, all Army aviation affairs were in theory under one civilian head. This organization, however, was hardly becoming effective before the Armistice brought Ryan's

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resignation, leaving all the offices he had held vacant. In January 1919, Maj. Gen. Charles T. Menoher, a non-flying officer who had commanded the 42d (Rainbow) Division and the VI Army Corps in France, was appointed Director of Air Service. On 19 March 1919, President Wilson signed an executive order which dissolved the old Aircraft Board and placed the Bureau of Aircraft Production immediately under the Director of Air Service. This executive action finally united all Army aviation functions in the Air Service, but President Wilson had acted under a wartime reorganizational authority and the final status of the Air Service would have to be enacted into law by Congress. [49]

Desiring that the lessons of World War I should be recorded promptly by the leaders who had participated in field operations, General Pershing on 19 April 1919 convened a superior board in Paris under the presidency of Maj. Gen. Joseph T. Dickman, which was charged to review the findings of boards of senior officers to be appointed from each branch of the American Expeditionary Forces, including the Air Service. The report of the Air Service Board headed by General Foulois was generally conservative and recommended that most of the Air Service should be assigned to armies, corps, and divisions. The report nevertheless recommended that a G.H.Q. Reserve should be maintained which would never be less than an aerial division, comprising a bombing brigade (a night-bombing wing and a day-bombing wing) and a pursuit brigade (two day wings) plus a 10 percent reserve of all units assigned to armies, corps, and divisions. In reviewing this board report, General Patrick insisted that the prime function of an Air Service was to obtain and transmit information, that the prime function of pursuit was to prevent enemy observation and protect friendly observation planes, and that aircraft intended for bombing distant objectives or industrial centers were a "luxury." "It follows," Patrick wrote, "that when it is possible to place such a bombing force in the field, its size should be limited only by the nation's ability to provide it and by the number and importance of the enemy activities which are to be attacked."[50]

The Dickman Board report noted that the Air Service AEF had developed along four general lines: observation, distant reconnaissance and bombing operations, aerial combat, and combat against ground troops. The board stated that air combat against ground troops was not well developed, and it predicted that this type of aerial work could be made more effective and decisive than distant bombing operations. "Nothing so far brought out in the war," the Dickman Board concluded, "shows that aerial activities can be carried on independently of ground troops, to such an extent as to materially affect the conduct of the war as to materially affect the conduct of the war as a whole. It is possible, perhaps, that future wars may develop aerial forces of far greater extent than those provided in this war. It is safe to assume that Air Forces will not be developed for war purposes to such an extent as to largely

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supplant ground and water forces, until such a proportion of the people become airfaring people as are now known as seafaring people." Believing this, the Board also believed that "so long as present conditions prevail. . . Aviation must continue to be one of the auxiliaries of the principal arm, the Infantry."[51]

Other reports, manuals, and histories prepared at the Headquarters, Air Service AEF in Paris and elsewhere in Europe during the immediate post-hostilities period reflected the over-riding importance of observation in the Air Service mission. Written in March 1919 but not published until later, General Patrick's Final Report of Chief of Air Service A.E.F. stated that to regard air forces as separate and distinct from other component parts of the Army would be "to sacrifice the cohesion and unity of effort which alone distinguishes an army from a mob."[52] Two tentative manuals prepared under the direction of Colonel Gorrell--entitled "Notes on the Employment of the Air Service from the General Staff Viewpoints" (February 1919) and "Tentative Manual for the Employment of Air Service" (April 1919)--represented the belief that "when the Infantry loses the Army loses. It is therefore the role of the Air Service, as well as that of the other arms, to aid the chief combatant, the Infantry."[53] The manual of operations for Air Service units which General Mitchell issued at Koblentz as Air Service Commander, U.S. Third Army, on 23 December 1918 portrayed aviation as a supporting arm for the infantry rather than as a decisive force.[54]

Back in Washington during 1919 and 1920 eight separate bills proposing the creation of a separate military aviation establishment were introduced in the U.S. Congress. The leading measures were the New and Curry bills, each of which sought to create an executive department of aeronautics, and, on 8 August 1919, the Secretary of War appointed a board of general officers headed by General Menoher to report on these bills. After study, the Menoher Board reported general agreement on several fundamental considerations: aeronautics would play an increasingly important role in a future war in proportion to the capacity of a nation to produce aircraft and train personnel for aircraft maintenance and operation; no nation could afford to maintain military air fleets required for war in time of peace; the nation which could be first to mobilize a superior air fleet after a war began would have an undoubted advantage; and a nation should desirably have a full development of commercial aviation in order to provide military potential in time of war. The Board stated that a single governmental agency ought to be established for research and development and for procurement of military, naval, and commercial aircraft. It recommended that the government should also develop and operate air route facilities and that it might provide direct subsidies to airline companies but that it should not undertake the production of aircraft. Whether or not a single separate governmental agency for research and development, procurement, and subsidization of the civil air fleet

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could be established, however, would depend upon the magnitude of federal expenditures which Congress would be willing to vote for national aeronautics.

The Menoher Board revealed an understanding of the nation's requirement for a progressive development of aviation potential, but it could see no need for a separate Army-Navy aeronautical service. It stated: "An air force acting independently cannot win a war against a civilized nation, nor by itself, accomplish a decision against forces on the ground." On the other hand, military forces could not be efficiently trained nor could they operate effectively without air force support. With respect to an army, an air force was an essential combat branch, and it had to be an integral part of an army command "not only during battle but also during its entire period of its doctrinal training." The Board stated that the outstanding defect of the Air Service AEF had been its lack of cooperative training with the Army, and it quoted extensively from the Dickman Board's findings to substantiate the air mission as being one of support for ground operations. The creation of the Royal Air Force in Great Britain was said to have been motivated "for political rather than military reasons." In regard to the exact organization of the air component of the Army, the Menoher Board recommended that the military air force was an essential combat branch and ought to be placed on an equal footing with the Infantry, Cavalry, and Artillery. "Whatever may be the decision as to a separate Aeronautical Department," the Board concluded, "the military air force must remain under the complete control of the Army and form an integral part thereof both in peace and war."[55]

In the late spring of 1919 the case for a separate air force drew support from the report of a mission headed by Assistant Secretary of War Benedict Crowell. Including American industrialists as well as Army and Navy officers, the Crowell mission visited France, Italy, and England, and conferred with civil and military leaders. The report noted a general agreement in Europe that "any future war will inevitably open with great aerial activity far in advance of contact either upon land or sea, and that victory cannot but incline to that belligerent able to first achieve and later maintain its supremacy in the air." Italy and France were said to realize the military-naval and civil-commercial aspects of aircraft, and Great Britain was reported "to consider the dominance of the air as at least of equal importance with that of the seas, and is frankly and avowedly planning a definite policy of aerial development to that end." Presented to the Secretary of War on 19 July 1919, the Crowell mission report recommended the establishment of a single Department of Air which would be coequal to the Departments of War, Navy, and Commerce, and would have subdepartments including civil aeronautics, military aeronautics, naval aeronautics, and supply and research. Apparently because the Crowell report did not follow accepted viewpoints, Secretary Baker allegedly made efforts to suppress it. The general contents of the report were soon known

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to aviation enthusiasts, but Secretary Baker did not release it until December 1919, when he made the observation that the mission had "gone too far in suggesting a single centralized Air Service." Military pilots, Baker stated, had to be trained "to fight singly or in formation, and to operate in coordination with other branches of the military service."[56]

* * * *

In his combat command in Europe, General Billy Mitchell had become America's hero and "prince of the air." While he would later re-write and add explanatory notes to his "diary of war-time experiences" that would indicate his early support for the concept of strategic bombardment, Mitchell's wartime activities and writings indicated that he cooperated with the desires of his Army superiors with little real question.[57] In January 1919, however, Mitchell was ordered to return to the United States to become Director of Military Aeronautics. He may well have recognized that he was returning to the United States at a time when the nation lacked an air policy, and, instead of looking backward at World War I, he began to look ahead to logical projections of air power capabilities. One thing was clear, the Air Service needed a definite mission of a distinctive nature. In 1915, when he had been assigned to the War Department General Staff, Mitchell had prepared a survey of America's aviation needs in which he had theorized that Army aviation would be a valuable "second line of defense" if the Navy's "first line of defense" should fail to stop an invasion of the United States. He had made the point that aviation attached to harbor and coastal defenses would be useful both for reconnaissance and for preventing similar enemy activity. Aircraft could also destroy an invader's airplanes, attack his submarines, and disrupt the operations of his minelayers.[58] Something of these earlier thoughts may have been in Mitchell's mind while he was returning to the United States: a naval officer with him aboard the westbound Aquitania duly reported that Mitchell was "fully prepared, with evidence, plans, data, propaganda, posters and articles, to break things wide open" for air power.[59]

When Mitchell assumed office as Director of Military Aeronautics on 6 March 1919, the duties of this position had already been superseded in large measure by the appointment of General Menoher as Director of Air Service. Menoher, however, gave Mitchell the principal assignment as chief of the Air Service's Training and Operations Group, the headquarters agency charged with the preparation of tactical manuals and war plans.[60] In the Training and Operations Group, Mitchell gathered together a team of veteran airmen, including Colonel Milling and Lieutenant Colonels William C. Sherman, Leslie MacDill, and Lewis H. Brereton. Obviously stimulating each other's thinking, these men developed many of the ideas which would eventually be recognized as Air Force doctrine. The

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activities of the Training and Operations Group were so clearly contrary to the official positions of the War Department and of General Monoher that Lt. Col. Oscar Westover, who was Menoher's executive officer, recommended on 5 May 1919 that Menoher ought either to get a statement of loyalty from Mitchell or to relieve all of the division heads of the Training and Operations Group.[61]

As Mitchell and his associates assessed the situation confronting the Air Service, they recognized, first of all, that "normalcy" was wrecking the nation's armed forces, and particularly the air force. In the rapid demobilization, the number of Air Service officers dropped from 20,000 to a little more than a nucleus of 200 regular officers in 1919, and these regulars were only "on detail" from other branches of the Army. While Mitchell maintained his rank by occupying a statutory assignment, most Air Service officers returned to their regular ranks--mostly in company grades--when they reached the United States. General Foulois would later recall the sheer shock that he felt when he walked down the gangplank in New York as a wartime brigadier general and became a captain when he stepped on the dock: within a few months, however, he was promoted to major.[62] Even more important, however, was the effect of the return to peace on the development of the airplane. "The airplane," Sherman wrote, "is in its infancy. Many of its features today show the crudity characteristic of all early efforts. But as we compare the airplane of 1918 with that of 1914, it is apparent that progress during that period was unbelievably rapid. This was due, of course, to the urgent demand of war. Now the acceleration of war has been lost; nor does there appear to be any great stimulus to advancement in commercial demand. We may expect, therefore, that progress will be materially slowed down, either until development makes the airplane widely useful to commerce, or until we encounter again the insistent demand of war."[63]

In their assessment of the impact of the airplane on the art of war, the Mitchell group drew an important distinction between the effect of air action on land warfare and sea warfare. "On land," Sherman reasoned, "battle is determined by morale: the aim therefore is to destroy morale by methods that are based on unchanging human nature." Naval warfare, on the other hand, was a product of industrial and inventive genius and firepower. Aircraft, together with submarines, had the ability to destroy naval vessels, and it was obvious that the airplane had altered the means by which sea power was to be attained.[64] At a meeting of the Navy's General Board on 3 April 1919, Mitchell urged that aircraft could successfully attack naval warships, stated that the aerial defense of the nation's coasts should be assigned to land-based aircraft, and urged that the United States should organize a Ministry of Defense, combining Army, Navy, and Air Force under one direction.[65] Mitchell was not again invited to appear before the Navy's General Board, but he presented a steady flow of aviation ideas to the Congressional committees that sat almost continuously during 1919. He advocated

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a single department of aviation with military, naval, and civil divisions. "The principal mission of aviation is fighting hostile aviation," he said, "and it does not make any difference where it is found, whether over the water or over the land, the mission of aviation is to destroy that force." "We believe if we are allowed to expand," he continued, "we can put the navy under the water in a comparatively few years as an offensive force against us. We believe we can have a great effect on land operations, although not to the same extent that we can against a navy, because an army can hide itself too well."[66] "If we give up the air to a foreign power," Mitchell testified on 5 December 1919, "it has been proved during the war that they can cause incalculable damage with their air service alone by hitting our industrial and other centers of organization for war, and in all probability they could bring about a decision by their air service alone." Mitchell also emphasized a need for unity of air command: "The principal mission. . . of aviation. . . is the destruction of the hostile aviation, in the same way that the principal mission of the navy is the destruction of the hostile navy, or the principal mission of an army is destruction of the hostile army. Therefore, in order to unite and bring your greatest effect to bear in any one place it is necessary to unite all the elements of your aviation at the place where the decision is called for, no matter whether it is war on the sea or war on land."[67]

In the same months that Mitchell was carrying on the fight for a separate department of aviation, he and other officers were also defining a role for an expanded Air Service within the Army. Major Foulois, who was assigned to the Director of Air Service's Office, bitterly attacked the short-sighted policies of Army General Staff officers in testimony before a Congressional committee on 16 October 1919. These officers, Foulois said, were interested only in a "defensive use" of aircraft and had neglected "the fighting side of aircraft." Although Foulois presented an elaborate justification of the materiel and logistical advantages to be obtained from a Department of Aeronautics (and was far more critical of the General Staff than was Mitchell at this early date), he was somewhat less positive about the relationship of aeronautics to the national defense. "The use of aircraft during the recent war," he said, "has fully demonstrated the fact that in future wars aircraft will play a part second only to the infantry." He added: "In time of war there is no question but that, in order to get the maximum efficiency of all elements of a military command, air service units as well as any other units, must come under the command of the supreme military commander in the field.[68]

In a paper entitled "Tactical Application of Military Aeronautics" apparently prepared in January 1920, Mitchell defined the principal mission and the secondary employment of aeronautics. "The principal mission of Aeronautics," he stated, "is to destroy the aeronautical force of the enemy, and, after this, to attack his

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formations, both tactical and strategical, on the ground or on the water. The secondary employment of Aeronautics pertains to their use as an auxiliary to troops on the ground for enhancing their effect against the hostile troops." In this paper, Mitchell divided combat aviation into four branches which would be classic for many years. These were: Pursuit aviation, or the branch "designed to take and hold the offensive in the air against all hostile aircraft" and the branch with which "air supremacy is sought and obtained." Bombardment aviation was "organized for the purpose of attacking enemy concentration points of all sorts at a distance from their front lines. Probably its greatest value is in hitting an enemy's great nerve centers at the very beginning of the war so as to paralyze them to the greatest extent possible." Attack aviation was a specialized branch which had only been coming into being when the war ended in Europe. Attack planes would be heavily armed and armored "flying tanks" which would be able to prosecute low-level attacks against hostile troops, tanks, artillery, motor vehicles, railway trains, or anything of that sort. Observation aviation was the branch "concerned more with the troops on the ground than any other." In the conduct of combat air operations, Mitchell envisioned that the superior command would outline the broad plan of operation and that the Air Service commander would prepare detailed air plans in conjunction with the Army G-3 Operations and G-2 Information branches. When approved by the superior commander, these plans would become orders.[69]

* * * *

Despite the ardent pleadings of aviation enthusiasts, the War and Navy Departments acted in unison during 1919 and 1920 to integrate aeronautics into the existing establishment. One of Mitchell's most telling arguments in favor of a separate air force had to do with its potential effectiveness for the coastal defenses of the United States. Allegedly to meet this line of argumentation, Secretary Baker in July 1919 sponsored a reconstitution of the Joint Army and Navy Board (which had been organized in 1903 but had ceased to function). Baker expressed confidence that the joint board would produce cooperation in developing the air services of the Army and Navy.[70] Late in December 1919, the Joint Board recommended a statement of Army-Navy functions in war which was immediately accepted by the Secretaries of War and Navy. The policy statement directed that Army aircraft would operate from bases on shore as an arm of the mobile army; against enemy aircraft in defense of all shore establishments; alone or in cooperation with other arms of the Army or with the Navy against enemy vessels engaged in attacks on the coast, such as bombardment of the coast, operations preparatory to or of landing troops, and operations such as mine laying or attacks on shipping in the vicinity of defended ports.

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Navy aircraft would operate from mobile floating bases or from naval air stations on shore as an arm of the fleet; for oversea scouting; against enemy establishments on shore when such operations were conducted in cooperation with other types of naval forces, or alone when their mission was primarily naval; to protect coastal sea communications by reconnaissance and patrol of coastal sea areas, convoy operations, attacks on enemy submarines, aircraft or surface vessels through the sea area; and alone or in cooperation with other arms of the Navy, or with the Army, against enemy vessels engaged in attacks on the coast. Marine aircraft would perform the functions normally assigned to Army aircraft when the operations were in connection with an advance base in which operations of the Army were not represented. The name of the old Joint Army and Navy Board on Aeronautics was changed to the Aeronautical Board and it was agreed that in order to prevent duplication and secure coordination of effort plans for new projects for the construction of aircraft, for experimental stations, for coastal air stations, and for stations to be used jointly by the Army and Navy would be summitted to the Aeronautical Board for study and recommendations.[71]

When General Pershing returned from Europe in the autumn of 1919, Air Service partisans had great hope that he might support their stand for a separate aviation department. Pershing had organized the Air Service AEF as a separate component, and in an appearance before a joint meeting of the Senate and House Committees on Military Affairs he indicated a belief that cooperation and coordination between the different departments of the government which used airships would be essential to the development of aviation. In a letter to General Menoher on 12 January 1920, however, Pershing explained that his testimony had been misunderstood. He unequivocally asserted: "An air force, acting independently, can of its own account neither win a war at the present time nor, so far as we can tell, at any time in the future. An air force by itself cannot obtain a decision against forces on the ground." He stressed that a military air force was an essential combat branch and should form an integral part of the Army not only during battle but during the entire period in which troops received doctrinal training. He hoped that the air service would be established as a separate arm of the Army, coordinate in status with the Infantry, Cavalry, and Artillery.[72]

Despite indications of a considerable sentiment among its members for a separate department of aeronautics, Congress finally voted to preserve the status of organization already existing as a result of war time changes. As a part of the Army Reorganization Act of 1920, which became law on 4 June 1920, the Air Service was made a part of the combat line of the Army and no changes were made in its existing relations with the War Department General Staff.[73] Still far from beaten by the course events were taking, General Mitchell urged the House Committee on Military Affairs to add a clause to the Army appropriation bill for fiscal year 1921 to

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provide that the Army Air Service should control all aerial operations from land bases and that the Navy should control all aerial operations attached to a fleet. This clause was opposed by the Secretaries of War and Navy, but, as approved on 5 June 1920, the Army appropriation act nevertheless provided: "That hereafter the Army Air Service shall control all aerial operations from land bases, and Naval Aviation shall have control of all aerial operations attached to a fleet, including shore stations whose maintenance is necessary for operation connected with the fleet, for construction and experimentation and for the training of personnel."[74]

Reportedly under pressure from the War Department General Staff to bring Mitchell into line, General Menoher made a number of changes within the Office of the Chief of Air Service following its legal establishment on 4 June 1920. Since the position of Director of Military Aeronautics was abolished, Menoher named Mitchell as Assistant Chief of the Air Service and gave him no specific duties in the new position other than to advise upon Air Service matters.[75] Mitchell was also relieved as Chief of the Training and Operations Group, and Majors Milling and Sherman, having lost their wartime ranks, were transferred to the new Air Service Field Officers' School, which the War Department had authorized at Langley Field, Virginia, on 25 March 1920. The Training and Operations Group continued to be responsible for "the prescribing of tactical methods to be employed and with the enunciating of tactical doctrine," but, seriously hampered by a shortage of personnel, its product retrogressed. Prepared by the old regime and printed in April 1920, the Air Service's Aerial Bombardment Manual looked to the future. "Bombardment from occupying a practically non-existent and unimportant part in the war," it asserted, "has become a very important branch of the Air Service, and it is believed by many that if carried out in sufficient numbers it will win a war." No such forward-looking thoughts appeared in the Air Service Manual issued in September 1920, which was in fact a reprint of a manual that had been prepared by the Air Service AEF.[76]

Since he lacked formal duties in the Air Service, Mitchell spent much of his time presenting the argument for a separate aeronautical department to the public and continuing the aircraft versus naval vessels controversy.[77] During the winter of 1920-21 he wrote Our Air Force, which summarized his views on aviation. He predicted that future wars would include the destruction of entire cities by airborne gas attacks. "As a prelude to any engagement of military or naval forces," he predicted, "a contest must take place for control of the air. The first battles of any future war will be air battles. The nation winning them is practically certain to win the whole war, because the victorious air service will be able to operate and increase without hindrances." He called for the development of a metal-skin aircraft, which would replace fabric-covered planes, and stated that the United States should possess about 5,000 modern airplanes, with

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twice that number in reserve. Fifteen hundred of the active aircraft should be assigned to the Army and Navy for observation, and the remaining 3,500 planes should be held in an air striking force which would be about 60 percent pursuit, 20 percent bombardment, and 20 percent attack planes. He asserted that the Navy should possess 20 aircraft carriers, but no battleships, cruisers, or similar warships. Reductions in the Navy's surface fleet would sustain the added cost of aeronautical development.[78]

Seeking to secure some evidence with which to refute Mitchell's charges that capital ships were vulnerable to air attack, the Navy secretly exploded a 900-pound bomb on the deck of the obsolete battleship Indiana in October 1920. It subsequently announced that the tests demonstrated that aircraft could not sink a battleship, but publication of photographs of the battered vessel led Mitchell to comment that "neither coast defense guns nor a defending fleet of battleships need fire a gun in repelling the attack of a foreign fleet if we have a properly organized Air Force."[79] In testifying on the Army appropriation bill in January 1921, Mitchell pointedly challenged the Navy to permit a live bombing test. "Aviation," he said, "must be ready when the war starts, because that is when aviation will be called on. That is when it will have its greatest effect, and we want to keep the organizations we have in service equipped with modern equipment and have enough in storage to last for two or three months of an ordinary war." As for the role of an air force in a land war, Mitchell saw its chief employment against hostile lines of communications. "I want it to be distinctly understood," he said, "that I do not consider that the air force is to be considered as in any sense supplanting the Army. You have always got to come to man power as the ultimate thing, but we do believe that the air force will control all the communications, and that it will have a very great effect on the land troops, and a decisive one against a navy."[80]

Spurred on by Congressional demands, the Navy agreed to stage aerial bombing tests against captured German warships off the Atlantic coast during the summer of 1921. Based at Langley Field, the 1st Provisional Air Brigade--with Mitchell in command and Milling as chief of staff--practiced bombing for several weeks, and on 18 and 21 July the brigade successfully attacked and sank the cruiser Frankfort and the battleship Ostfriesland.[81] In his report to General Menoher (which was leaked to the press when Menoher would not make it public), Mitchell claimed that "the problem of the destruction of seacraft by Air Forces has been solved and is finished." He concluded his statement by calling for the organization of a Department of National Defense, with a staff common to all services and with subsecretaries of Army, Navy, and Air Force. Only with such an organization would the United States be able to make correct decisions in choosing weapons for the future defense of the nation.[82] As early as June 1921, Menoher had asked that Mitchell be transferred away from Washington, and, following the illicit publication of the bombing report, Menoher told Secretary

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of War John W. Weeks that either he or Mitchell had to go. Allegedly because he had failed "to handle and discipline" Mitchell, Menoher was relieved as Chief of Air Service. Selected by Secretary Weeks because of his reputation for having straightened out "a tangled mess" in the Air Service AEF, General Patrick was appointed Chief of Air Service and undertook the duty on 5 October 1921.[83] As a non-flyer, Patrick told Mitchell that he would consult him on major decisions including general air service doctrine and policies, but that he would be the chief in fact as well as in name and would make all final decisions. Patrick said that Mitchell talked of resignation from the Army but that on a little reflection he saw fit to continue as assistant chief of the Air Service.[84]

In the winter of 1921-22, allegedly to get him off the scene while the delicate negotiations attending the Washington conference for the limitation of naval armaments were in progress, Patrick sent Mitchell, accompanied by Lt. Clayton Bissell and Aeronautical Engineer Alfred Verville, on an inspection trip to France, Italy, Germany, Holland, and England. In each of these countries, Mitchell attempted to determine "the national policy of the country and the way in which it was applied from an aeronautical standpoint." Mitchell professed to have found a great emphasis upon aviation: "It is well known by all European nations," he reported, "that an air force can be ready to strike at least two weeks before any armies join battle. . . . If an air force is sufficiently well organized, equipped, and instructed, these armies probably never will come into contact as the air force will settle the matter itself." Applying what he had observed in Europe to the strategic problem of the United States--namely, "the ability to attack at a distance and the ability to attack possible debarkations, other troops on the ground, and to cover landings"--Mitchell advocated a unity of air command. The air force commander should control not only the air force and army observation planes (in the beginning of hostilities before ground combat was joined) but also all antiaircraft weapons, searchlights, and barrage balloons. Since aviation's primary mission was to destroy hostile air forces, Mitchell urged that bombardment wings should be formed out of two groups of "high speed diving type of pursuit" and one group of high-level bombardment. Attack wings should comprise two groups of "fast climbing, maneuverable" pursuit and one group of armored attack aircraft. Mitchell specifically recommended that the minimum air force for the United States should be one brigade of 600 planes behind the east coast, one division of 1,200 planes in the central part of the nation, and one brigade of 600 planes on the Pacific Coast. This force should be roughly one-fifth active air force and four-fifths reserve (which could be mobilized in two days). Mitchell ended his report by pointing out: "The organization along our coasts is so complicated between the corps area, the coast artillery, the naval districts, the coast guard, the air forces, the meteorological service which is under the Department of Agriculture, and the radio

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service which is partly under the navy and partly under the army that we would be terribly handicapped and our hands almost tied in case we were attacked by a first-class power."[85]

In commenting upon his visit to Europe, Mitchell reported that he had met "more men of exceptional ability in Italy than. . . in any other country." Ten years would pass before Mitchell would mention that he had had "frequent conversations" with the Italian air strategist Giulio Douhet, whose career paralleled Mitchell's own in many ways. Douhet had begun to write about military aviation in 1909; he had been imprisoned for a year in 1916-17 for having criticized Italy's wartime military policy; the court martial had been expunged in 1920. Promoted to general officer rank in 1921, Douhet completed his first serious treatise on military aviation--Il Dominio del Aria, or The Command of the Air--in October 1921. In this essay on the art of aerial warfare, Douhet demonstrated that two new instruments of war--the aerial arm and the arm of poison gases--had been introduced in World War I. For the future, he predicted: "Not only explosives, but also chemical and bacteriological poisons can be carried by the aerial arm to any point of the enemy's territory, scattering death and destruction over the entire country of the foe." Douhet argued that ground warfare would be progressively stalemated by improvements in guns but that aircraft were instruments of incomparable potentialities against which no effective defense except for the establishment of command of the air could be foreseen. "To prevent the enemy from harming us by means of his air forces," he wrote, "there is no other practical method than to destroy his air forces. . . . Command of the air means to be in a position to prevent the enemy from flying, while at the same time retaining this right for one's self." Believing that "it is easier to destroy the potentiality of the enemy in the air by destroying the nests and eggs of the flyers rather than to seek the flyers in the air for the purpose of bringing them down," Douhet thought that an independent air force should be an air fleet of bombers and "combat planes"--the latter to be a bomber-type plane that would be equipped with many guns and used to convoy bombers and fight off hostile pursuit planes. Following establishment of command of the air, the independent air force would be able to destroy an enemy nation by attacking transportation lines and population centers. On the other hand, if two opposing air fleets began operations simultaneously and command of the air could not be established, Douhet reasoned that it would be necessary "to resign one's self to suffer offensives which the enemy is capable of inflicting upon us, so that all the means we possess may be utilized for the purpose of inflicting on the enemy more powerful offensives."[86]

In his writings Mitchell never attributed any special influence on his thought to Douhet, and U.S. Air Corps officers would not publicly cite Douhet for several years. While it was true that Douhet's works would not be generally available in a published translation until 1942,[87] a five page extract of The Command of the Air was prepared by the War Department Military Intelligence Division

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on 23 March 1922 and found its way into the files of the Air Service Plans Division.[88] A typescript translation of the first hundred pages of the book (the substantive portion) was received by the Air Service Field Officers' School on 3 May 1923.[89] During 1922, moreover, Lt. Col. A. Guidoni, the Italian air attache in Washington, sent a summary of the book to Air Service Headquarters and to Lester Gardner, editor of Aviation magazine. Guidoni reported that Gardner had discussed the summary with Mitchell and had said that Mitchell was greatly impressed with Douhet's ideas.[90] Air Service officers thus knew of Douhet's ideas, but they probably recognized that they were politically unacceptable in the United States. "Air raids upon great unfortified cities like London and Paris," Secretary Baker had reported in November 1919, "brought into the war a new element and constituted an abandonment of the time-honored practice among civilized peoples of restricting bombardment to fortified places or to places from which the civil population had an opportunity to be removed. . . . The actual loss of life caused by these bombardments was relatively small and the destruction of property, while large, had no appreciable effect upon the war-making power of either nation. Indeed, it may rather be said that the willingness of the enemy casually to slaughter women and children, and to destroy property of no military value or use, demonstrated to England and France the necessity of beating so brutal a foe, and it is most likely that history will record these manifestations of inhumanity as the most powerful aids to recruitment in the nations against which they were made."[91]

* * * *

"As a whole the Air Service. . . when I took charge," General Patrick observed, "was in about as chaotic a condition as I had found it when some three years before I had been placed in charge of it in France."[92] Patrick believed that thinking about military aviation tended toward the extremes and he preferred a middle way. "There are, on the one hand," he stated, "enthusiasts who believe that the coming into being of aircraft have practically scrapped all other combat agencies; and, on the other hand, conservatives who consider aircraft as merely auxiliaries to previously existing combat branches. The truth, of course, lies somewhere between those two views."[93] As an able but conservative administrator, he favored evolutionary rather than revolutionary changes in the national military organization.[94] Unlike many of the Army-indoctrinated officers of his generation, Patrick had an open mind as to the future of aviation. After months of practice, he passed a normal test and was recognized as a qualified junior airplane pilot. While he had no hope of becoming a skillful pilot, Patrick believed that his ability to fly helped him win the confidence of many younger men whom he was trying to contact, direct, and guide "in an effort to make of the Air Service a united body of men all working toward one end."[95]

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A part of the chaos which affected the Air Service grew out of the vast mass of material which had been issued in the Army during World War I for instructional purposes. In the autumn of 1920, the War Department had issued instructions to each of its branches that all training data would be prepared in a new Training Regulation series. Looking toward the accomplishment of this and other tasks, General Patrick during the reorganization of the Office of Chief of Air Services on 1 December 1921 replaced the Training and Operations Group with a Training and War Plans Division, which was made responsible for conducting service tests of new equipment and the preparation training literature. In the other branches of the Army, general boards representing the chief of the service handled test and training literature projects, but the Air Service did not have an Air Service Board. In the absence of such an agency, the Air Service Training and War Plans Division assigned training literature projects to the various schools and units believed best qualified for handling each particular project.[96] At the Air Service Field Officers' School, Major Sherman had been preparing during 1921 a school text on air tactics. In this text, Sherman accepted the prevailing belief that the success or the failure of the infantry determined the success or failure of an army, but he maintained that this had not always been true in the past and might not be true in the future. He also believed that the army aviation was comprised of two portions: "air service" aviation was an auxiliary of the ground forces, while "air force" aviation (pursuit, bombardment, and attack aircraft) constituted a true arm. Sherman suggested that the "air force" portion of army aviation would support the infantry in the same manner that the Navy did--by seeking out its doctrine in the element in which it operated. The first duty of the air force was "to gain and hold control of the air, by seeking out and destroying the hostile air force, wherever it may be found." Although he did not believe that control of the air could ever be completed, Sherman believed that "the backbone of the air forces on which the whole plan of employment must be hung is pursuit." Having established control of the air, the mission of the air force was "to destroy the most important enemy forces on the surface of the land or sea."[97] During 1922, Sherman's manuscript on air tactics was revised into manual form, and early in 1923 it was issued in preliminary form for use in the Air Service as Training Regulation No. 440-15, Fundamental Conceptions of the Air Service.[98]

While the doctrinal project was in progress, General Patrick gave close attention to the pitiful plight of aircraft procurement and the poor state of health of the nation's aircraft manufacturers. While the development of experimental aircraft had made substantial progress since 1918, the quantity procurement of new aircraft and accessories had been penalized by the tremendous stock of equipment still on hand from World War I. Some new planes--such as the Martin MB-2 which could carry 2,000-pound bombs--had been procured,

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but the Air Service had been able to purchase only a few of many prototype planes which it wished to see developed to meet specific requirements.[99] In his report for fiscal year 1922, Patrick pointed out: "No nation can afford to support, in times of peace, an air force capable of meeting the requirements of war, and because of the rapid deterioration of aeronautical equipment in storage the proposition to maintain a sufficient war reserve of aircraft is equally untenable." In effect, the Air Service had to plan to use viable aircraft manufacturing companies for the production of its mobilization requirements in a war emergency. Aircraft production in the United States, however, was at such a low ebb that it would not be able to meet the Army's plans to mobilize six armies for a war emergency. General Patrick recommended that a program for the production and purchase of modern aircraft be considered and that a definite amount of aircraft purchase funds should be provided by Congress from year to year. He also stated that a properly balanced Army aviation force ought to have about 20 percent of its strength in "air service" units and the remaining 80 percent in "air force" or combat aviation. Because of reductions in Air Service strength and the requirement to keep enough observation units to conduct training with ground forces, 38 percent of the Air Service strength was in "air service" units. Patrick called for a restoration of a proper balance by the organization of additional "air force" combat units.[100]

Attentive to General Patrick's criticisms, the Secretary of War on 18 December 1922 directed the Air Service to present a study on necessary remedial actions. Patrick accepted the project but he maintained that the study could not be made until the War Department had accepted the concept that Army aviation should be divided into "air service" and "air force" units. In addition to this, he argued that all "air service" observation units should be withdrawn from divisions and consolidated under the command of corps and armies, and that an "adequate well-balanced Air Force"ought to be built to serve as the "G.H.Q. Reserve." "Very often," Patrick wrote, "there is as distinct and definite a mission for the Air Force independent of the ground troops as there is for the Army and Navy independent of each other." For this reason he opposed the assignment of "air force" units to field armies, and he urged that the Air Service should be authorized to maintain a minimum of six bombardment groups instead of the existing authorization for only one bombardment group.[101] Possibly in order to emphasize Patrick's point, General Mitchell wrote a long pamphlet in the winter of 1922-23 entitled "Notes on the Multi-Motored Bombardment Broup, Day and Night." This elaborate treatise on the tactical employment of bombardment aviation was prefaced by the observation: "Offensive aviation is employed most effectively at the beginning of hostilities during the period of ground and water mobilization and concentration. . . . Against an enemy not in possession of an adequate air force, offensive aviation, if employed effectively, can force a decision

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before the ground troops or sea force could join in battle."[102]

In order to hear Patrick's plan and make recommendations on it, the Secretary of War appointed a board of General Staff officers, headed by Maj. Gen. William Lassiter. When the Lassiter Board convened in daily sessions beginning on 22 March 1923, General Patrick argued the Air Service plan which he had outlined earlier: he wished to reduce the auxiliary services of aviation (mainly observation) and increase the primary services needed to secure control of the air (pursuit) and to destroy hostile targets behind enemy lines (bombardment). "The principle of concentration of air forces becomes a maxim," he said. And again, he urged: "I am. . . convinced that the concentration of all air force under one GHQ Reserve Commander is the most effective way of assuring aerial supremacy." But Patrick ran headlong into the opposition of Brig. Gen. Hugh A. Drum, of the War Department General Staff, who insisted that the board should first determine what aviation would be needed to support the ground armies and then decide how large the air force ought to be. Under this formula, the board proved unwilling to divest divisions of their observation squadrons and to concentrate all "air force" units in a GHQ Reserve. Instead, the Lassiter Board recommended that the observation air service should be an integral part of divisions, corps, and armies; that an air force of attack and pursuit should be an integral part of each field army; and that an air force of bombardment, pursuit, and airships should be directly under General Headquarters for assignment to special and strategical missions, the accomplishment of which might be either in connection with the operation of ground troops or entirely independent of them. This force should be organized into large units in order to insure great mobility and independence of action. The Lassiter group nevertheless agreed that the Air Service ought to be augmented, mainly, however, because it recognized that "for lack of business our aircraft industry is languishing and may disappear." In place of the single bombardment group in the GHQ Reserve, the board recommended that there should be two bombardment groups and four pursuit groups. It also recommended that Congress be asked to make annual appropriations of $25 million for the Air Service each year for ten years and that approximately $15 million each year should be used for the purpose of aircraft.[103]

The Secretary of War approved the Lassiter Board report on 24 April 1923. While the aircraft procurement recommendations subsequently became lost when the War Department attempted long and unsuccessfully to coordinate a planned purchasing program with the Navy through the agency of the Joint Army-Navy Board,[104] the War Department accepted the Lassiter report as the basis for the internal conceptual organization of the Air Service. Thus the official Field Service Regulations, United States Army, 1923, declared: "The coordinating principle which underlies the employment of the combined arms is that the mission of the infantry is the general mission of the entire force," but it now recognized that "no one arm

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wins battles." Since pursuit aviation created "the conditions which enable the other elements to operate with the greatest degree of effectiveness," the regulations considered pursuit to constitute "the most vital element of the air service." Although the assignment of aviation elements to particular commands was said to be "flexible," the regulations followed the assignment recommended by the Lassiter Board: observation units to divisions, corps, and armies; pursuit and attack units to armies; and bombardment units and airships to the GHQ Reserve.[105]

Appreciation of the fact that the Air Service was "a growing factor in national defense," together with the year and a half which had elapsed without positive action on the Lassiter recommendations, caused General Patrick to propose a reorganization of the air forces to the War Department on 19 December 1924. "I am convinced," Patrick wrote, "that the ultimate solution of the air defense problem of this country is a united air force, that is the placing of all of the component air units, and possibly all aeronautical development under one responsible and directing head. . . . The great mobility of the Air Service and the missions it is capable of performing have created a problem in command, the solution of which is still far from satisfactory. . . . Future emergencies will require at the very outset, before the ground armies can get under way, and in many cases before the Navy can make its power effective, the maximum use of air power on strategic missions. . . . We should gather our air forces together under one air commander and strike at the strategic points of our enemy--cripple him even before the ground forces can come in contact. Air power is coordinate with land and sea power and the air commander should sit in councils of war on an equal footing with the commanders of the land and sea forces."[106] "I personally believe," Patrick told the Army War College on 21 February 1925, "that the results desired can be best brought about by a Minister of Defense, under whom would be the Land Force, the Sea Force, and the Air Force."[107]

While he conceived that a Department of Defense, with Army, Navy, and Air Force branches would be the ultimate organizational solution to national defense problems,[108] General Patrick was not in favor of hasty action to separate the Air Service from the War Department. Instead, he called upon the War Department on 19 December 1924 to secure legislation which would accord the Air Service a status within the War Department analogous to that of the Marine Corps within the Navy Department and that would authorize the Air Service expansion recommended by the Lassiter Board. He also recommended that the Army Air Service should be positively charged with all air operations conducted from shore bases, thus ending the overlap of functions of the Army and Navy air forces. He asked that the Chief of Air Service be made responsible for procurement, storage, and issue of Air Service equipment; for the transportation by air of personnel and supplies; for management of Air Service personnel policies; and "for the tactical training and

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efficiency of all Air Service units with a doctrine first of offensive action." He further recommended that war plans should establish "one air commander who, in at least the initial stages of an emergency, should control all operations of the air forces, both in the performance of distant strategic missions and in joint action with the land and sea forces."[109]

* * * *

On 24 March 1924, the House of Representatives, sensitive to growing demands for a thorough review of national air policy, established a Select Committee of Inquiry into Operations of the United States Air Services, headed by Representative Florian Lampert, and directed it to make a sweeping investigation of the United States Army Air Service, the Naval Bureau of Aeronautics, the United States air mail service, and "any corporations, firms, or individuals or agencies having any transactions with or being in any manner associated with or controlled or regulated by the said Air Services." Beginning its hearing in October 1924, the Lampert Committee examined more than 150 witnesses over an 11-month period.[110]

When they appeared before the Lampert Committee during the winter of 1924-25, Air Service officers demonstrated a growing recognition of a phenomena which they began to refer to as "air power." In his testimony on 17 December 1924, General Mitchell spoke of the military and civil potentialities of air power, and in an article appearing in the Saturday Evening Post on 20 December he defined air power as "the ability to do something in or through the air."[111] In an elaboration of his testimony, Mitchell stated that military air power, civil air power, and commercial aeronautics were the three elements of national air power.[112] Another Air Service officer, Major Raycroft Walsh, defined air power "as being the power of a country to wage war through aerial forces."[113] Majors Delos C. Emmons and Carl Spaatz spoke of the general agreement among airmen that the next war would start in the air and that the United States lacked preparedness for such a war. Spaatz stated his opinion that the service doctrines laid down by the Army made it impossible to develop a well-defined policy of independent operations by an air force.[114] Major Milling asserted that the Air Service had to be constantly ready for combat, even more so than the Navy. He also urged that the principal air service doctrinal problem which defied solution was the over-lapping jurisdiction between the Army and Navy for coastal defense.[115] General Patrick stated a concept that a nucleus of aircraft manufacturers had to be kept in readiness to expand in time of emergency in order to meet the requirements of war. Emmons called the aircraft industry "a war reserve and a most important one."[116]

"I believe," stated General Patrick to the Lampert Committee on

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5 January 1925, "that as time goes on the importance of aircraft in national defense will greatly increase. I try to look ahead and to visualize what would take place if we should be so unfortunate as to engage in another war. I am satisfied that one of the first war-like acts would be an effort on the part of the belligerents each to obtain air supremacy; to sweep the enemy out of the air, in order that he might be free to operate his fleets, his armies, and his own aircraft. It is quite possible that such a move would take place very soon after or almost immediately upon the declaration of war. It would be necessary for every nation to have in being an air force that could be used thus offensively, or if attacked by air that could be used in order to defend itself."[117] As a step in the direction of an independent air service, Patrick recommended the creation of an Air Corps under the Secretary of War which would be "charged specifically with the development and utilization of air power as an arm for national defense." Referring to the duplication of effort wherein both the Army and Navy were apparently charged with air defense of the sea frontiers of the United States because of different interpretations of the meanings of the Army appropriations act of 5 June 1920, Patrick stated that "the assignment to the air corps of all air coast defense functions which can be performed from land bases (the limit to be taken at about 200 miles under the present state of aircraft development) will be one of the most important and immediate economies, and one of the greatest gains to efficient national defense which will result from the formation of the air corps."[118]

The general tenor of Air Service testimony before the Lampert Committee reflected the evolutionary program desired by General Patrick. Only General Mitchell, in repeated appearances before the committee and in his series of articles which appeared at almost the same time in the Saturday Evening Post, deviated from the Air Service position. Mitchell urged that the national organizational pattern which divided aviation between the Army and Navy, the air mail service of the Post Office Department, and the National Advisory Committee for Aeronautics was designed to protect "vested interests" rather than to foster a national air power doctrine. "Air power claims that it is an entirely different element than either sea power or land power," Mitchell said, "and that unless you allow air power to have a coordinate voice in the councils of the Nationa with sea power and land power, that you can not organize an adequate defense." Mitchell sponsored two different plans for organizing aviation: the first visualized the establishment of a Department of Aeronautics coequal with the Army and the Navy and with a division of fabrications, a division for civil aviation, and a division for military aviation; and the second advocated a Department of National Defense with subsecretaries to control the air, the water, and the land. Many of Mitchell's statements were hardly calculated to endear him to either the Army or the Navy. He said, for example, that the Air Service could get

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control of the air in two years if it could get half the cost of a battleship as an appropriation each year. "It is a very serious question," he stated, "whether air power is auxiliary to the Army and the Navy, or whether armies and navies are not actually auxiliary to air power."[119] As late as December 1924, Patrick had considered that Mitchell had cooperated with Air Service policies and he had recommended that Mitchell be reappointed as assistant chief of the Air Service. Because of the controversy that he stirred up during January and February 1925, however, Secretary Weeks told Patrick to recommend another officer for Mitchell's position. Patrick chose Lt. Col. James E. Fechet, a veteran pilot and commander of the Advanced Flying School at Kelly Field, to replace Mitchell. On 26 April 1925, Mitchell accordingly reverted to his permanent rank of colonel and was transferred to San Antonio to serve as Air Officer of the VIII Corps Area.[120]

In the early autumn of 1925, before the Lampert Committee was able to make its report, the Secretaries of War and Navy jointly requested President Calvin Coolidge to appoint a board to study the best means of developing and applying aircraft in national defense. Agreeable to the request, Coolidge appointed a board headed by Dwight W. Morrow, lawyer and banker, on 12 September 1925. Appearing before the President's Aircraft Board, which would be better known as the Morrow Board, on the first day of its hearings, Patrick again emphasized the poor state of preparedness of the Air Service and again requested that an Air Corps be created. He spoke out against a Department of Aeronautics, and he stated that the United States would continue to require a Navy for sea operations beyond the range of land-based aircraft. Patrick conceded that the United States was not in immediate danger of hostile air attacks, but he maintained that without an adequate air force the nation would soon be jeopardized by the aircraft carrier forces which foreign powers were constructing.[121] Now serving as the Air Service's Chief Engineer at McCook Field, Major MacDill agreed that a Department of Aeronautics would be no more logical than a department of automobiles or a department of shipping, and he predicted that within five years it would be technologically possible to build an airplane that could fly across the Atlantic and drop up to 4,000 pounds of bombs.[122] Nearly all of the Air Service officers who testified--including Lieutenant Colonel Foulois and Majors Armold, Milling, and Horace M. Hickam--supported Patrick's plan to establish an Air Corps and eventually a Department of Defense. Milling additionally pointed out that the commander-in-chief of U.S. armed forces in future wars would inevitably have to exercise his authority through subordinate army, navy, and air commanders.[123]

Once again the only Air Service officer who presented strongly divergent viewpoints was Colonel William Mitchell. On 5 September, Mitchell had made a public statement that the loss of the Navy dirigible Shenandoah in stormy weather over the Ohio River valley was the direct result "of incompetency, criminal negligence and

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almost treasonable administration of the national defense by the war and navy departments."[124] Before the Morrow Board, Mitchell asserted that the United States was strategically vulnerable to an aircraft carrier invasion force which could be mounted by Great Britain in the Atlantic and by Japan in the Pacific. The answer to this strategic problem was an army to hold theland, a navy with a good force of submarines to patrol the seas, and, above all, an air force to protect the seaboard and insular possessions of the United States. "There need be little or no change in the organization of the Army or Navy," he said, "but beside them there should be the department of the air." After he had given this "constructive" testimony, Mitchell recalled the long-standing opposition of Army and Navy officers to the development of aviation. He repeated many of these same grievances at his court martial when he was brought to trial on 28 October on charges of conduct prejudicial to military discipline and of a nature to bring discredit upon the military service. Mitchell was convicted of these charges on 17 December 1925 and resigned from the Army on 1 February 1926.[125]

The hearings before the Lampert Committee and the Morrow Board found Army and Navy officials solidly arrayed in opposition to the Air Service position--even the moderate official position of General Patrick. "I regard the statement that the next war will be in the air as an absurdity, partaking of the Jules Verne type of literature," Secretary of the Navy Curtis D. Wilbur told the Lampert Committee.[126] "Aviation as an independent force cannot operate across the sea," said Rear Admiral William A. Moffett, Chief of the Bureau of Aeronautics. "The thing to do is to put aviation on something," he continued, "and carry it to the enemy, and the only way to carry it is on board something that will float--on board a ship, in other words."[127] "I believe," testified Lieutenant Ralph A. Ofstie, of the Navy Bureau of Aeronautics, "that air power does not exist, absolutely; that it exists only in conjunction with other forces which can cooperate with it or which can transport it."[128] Leading the Navy witnesses before the Morrow Board, Secretary Wilbur stated that the mission of the naval air force was to serve as an arm of the fleet. "Its mission is to aid the surface units in gaining and maintaining command of the sea. It may best carry out this mission by gaining and maintaining control of the air in the theater of naval operations."[129] Admiral Moffett saw no difficulty in maintaining coordination for coastal defense through the agency of the Joint Army and Navy Board and he regarded the "Joint Army and Navy Action in Coast Defense" agreement to be a clear definition of aerial responsibilities.[130] The Navy also held to the official position that the establishment of a central procurement agency for military aircraft was undesirable. "There is very little duplication of effort on the part of the services and such duplication as exists is not only justifiable but, I believe," noted Admiral Moffett, "decidedly necessary, in order that there may be competition, that there may be rivalry, that there may be initiative; otherwise

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there is bound to be stagnation."[131]

The high-ranking Army officials who appeared before the Morrow Board opposed changes in the Air Service. Secretary of War Dwight F. Davis stated that the War Department was "convinced that a strong airplane industry is vital to the national defense," but he asserted that the subordination of civil aviation to a military department would be an "economically unsound" and "basically unwise" practice. Davis admitted that the nation's aircraft industry had been starving and that the amount of equipment in the Air Service was inadequate, but these situations were caused by the scarcity of funds appropriated by Congress.[132] Major General John L. Hines, who had succeeded Pershing as Chief of Staff on 14 September 1924, stated that the combat readiness of the Air Service should perhaps excel that of the other branches of the Army, but he could see no reason for a separate Air Service or a separate Air Corps within the Army. "I am of the opinion," he said, "that the Air Service, because of the limitations imposed by natural laws on the operation of aircraft as well as the necessity for unity of action, will always be an auxiliary arm or service. It can never by itself defeat an enemy."[133] The principal Air Service opponent before both the Lampert Committee and the Morrow Board was General Drum, now the assistant chief of staff for operations on the War Department General Staff. In the Lampert hearings, Drum argued that the United States had little to fear from hositle air attack because of the inherent range limitations on land-based aircraft and the tonnage restrictions that had been placed upon the construction of aircraft carriers by the Washington treaty of 1922.[134] Both in his initial statement and in his rebuttal testimony before the Morrow Board, Drum insisted that "the air power principle and its application as recently proposed by the Chief of Air Service. . . is unsound from a national defense viewpoint, as well as from purely Army considerations. At the present and so far as the future of aviation can be foreseen, air power has no function independent of the Army and Navy." Possibly one of his most telling points--and Drum repeated it several times--was the opinion of the august General Pershing. "The Infantry," Pershing had said on the eve of his retirement, "still remains the backbone of the attack, and the role of the other arms is to help it reach the enemy. . . . The idea that principles of warfare have changed and that armed contests will be settled in any other way have nothing substantial in our experience to warrant serious consideration."[135]

What circumstances lay behind the Morrow Board's speed in acting were never definitely known, but it presented its report on 30 November 1925, exactly two weeks before the Lampert Committee could report. "We do not consider," stated the Morrow Board, "that air power, as an arm of the national defense, has yet demonstrated its value--certainly not in a country situated as ours--for independent operations of such a character as to justify the organization

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of a separate department. We believe that such independent missions as it is capable of can be better carried out under the high command of the Army or Navy." The board concluded that the United States was in no danger from air attack, and it further stated that "the belief that new and deadlier weapons will shorten future wars and prevent vast expenditures of lives and resources is a dangerous one which, if accepted, might well lead to a readier acceptance of war as the solution of international difficulties." The board nevertheless recommended that the name of the Air Service be changed to that of the Air Corps, that an Assistant Secretary of War be established to give especial attention to aviation matters, that aviation be given special representation in the General Staff sections, and that a five year program of aircraft procurement be initiated with a lesser magnitude than had been recommended by the Lassiter Board.[136] In its report on 14 December 1925, the Lampert Committee stated that aircraft would be "the first resort of our country in case of a war emergency" and would comprise "one of the most essential arms of our military defense." The committee accordingly recommended the establishment of a department of national defense, representation of Army and Navy aviation on the General Staff of the Army and the General Board of the Navy, and that not less than less than $10 million should be appropriated and expanded annually by both the Army and the Navy on the procurement of new flying equipment.[137]

Far from being daunted by what he called the "time-worn, threadbare, reactionary plea" of those who resisted change, General Patrick told Army War College students on 9 November 1925 that he considered it his duty, when done in a proper way, to suggest improvements in national defense. In this lecture, Patrick repeated many of the statements he had presented to the Lampert Committee and the Morrow Board, but he also revealed that he had "recently been quite impressed by a little book written by an Englishman, Captain Liddell Hart." The book, published earlier that year, was Paris: Or the Future of War. Patrick was impressed with Liddell Hart's thesis that the main military objective in war should be the will of the enemy to fight rather than the defeat of his armed forces in the field. He agreed with Liddell Hart's conclusion that the German army had still had a lot of fight left in the fall of 1918 and that the war had ended because the will of the German people to fight had been shattered. While the use of gas was now prohibited by treaty, Patrick doubted that such a prohibition would hold in war. "Assume," he suggested, "that aircraft are able to fly at will over enemy territory, in other words, assume air supremacy. Imagine, in consequence, the enemy's industrial establishments, his munitions factories, his means of communication, destroyed; add to this drenching with gas, which even though not deadly, would cause great discomfort, and then estimate how long such a harassed enemy would fight." The waging of such "air pressure" against an enemy nation, Patrick said, "can best be done by an organization which is developed and directed by those who know thoroughly its achievements, its

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possibilities, and its limitations."[138]

During the winter of 1925-26, William Mitchell continued to wage a strong fight for an air power concept, and the emotional responses engendered by his court martial insured him a wide audience. Published in August 1925 as a summarization of some of his articles, Mitchell's Winged Defense was extensively quoted during his trial. Before the House Committee on Military Affairs on 5 February 1926, Mitchell made a statement which represented the culmination of his thinking on the nature of war and of air power: "There has never been anything that has come which has changed war the way the advent of air power has. The method of prosecuting a war in the old days always was to get at the vital centers of the country in order to paralyze the resistance. This meant the centers of production, the centers of population, the agricultural districts, the animal industry, communications--anything that tended to keep up war. Now, in order to keep the enemy out of that, armies were spread in front of those places and protected them by their flesh and blood. You had mass killings there, sometimes for years before these vital centers were reached. It led to the theory that the hostile army in the field was the main objective, which it was. Once having been conquered, the vital centers could be gotten at. . . . Now we can get today to these vital centers by air power. . . . So that, in the future, we will strike, in case of armed conflict, when all other means of settling disputes have failed, to go straight to the vital centers, the industrial centers, through the use of an air force and hit them. That is the modern theory of making war." Four years later in Skyways, the last of his three books, Mitchell would again emphasize this theory of war.[139]

While the Morrow Board report dampened any general reorganization of the armed services, the War Department was prepared to grant some concessions--but not much independence--to the Air Service. On 26 January 1926, the War Department officially issued Training Regulations No. 440-15, Fundamental Principles for the Employment of the Air Service. This was the pamphlet that had been drafted by Major Sherman in 1921 and had been revised and accepted as a policy statement by the Office of Chief of Air Service. Subsequent to that time, it had been reviewed by the Army's Command and General Staff School and the War College, and the General Staff's G-3 division had stamped final approval on it. The pamphlet noted that the primary objective of the whole Army was to destroy hostile armed forces and that the mission of the Air Service was "to assist the ground forces to gain strategical and tactical successes by destroying enemy aviation, attacking enemy ground forces and other enemy objectives on land or sea, and in conjunction with other agencies to protect ground forces from hostile aerial observation and attack. In addition it furnishes aerial observation for information and for artillery fire, and also provides messenger service and transportation for special personnel." It stated further:

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"The organization and training of all air units is based on the fundamental doctrine that their mission is to aid the ground forces to gain decisive success." The regulation recognized the distinction between observation which was an integral part of divisions, corps, and armies, and the GHQ air force which was to be self-contained and capable of rapidly shifting its activites from one theater of operations to another. Obviously pleased with the training regulation, General Drum described it as "the most advanced thought in the world today on aviation."[140]

In September 1925, less than a week after Patrick testified before the Morrow Board, the War Department directed him to submit within five days a complete plan to implement his Air Corps idea. The heads of the Army branches which supported the Air Service were given a similar brief period to comment on Patrick's plan. Each objected that the organization of the Air Service on the model of the Marine Corps would upset coordination between the branches of the Army. Secretary Davis nevertheless insisted that it was very important to pass an air bill through Congress in the spring of 1926 because it was necessary to increase the efficiency of the air force and because, in his opinion, the country demanded it. In the end the War Department proved willing to accept the findings of the Morrow Board, and the Air Corps Act of 2 July 1926 constituted a legislative enactment of the Morrow recommendations. The name of the Air Service was changed to the Air Corps, the implication being that the Air Corps was capable of independent as well as auxiliary operations. An additional Assistant Secretary of War was authorized to perform duties delegated to him by the Secretary, and air sections were authorized in the General Staff divisions. A five-year program for expansion of Air Corps personnel and aircraft was to be initiated. The Air Corps attained little autonomy within the War Department by these actions; and no decision was made to delineate the coast defense responsibilities of the Army and Navy, as air officers had desired. In hearings on the legislation, Patrick suggested that it would be economical and practical to combine Army and Navy flying training under one agency, but he noted that "naval officers. . . feared they would lose a certain measure of control over their air component, and. . . insisted also that all of the flyers with the Navy should be trained in naval tactics and should understand all of the tactics employed in naval battles." Thus Patrick's suggestion was not accepted.[141]

For the time being, the Air Corps Act of 1926 ended the struggle for an autonomous air force. General Patrick continued to insist that a department of defense, with army, naval, and air components, would be the ultimate solution to the defense problems of the United States, but he privately expressed the opinion that the best that the Air Corps could hope for in a span of years in which nations were reducing their armaments was some expansion and considerable modernization. Patrick accordingly hailed the Air Corps Act as "a long step in the right direction."[142] Viewed in retrospect,

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the Air Corps Act of 1926 was only one of several pieces of legislation which manifested a belief within Congress that the pioneering years of aviation were ending. On 24 June, Congress enacted the Morrow Board recommendations relevant to the Navy: the appointment of an Assistant Secretary of the Navy to assist in furthering naval aeronautics and a five-year naval aviation expansion program. The Air Mail Act of February 1925 has already turned the Post Office Department's federal air mail system over to private contractors, and the Air Commerce Act of 21 May 1926 now created the post of Assistant Secretary of Commerce for Air and authorized the Department of Commerce to license pilots, map and operate airways, provide flight information, and develop new air navigation facilities.[143] In its infancy aviation had been nurtured by military expenditures: now military aviation would begin to share the technological advances which would come from rapidly developing commercial aviation.

4. The Mitchell Era Re-examined

"The former isolation of the United States is a thing of the past," William Mitchell wrote in 1925. "The coming of aircraft has greatly modified this isolation on account of the great range and speed which these agents of communications are developing."[144] Believing that "changes in military systems come about only through the pressure of public opinion or disaster in war," Mitchell hoped that he could modify the military policy of the United States by laying "aeronautical facts" before Congress and the people.[145] Though he counted himself a close personal friend of Mitchell, General Arnold looked backward many years later and observed that Mitchell's agitation for air power had a considerable effect upon the development of naval aviation but that it had made Army officers "set their mouths together, draw more into their shell, and, if anything, take even a narrower point of view of aviation as an offensive power in warfare." As Arnold remembered the early 1920's, the American people were fascinated with flying and loved Billy Mitchell, but no one was willing to think that the United States required a military policy--let alone an air power policy.[146]

It was General Arnold's theory that a marked-magnitude growth of air power depended upon a combination of a critical state of international relations and a favorable state of aviation technology. To his way of thinking such a coincidence of national military requirements and air technology had been near at hand just before the Armistice in 1918 but that it would not again occur for more than a decade.[147] The successful conclusion of World War I and the Washington Disarmament Treaty of 1922 stunted the development of military aviation. Early in 1925, General Patrick predicted that the Locarno agreements which marked a relaxation of tension in Europe would lessen the amount which the American people would be willing to pay for national defense.[148]

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The Baker Board stated an unequivocal opinion that the United States was in no danger of air attack from any potential enemy of menacing strength. Even Army and Navy war planners--who made it their business to provide against all contingencies--found it difficult to determine the enemy or enemies who might threaten the United States. Although the Washington Disarmament Treaty had terminated the Anglo-Japanese alliance, the logical opponents of the United States continued to be Great Britain (Red) and Japan (Orange). General Patrick thought in terms of the employment of a mobile GHQ air force in a war with Red and Orange forces in which the British would debark at Halifax and Japanese troops would land at Vancouver.[149] Mitchell visualized a requirement for defensive air forces to be stationed on Hawaii, in Panama, and in Alaska, but he opposed the establishment of a strong air force in the remote Philippine Islands lest it be easily destroyed. Patrick believed, however, that "our only salvation" in the Philippines "is to have an air force there that is competent and qualified to oppose an enemy air force."[150] Oddly enough, the more conservative Patrick believed that there was no question but the time was coming when "we can bomb trans-sea countries."[151] Mitchell, on the other hand, visualized that strings of islands would be seized so that aircraft based on them might fly from one island to another. He pointed out on numerous occasions in 1924 and 1925 that there was no stretch of water in the northern hemisphere between the United States and Europe or Asia greater than the cruising range of the modern aircraft of the day.[152]

Despite their impatience with military conservatism, Air Corps officers of the Mitchell era frequently talked and thought in terms of the strategic situation of World War I. In 1924 these air officers formally introduced the concept that air power was different from land and sea power, but Patrick, Milling, and Mitchell all agreed that air power could be divided into air force and air service (auxiliary) aviation. By 1926, moreover, Mitchell stated that the air service of the Navy could "stay just the way it is. . . for work on the high seas."[153] The Air Service accepted the doctrine that control of the air was necessary for effective air, ground, or naval operations, and Milling stated that "the main role--almost the only role, properly speaking--of Pursuit aviation is to seek out and destroy the hostile air force."[154] Thinking in terms of World War I, however, Patrick described "control of the air" as the condition in which "we get the upper hand of our adversary, make life miserable for him every time he comes on our side of the lines, and even endeavor to meet him on his own side of the lines, and finally his morale is shaken to such an extent that he would rather stay at home. We then have control of the air."[155] Patrick thought of "air supremacy" as a condition wherein one adversary "practically wiped out" another's air force and thus went virtually unchallenged in the air.[156]

Air Service leaders agreed that an air force had to be an

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effective D-day force and that it had to be supported by a healthy domestic aircraft industry. In their thoughts on strategic air warfare, the air leaders did not seem to be entirely certain whether air bombardment could win a war without army and navy action. Patrick drew upon Liddell Hart's concept of a future war under conditions similar to tha ground-siege situation of World War I and visualized aerial pressure as breaking the morale and capabilities of an enemy nation which was presumably first brought to bay by air and naval action.[157] Even Mitchell hesitated to say that air power could be decisive without ground and naval action: "I believe," he told Congressmen on 5 February 1926, "air power in the future will have a great influence in determining any conflict, so I believe if you figure your whole national defense as 100 percent, air power would make approximately 50 percent, the land forces 30 percent, and the sea forces 20 percent."[158]

Writing in 1948, an Air Force leader evaluated the significance of William Mitchell as being that of a "visionary and missionary."[159] Certainly Mitchell saw beyond his times, but, because of the close-knit fellowship of air leaders in the early 1920's, one may wonder how many of the basic ideas attributed to Mitchell actually may have originated with his associates. Considered in their essential thinking, Mitchell, Patrick, Milling, and other air officers did not differ markedly, except for the impetuousness manifested by Mitchell. It is significant that Mitchell's last book on aviation, Skyways, published in 1930 after the author had been out of touch with his fellow air officers for some four years, contained few thoughts that he had not presented before 1926.[160] In his early writings, however, Mitchell had publicized the ideas which would be continued, expanded, and refined to become the doctrine of the Air Force.

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CHAPTER 3

GROWTH OF THE AIR FORCE IDEA, 1926-1941

1. Beginnings of the GHQ Air Force

"Despite popular legend," reminisced General Arnold, "we could not have had any real air power much sooner than we got it."[1] Arnold reasoned that in the early 1920's the state of the technological art of aeronautics was not far enough advanced to support air power doctrines. In the field of national aviation policy and military aviation technology the early developmental period clearly ended in 1926. In that year the World War I stocks of such items as Liberty engines were used up or declared obsolete, as were many of the war stocks of aircraft. The ten aircraft production companies that had survived the stringent years of the early 1920's were getting on sound footing and were receiving some orders for commercial aircraft. Research and development in aeronautics was making headway in the National Advisory Committee for Aeronautics, the Air Corps Materiel Division at Wright Field, Ohio, and in Guggenheim Foundation laboratories. The Air Corps Act of 1926 stated the policy that the government should encourage the development of design and engineering staffs in aircraft production companies by following a rather liberal policy of placing experimental orders for prototype aircraft. It also provided that the government ought not to enter into competition with private industry by manufacturing aircraft in government arsenals.[2]

In the early years, the U.S. Air Service had considered it logical that the military services should bear the brunt of the burden of developing aeronautics until such time as the utility of air transportation could be established. In 1922, the Air Service had opened a "model airway" connecting New York, Norfolk, Washington, and Dayton, and by 1925 the airway was extended to St. Louis, Kansas City, Dallas, and Fort Worth. Lighted beacons guided night flying, and radio-meteorological stations were established along the routes. Enactment of the Air Mail Act of 1925 and the Air Commerce Act of 1926 took the Post Office Department and the military services out of commercial aviation and served as legislative cornerstones for the development of commercial aviation in America. After competitive bidding, the Post Office Department negotiated 12 air mail contracts, and these initial contracts provided the eventual base upon which the nation's great trunk airlines were built. The real breakthrough in aviation, however, occurred in 1927, when Charles A. Lindbergh's pioneer trans-Atlantic solo flight on 20-21 May galvanized the imagination of the people. After May 1927 the public suddenly wanted to fly: during 1927 the new airline companies carried only 8,679 passengers but the number of passengers transported reached 48,312 in 1928, 161,933 in 1929, and 384,506 in 1930.

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In 1926, U.S. aircraft production totaled 1,186 planes and in 1929 the total was 6,193--5,516 of which were civil aircraft.[3]

Both General Patrick and Maj. Gen. James E. Fechet, who became Chief of Air Corps on 14 November 1927, considered that the Air Corps Act of 1926 to have been "far-sighted legislation." In accordance with its provisions, F. Trubee Davison was appointed Assistant Secretary of War for Air on 16 July 1926 and Air Corps officers were assigned to the War Department General Staff divisions. After a year's delay while studies were made, the Air Corps was authorized a five-year expansion program in which it was expected to attain a strength of 1,650 officers, 15,000 enlisted men, and 1,800 serviceable airplanes. The only difficulty with the Air Corps Act--according to Secretary Davison--was that it was never fully implemented. The legislation was never popular with other agencies of the War Department who lost funds and personnel spaces to Air Corps expansion, and there was jealousy that the Air Corps was permitted special representation at the Secretary and General Staff level. "Those in higher places. . .," Davison noted, "were looking more for an alibi rather than a means of carrying out this program." Davison also noticed that Congress did not appropriate authorized funds in full amounts and the Bureau of the Budget impounded some of the Air Corps funds that were appropriated.[4]

As the Air Corps expansion got underway, the Chief of Air Corps continued to be responsible for the preparation and issuance through the War Department General Staff of training doctrine for all Air Corps organizations. Because of the small number of officers in his office, the Chief of Air Service had begun to require the Air Service Field Officers' School to prepare basic drafts of doctrinal manuals. Subsequently redesignated as the Air Service Tactical School in 1922 and the Air Corps Tactical School in 1926, the institution at Langley proved to be the only common location of experienced Air Corps officers who had enough time for creative thinking. Following the practice of other arms and services, an Air Service Board was established at Langley in 1922 and was redesignated as the Air Corps Board in 1926, but the Air Corps did not have enough senior personnel to assign to this board and the commandant of the Tactical School and several of its stafr members accordingly doubled as members of the Air Corps Board.[5] The Chief of Air Corps also took advantage of the experienced men at Langley by referring problems originating in the War Department to the Air Corps Tactical School for study and comment.[6]

Early in the 1920's the manuals of the Air Corps Tactical School closely followed the ideas expressed in statements of air leaders in Washington. Published early in 1926, when Major Oscar Westover was commandant, the instructional manual entitled Employment of Combined Air Force envisioned the air arm as coordinate with land and sea forces, having as its aim the destruction of the enemy's morale and will to resist, preferably by means of attacks against targets in the enemy's interior. Pursuit aviation was designed to establish localized aerial supremacy; command of the air was held to be

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"temporary and fleeting." Bombardment was said to cooperate with air and ground forces by giving direct support in tactical operations or by giving indirect support to them through strategical operations.[7] In the spring of 1928, the Air Corps Tactical School undertook a general revision of its texts, and its commandant, now Lt. Col. C. C. Culver, on 30 April forwarded to Washington a paper entitled "The Doctrine of Air Force" which was proposed as a basis for all texts. This draft doctrine obviously followed the letter of the law set forth in War Department Training Regulations 440-15 and concluded: "In the final analysis, the army is the principal component of the nation's militia, both the air and the naval forces being used to further its interests . . . .The Air component . . . always supports the ground forces, no matter how decisive its . . . operations may be, or how indirect its support."[8] When efforts to revise this statement were not accomplished to his satisfaction, General Fechet stated his own idea on 1 September: "The objective of war is to overcome the enemy's will to resist, and the defeat of his army, his fleet or the occupation of his territory is merely a means to this end and none of them is the true objective. If the true objective can be reached without the necessity of defeating or brushing aside the enemy force on the ground or water and the proper means furnished to subdue the enemy's will and bring the war to a close, the object of war can be obtained with less destruction and lasting after effects than has heretofore been the case. At present the Air Force provides the only means for such an accomplishment."[9]

The procurement of aircraft under the Air Corps expansion program was indicative of Air Corps ideas and concepts, and the performance of the new equipment had a substantial impact upon Air Corps doctrine. In 1924 the Air Service Tactical School had stated the proposition that a combat air force could not depend upon surface transportation but required air transport aircraft. The Air Corps began to procure such planes, although in very small numbers since civilian airliners would be available for military service in a war emergency.[10] In the first years of the expansion, the Air Corps gave emphasis to the purchase of new observation and pursuit aircraft. Because of alarming experiences with flutter in experimental monoplanes, the standard Air Corps pursuit aircraft of the 1920's were predominatly biplanes. In the several years following initial purchases in 1925, the Air Corps bought a total of 150 Curtiss Hawk series planes, but beginning in 1928 the Air Corps commenced to buy Boeing P-12F biplanes--which had a top speed of 194 miles an hour--as the standard pursuit planes.[11]

Since observation planes had higher priority, the Air Corps was not permitted to purchase any new bombers in the first year of its augmentation. In May 1928, Major Hugh J. Knerr, the commander of the 2d Bombardment Group (who was additionally named as chairman of a special Air Corps Bombardment Board) recommended the development of a light and fast day bomber and a heavier and longer range night bomber. This proposal was soon lost when the War Department insisted that a twin-engine observation plane be developed and that provision

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be made for its modification as a bomber. In March 1930 the Air Corps Tactical School recommended that night bombing was inefficient and proposed that light and heavy bombers should be built solely for day operations. The school believed that speed and armament could protect a day bomber. As a result of circular design proposals in 1930, the Air Corps issued procurement orders for both Boeing B-9 and Martin B-10 aircraft. Built in 1931, the Boeing B-9 was a twin-engine monoplane which bore a superficial resemblance to the later B-17; it subsequently developed a fuselage vibration which made it unacceptable for quantity procurement. The Martin B-10, on the other hand was to be the first of the modern bombers. First flown in early 1932, this all-metal monoplane had front and rear machine gun turrets, a top speed of 212 miles an hour, and a service ceiling of 21,000 feet.[12]

At the Air Corps Tactical School the increasing capabilities of military aircraft opened new vistas of air power which visionary instructors desired to exploit. After completing the school in 1928 and 1929, Captain Robert Olds and Lieutenant Kenneth N. Walker remained on the faculty as instructors in bombardment aviation. Olds had assisted Mitchell in his appearances before the Morrow Board, while Walker was an experienced bombardment officer who had been a member of the Air Service Board in 1925. What these two men already doubtlessly believed was confirmed in May 1929 during the annual Air Corps maneuvers held that year in Ohio. Major Walter H. Frank, assistant commandant of the Air Corps Tactical School, served as chief umpire, and at the close of the maneuvers he reported: "There is considerable doubt among the umpires as to the ability of any air organization to stop a well organized, well flown air force attack. . . . The difficulty that pursuit had, not only in attacking, but in finding some of the missions that were sent into hostile territory during these maneuvers, would make it appear that a well planned air force attack is going to be successful most of the time." Major Frank had obviously studied Douhet's writings, since he observed: "Douhet, a well known Italian writer, says that 'now that aviation has entered the ranks as a means of carrying on war, more than ever war is going to be a question of give and take.' It emphasizes the fact that air force is principally an offensive weapon rather than a defensive one."[13]

Back at the classrooms at Langley, Lieutenant Walker saw the major significance of the theorem that "a well organized, well planned, and well flown air force attack will constitute an offensive that cannot be stopped." In fact, his students would subsequently credit him with the origination of the whole idea.[14] The revision of the Air Corps Tactical School text entitled The Air Force issued in April 1930 boldly stated: "a defensive formation of bombardment airplanes properly flown, can accomplish its mission unsupported by friendly pursuit, when opposed by no more than twice its number of hostile pursuit" and that "defensive formations of attack can accomplish their missions, unsupported by friendly pursuit, when opposed by no more than their own number of hostile pursuit."[15] Bombers would rely upon superior speed and firepower for protection

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in deep penetrations into enemy territory; the only pursuit support they would be likely to require would be in crossing the crust of enemy air opposition along the front lines.[16]

To Olds and Walker the supremacy of the bomber held important significance. Under the older air doctrines, air superiority, air supremacy, or control of the air had been considered to be fleeting and attainable by the concentration of a predominant number of pursuit aircraft in a local area. The Air Corps Tactical School text on The Air Force issued in April 1930 continued to mention the old doctrine but suggested that bomber attacks against enemy airdromes would be the best method of destroying enemy aircraft.[17] The text on The Air Force of February 1931, however, boldly predicted that control of the air, air superiority, or air supremacy (the terms were said to be synonymous) would be attainable throughout a combat theater by destroying the hostile air force in the air, on its airdromes, and in the enemy's depots and factories. "Victory is practically assured to the commander whose air force has gained and can maintain, control of the air," the text stated, "even if his ground forces are merely equal or somewhat inferior to those of his enemy."[18] "Pursuit alone," the text continued, "cannot ensure protection from air attack, but . . . bombardment and attack must participate to a degree undreamed of in the World War in the contest for control of the air, by attacks against the hostile air force on the ground."[19] What friendly control of the air would mean in the course of a war had already been suggested in the April 1930 text: "An army with an air force strong in bombardment and attack should be able to defeat its opponent, as when its air force has reduced the bombardment and attack of the enemy to a negligible quantity, its ground operations will progress without important hostile air interference, and its air force will then be able to assist these operations directly by attack on terrestial objectives. An air force preponderately pursuit, cannot materially affect the ground situation except through the indirect method of destroying hostile aircraft."[20]

At the same time that the concept of the primacy of bombardment aviation was becoming firmly established at the Tactical School, the War Department also appeared to have gotten a clear mandate to develop aviation for the performance of its traditional coast defense mission. Unwilling to accept General Patrick's demands for legislation defining the exact division of Army-Navy responsibilities for aerial operations at the nation's sea coasts, the War Department had preferred in 1926 to rely upon the Joint Army and Navy Board for such decisions. As a portion of the Joint Board's Joint Action of the Army and the Navy approved in December 1926, the Secretaries of the War and Navy Departments had agreed that naval peacetime procurement of land-based aircraft would be "limited to those primarily designed and ordinarily used for scouting and patrolling over the sea." In time of war, however, the Navy would be authorized to conduct "operations from shore bases for overseas scouting, and for the observation and patrol of sea communications and their defense against raids."[21]

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Notwithstanding this agreement, both Patrick and Fechet continued to fear that the Navy intended to take over coastal air defense, and the matter came to a head in August 1930 when Secretary of War Patrick J. Hurley received a copy of a Navy letter to President Herbert Hoover containing severe criticism of the Army program for coastal air defense. In an effort to clarify the apparent confusion, the Army Chief of Staff, General Douglas MacArthur, and the Chief of Naval Operations, Admiral W. V. Pratt, reached an agreement between themselves on 9 January 1931, which General MacArthur described in these terms: "Under it the naval air forces will be based on the fleet and move with it as an important element in performing the essential missions of the fleet afloat. The Army air forces will be land based and employed as an element of the Army in carrying out its mission of defending the coasts, both in the homeland and in overseas possessions. Through this arrangement the fleet is assured absolute freedom of action with no responsibility for coast defense." Admiral Pratt apparently entered into this agreement because he wished to develop the Navy's fleet as an offensive rather than a defensive force. The Navy's General Board, however, strongly disapproved of the agreement since it feared that the Air Corps might lay claim to the Navy's air stations ashore. After a detailed study had been made by the War Plans Division, however, General MacArthur issued an order on 3 January 1933 specifically requiring the Air Corps "to conduct the land-based air operations in defense of the United States and its overseas possessions."[22]

* * * *

When Major General Benjamin D. Foulois moved up from assistant chief to become Chief of Air Corps on 22 December 1931 he brought with him a long record of experience that went back to the earliest days of Army aviation and a new assessment of the international situation. From 1920 to 1924, Foulois had served as the Assistant Military Observer with the American Commission and as Assistant Military Attache at the American Embassy in Berlin. He had had intimate talks with many of the German airmen who smarted from defeat: they had insisted that Germany would rise again and would use aviation to conquer Europe. "The first phase of the next war," Foulois reasoned, "is going to be the conquest of Europe, and the second phase is going to be the conquest of the United States. They're going to use short range aircraft to do the conquest of Europe job, but they'll need long range stuff to lick us." Anticipating that the United States could well be isolated in the Western Hemisphere, Foulois had returned home as an active advocate of long-range bombers.[23]

As the Air Corps five-year expansion program approached a delayed completion in 1933, the added War Department responsibilities for coastal defense and the increasing technological capabilities of bombardment aircraft led General Foulois to suggest that an air power strategy was appropriate for the United States. At the completion

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of the five-year program, the Air Corps would possess 13 squadrons of observation, 12 squadrons of bombardment, 4 squadrons of attack, and 21 squadrons of pursuit aviation. Instead of the 1,800 aircraft authorized to it, however, the Air Corps had only 1,619 planes, of which 442 were either obsolescent or non-standard.[24] The Air Corps based its new defense strategy on the assumption that the United States would be attacked by a coalition of two or more naval powers who would muster a superior force of carrier-based aviation and upon the fact that the War Department was responsible for coastal air defense. Based upon this appreciation of the situation, Brigadier General Oscar Westover, the Assistant Chief of Air Corps, requested the War Department on 15 March 1933 to strengthen the air garrisons of Panama Canal department, the Hawaiian Islands, the Philippines, and to authorize the organization of bombardment and coast defense patrol units in the six critical defense areas along the Atlantic and Pacific coasts of the United States. Noting that Air Corps operational doctrine varied according to the various Air Corps tactical commanders, General Westover also asked authority to establish a Center of Tactical Research at the Air Corps Tactical School, which had moved from Langley to Maxwell Field, Montgomery, Alabama, on 1 July 1931.[25]

The timing of the Air Corps plan was appropriate since General MacArthur was considering a reorganization of the Army into four continental armies, but the War Department General Staff viewed the Air Corps submission with skepticism. Like the rest of the world, the United States was in the throes of an economic depression. The five-year Air Corps expansion plan which was just concluding, moreover, had worked hardships upon the Army's ground arms which had been compelled--since ceilings on over-all Army strength had been curtailed while Air Corps authorizations had increased--to give up personnel spaces to the Air Corps.[26] On 3 June 1933 the War Department directed the Chief of Air Corps to submit a new plan, staying within his approved ceiling of 1,800 aircraft, which would recommend the manner in which a GHQ Air Force would be employed under war plans Red, Red-Orange, and Green. War plan Red visualized conflict with Great Britain, Orange with Japan, and Green visualized certain operations against a hostile force in Mexico. The Air Corps submitted these plans on 13 July, and on 11 August a special committee of the Army General Council chairmanned by Major General Hugh A. Drum, who was now Deputy Chief of Staff, was designated to review the Air Corps plan. General Foulois was a member of this special committee, which would usually be known as the Drum Board.[27]

When it reported in October 1933, the Drum Board was chiefly concerned about the worst possible strategic alignment which could confront the United States: a two-front coalition attack by Great Britain and Japan which would involve an inferiority of U.S. Navy forces and probable surface invasions of the northeastern and northwestern United States mounted from beach-heads established in the vicinity of Halifax and Vancouver. Such a war would also be accompanied by attacks against Alaska, Hawaii, the Philippines, and the

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Canal Zone. Because of the elaborate logistical requirements and the rather slow progress of the flight of Italian bombers under General Italo Balbo to the opening of the Chicago world fair, the Drum Board did not fear attacks by land-based bombers against the United States, but it was apprehensive about carrier-based air which would support landings of British and Japanese forces in Canada. Both Army and Navy air forces would have to oppose this two-front operation, and the strategic problem posed a distinct requirement for the organization of a mobile GHQ Air Force which could be concentrated in the peripheral areas of the United States to oppose the landings of hostile forces and to support subsequent ground operations against the invaders. The Drum Board recommended that the GHQ Air Force should be organized, and it stated that the Air Corps had a requirement for 2,320 aircraft to be organized into 27 bombardment, 17 pursuit, 11 attack and 20 observation squadrons. The Drum Board, however, was unwilling to recommend an immediate increase in Air Corps personnel or aircraft strength until other Army requirements needed to augment ground forces were met. Secretary of War George H. Dern approved the Drum Board report on 11 October 1933.[28]

While the War Department was examining its strategic planning, additional information became available from the concentration of a GHQ Air Force (Provisional) on the Pacific coast for a maneuver defense against a simulated hostile fleet and accompanying aircraft. In his report of this maneuver made in July 1933, General Westover called attention to the wide disparity between the speed of new bombers and of pursuit and observation planes. "The modern trend of thought," Westover wrote, "is that high speed and otherwise high performing bombardment aircraft, together with observation aviation of superior speed and range and communications characteristics, will surfice for the adequate air defense of this country. The ability of bombardment aviation to fly in close formation and thus to insure greater defense against air attack . . . warrants the belief that no known agency can frustrate the accomplishment of a bombardment mission." Lieutenant Colonel Arnold, who served as Westover's chief of staff during the maneuver, called for the development of air task forces (including transport planes) built around the modern bombers. He also recommended that the time had come for the establishment of an Air Corps Board with experienced membership, which could study and recommend policy for the ultimate development of the air force.[29] At the Army War College on 12 September, General Foulois defined air power "as the strength of a nation in its ability to strike offensively in the air" and stated that the size of the air force should "be determined as that which can operate successfully against that amount of hostile aviation to which it may be opposed on our frontiers." "The real effective air defense," he stated, "will consist of our ability to attack and destroy the hostile aviation on the ground before it takes to the air." In response to a question put to him on this same occasion at the Army War College, General Westover explained: "Within the Army Air Corps, there has been a growing conviction that we have got to come down to practically two

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types of aircraft. One type designed in general for the patrol missions, and the other designed for the high-powered, bombing offensive missions with sufficient machine gun fire power to protect itself."[30]

While it is impossible to assess the exact degree of influence which the ideas of Giulio Douhet had upon the development of American air power doctrine, there is no doubt that Air Corps thinkers were familiar with Douhet's writings. Copies of Douhet's "The War of 19 . . .," which appeared in Revista Aeronautica in March 1930 were in the Air Corps Tactical School library as early as November 1931.[31] In 1933, Captain George C. Kenney, who had been an instructor at the Air Corps Tactical School from 1927 to 1929 and was assigned to the chief of the Air Corps Plans Division between 1933 and 1935, made a translation of an epitome of Douhet's ideas which appeared in the French magazine Les Ailes. This translation from Les Ailes seems to have provided the basis for an article published by Colonel Charles DeF. Chandler (Retired) entitled, "Air Warfare Doctrine of General Douhet," in U.S. Air Services in May 1933.[32] At the very least, Douhet's arguments in favor of the decisiveness of air attack as a means of winning a war, for the establishment of command of the air by air attacks against an enemy's airdromes, for "battle cruiser" aircraft that would not require fighter escort, and for the development of commercial air transport aviation as an adjunct to military aviation proved useful as a corroboration of Air Corps ideas. Thus, on 9 May 1933, General Foulois sent thirty mimeographed copies of Chandler's article to the Chairman of the House Committee on Military Affairs, with the notation that the paper "presents an excellent exposition of certain principles of air warfare."[33]

Although the War Department was unwilling to permit any immediate Air Corps expansion, General MacArthur was sympathetic with Air Corps proposals for the development of experimental long-range bombers. Completed in July 1932, a study by the Air Corps Materiel Division indicated that a bomber with a speed of 200 miles per hour, a range of 5,000 miles, and a 2,000-pound bomb load was technically possible. In December 1933 the Air Corps suggested and the War Department approved the commitment of funds for Project A: the development of a long-range bomber which would not only be able to "reinforce either coast line . . . but would definitely enable . . . reinforcement of . . . Panama and Hawaii." The single XB-15 that the Boeing Company would deliver under this contract in 1937 would be too large for existing engines (someone once humorously remarked that if the engines on the XB-15 had ever looked back to see what they were pulling, all four of them would have quit simultaneously). But technology was catching up with requirements, and the Air Corps was learning to write military characteristics for planes which would be good yet attainable. In 1933 the Air Corps distributed proposals to manufacturers specifying a design competition for a multi-engine bomber with a 2,000-mile range and 250-miles-per-hour speed. In the design competition the following year Douglas offered the DB-1 (an extrapolation from its DC-3 transport which would be the prototype

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for the twin-engine B-18), Martin proposed a modification of its already successful B-10, and Boeing offered a four-engine Model 299, which would be the prototype of the B-17 Flying Fortress.[34]

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While the Air Corps was making plans to implement the recommendations of the Drum Board in the winter of 1933-34 it was suddenly launched into a tragic undertaking that would center public attention and criticism upon it. Convinced that there were evidences of collusion and fraud in airmail contracts with commercial air transport companies, President Franklin D. Roosevelt ordered the Air Corps to start flying the air mail effective on 19 February 1934. Undertaking this mission without proper equipment, with inadequate ground organization, in the face of extremely bad winter flying weather, and with only ten days' preparation, the Air Corps would experience 57 accidents and suffer 12 fatalities while flying 1,590,155 miles with 777,389 pounds of mail. Alarmed by the loss of life, President Roosevelt directed the Air Corps on 10 March to operate only in favorable weather conditions. On 8 May new contracts with private companies went into effect, and the Army Air Corps flew its last scheduled mail flight on 1 June 1934. General Foulois would remember the air-mail episode as a dramatic illustration to the American people that the Air Corps had been neglected. "In the blaze of editorial and Congressional reaction to the deaths of Army flyers," Foulois recalled, "the President and the Congress were, in my opinion, forced to release funds for immediate use in Air Corps experimental and research work, for the immediate procurement of advanced types of aircraft and aircraft materiel and for the immediate advanced training of Army Air Corps personnel."[35]

Even before the Air Corps completed its air-mail duty, the Secretary of War on 17 April 1934 named Newton D. Baker to head a special committee of civilian and military members which was charged to make a constructive study and report of the adequacy and efficiency of the Army Air Corps for the performance of its missions in peace and war. In twenty-five days, the Baker Board heard 105 witnesses, but, possibly because General Drum was its executive vice chairman, the report released on 18 July 1934 accepted virtually all of the conclusions of the Drum Board report which had been approved the previous October. "Our national defense policy," stated the report of the Baker Board, "contemplates aggressive action against no nation; it is based entirely upon the defense of our homeland and overseas possessions, including protection of our sea and air-borne commerce." The board found that the purpose of the Army was "to hold an invader while the citizen forces are being mobilized." Aviation was advantageous to the national defense, but the board stated: "The idea that aviation can replace any of the other elements of our armed forces is found, on analysis, to be erroneous. . . . Since ground forces alone are capable of occupying territory, or, with certainty, preventing occupation or our own territory, the

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Army with its own air forces remains the ultimate decisive factor in war." Citing the Drum Board report as evidence that the United States was in no danger of land-based transocean air attack, the Baker Board stated that "the ideas that aviation, acting alone, can control the sea lanes, or defend the coast, or produce decisive results in any other general mission contemplated under our policy are all visionary, as is the idea that a very large and independent air force is necessary to defend our country against air attack."[36]

As was to be expected from its concept of national military policy, the Baker Board recommended that the existing Army and Navy organizations be continued, with air forces an integral part of each. It found the only potential area of Army-Navy disagreement to be the employment of aircraft in coastal defense, and it recommended that the Joint Board should continue to resolve any such controversy in accordance with the old formula expressed in the Army appropriation act of 5 June 1920. The board thought that the position of Assistant Secretary of War for Air should be abolished and that the Air Corps should "become in all respects a homogeneous part of the Army, under General Staff control, and be subject to military coordination, study, influence and operation." Following and elaborating on the Drum Board recommendations, the Baker Board recommended that a Headquarters Air Force, be established outside of Washington to supervise the training and operations of combat air units, that an Air Corps Board be created to formulate uniform tactical doctrines, and that a model Air Corps unit be created at the Air Corps Tactical School for employment in tactical testing and experimentation. The board recognized that the Air Corps had a requirement for 2,320 airplanes, but it proposed that any Air Corps expansion ought to be a part of a comprehensive Army augmentation plan.[37]

Of the several members of the Baker Board--including General Foulois and Edgar S. Gorrell--only James H. Doolittle filed a minority report. "I believe," stated Doolittle, "that the future security of our Nation is dependent upon an adequate air force. This is true at the present time and will become increasingly important as the science of aviation advances and the airplane lends itself more and more to the Art of Warfare." Doolittle insisted that the air force could be most rapidly developed if it were separated from the Army. If this were impossible, the Air Corps should have a separate budget, a separate promotion list, and be removed from the control of the General Staff.[38] There is no indication that these remarks by Doolittle, an experienced Army aviator who had resigned from the service to take an engineering job with the Shell Oil Company, were ever considered by the Secretary of War. In fact, Secretary Dern was in Panama when the Baker Board completed its report, but he immediately messaged Baker that he had "no hesitancy in approving in principle your conclusions."[39]

When the Federal Aviation Commission, which President Roosevelt appointed in June 1934 under the chairmanship of newspaper editor Clark Howell to make recommendations concerning all phases of aviation, began its hearings, Secretary Dern informed it that the

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War Department endorsed the report of the Baker Board. Brigadier General C. E. Kilbourne, Assistant Chief of Staff, War Plans Division, moreover, instructed all officers summoned to testify to familiarize themselves with the approved policy and not to express personal opinions unless they were so identified.[40] With the exception of William Mitchell, who seized the opportunity before the Howell Commission to denounce the Baker Board report, the testimony of Air Corps officers was marked by restraint. Colonel Arnold stated a personal opinion that an independent air force would be desirable, but he evidently stated off the record that the GHQ Air Force ought to be organized and given a two year-trial. Other Air Corps officers favored no immediate change in defense organization until the GHQ Air Force had been tested.[41] In spite of a general reticence to talk, Major Donald Wilson, Captains Harold Lee George and Robert Olds, and Lieutenant Kenneth Walker freely expressed many of the ideas which were being taught at the Air Corps Tactical School.

When he appeared before the Howell Commission, Captain George emphasized that "the object of war is now, and always has been, the overcoming of the hostile will to resist. . . . When that will is broken down, when that will disintegrates, then capitulation results." Reasoning that the strength of opposing air forces would never permit a nation to utilize its potential to build air power after a war began, George defined air power as "the immediate ability of a nation to engage effectively in air warfare." Future wars," he predicted, "will be fought by the air forces which are in existence when the war breaks out and not by air forces which are created after the war commences." George argued that in a future war air forces would be in action for weeks or months before land forces got into action and that an air force, therefore, required independent organization.[42]

Emphasizing that he was expressing a personal opinion, Major Donald Wilson pointed out that world conditions were leading toward war, that the basic principles of war applied by an intelligent enemy portended that the principal hostile effort against the United States would be through the air, that the defense problem of the United States with planes of limited range was particularly disadvantageous, and that an air force organized, equipped, and trained to defend the United States was an essential element in providing the national defense.[43]

Lieutenant Walker prefaced his testimony by reading the statement of the primacy of the ground force mission as it appeared in the Field Service Regulations of 1923, and he charged that Army leaders refused "to consider that an Air Force is of real value, other than to cover the mobilization of the Army." "We insist," said Walker, "that the defeat of the enemy results from breaking his will to resist and that this is most quickly accomplished, in the scheme of modern war, by disruption, by direct action, of his means for prosecuting the war. . . . An Air Force is an arm which, without the necessity of defeating the armed forces to the enemy, can strike directly and destroy those industrial and communications facilities, without which no nation can wage modern war." Walker

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believed that the Army should control observation aviation and that the Navy should have aircraft carriers to protect its fleets, but he urged that a separate air force had to be created for the air defense of the United States--the air defense mission being defined as seeking out and destroying the enemy air force on its home bases. "Gentlemen," Walker concluded, "unless we create an adequate and separate Air Force, this next war 'will begin in the air and end in the mud'--in the mud and debris of the demolished industries that has brought us to our knees."[44]

At the outset of his testimony, Captain Olds expressed opposition to the creation of a unified air force that would amalgamate all of the aviation components of the Army and Navy, because he held that the Army mission required observation aviation and balloons and that the Navy mission necessitated sea-based aircraft. Olds nevertheless pointed out that the waging of air warfare was of equal importance to the waging of ground and sea warfare. "We simply cannot predict a limit," he said, "nor is it safe to predict the definite role aircraft will fill in a future war. . . . A determined air armada loaded with modern agencies of destruction, in readiness within range of our great centers of population and industry, may eventually prove to be a more convincing argument against war than all the Hague and Geneva Conventions put together." Olds called for the establishment of a Department of National Defense, with subordinate departments of Army, Navy, Air, and Procurement and with a Supreme General Staff headed by a single Chief. He urged that a National Air Force should be organized and should have subordinate air forces in the North Atlantic, South Atlantic, Gulf, and Pacific states, and in Alaska. He proposed no changes for the defensive air garrisons assigned to the Army commands in Hawaii, the Panama Canal Zone, and in the Philippines.[45]

Since the members of the Federal Aviation Commission had not previously committed themselves on the subject of defense organization, they had a splendid opportunity to make a fresh approach to aviation problems. On 31 January 1935, however, the Howell Commission reported to Congress that "the present degree of mutual understanding between the Army and Navy is less than might be desired, that the machinery for setting differences in matters of detail lacks something in effectiveness, and that the arrangements for keeping commanders in the field notified of their respective responsibilities in joint operations . . . are strikingly inadequate," but that it did not believe that it would be easier to coordinate three services than two. Since plans for the GHQ Air Force were already being issued, the Howell Commission preferred to refrain from comment on the matter of an independent air force. "It must be noted, however," the report stated, "that there is ample reason to believe that aircraft have now passed far beyond their former position as useful auxiliaries, and must in the future be considered and utilized as an important means of exerting directly the will of the Commander in Chief. An adequate striking force for use against objectives both near and remote is a necessity for a modern army, and the projected

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G.H.Q. Air Force must be judged with reference to its effectiveness in this respect."[46]

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Both in his first conceptual thinking and later in more exact planning, General Foulois urged the War Department General Staff to observe the principle of unity of command when it organized the GHQ Air Force. In March 1933, Foulois stated his belief that the Army Chief of Staff in a time of war should go into the field as the Supreme Military Commander and leave his second in command in the Zone of Interior. Following the same pattern, Foulois believed that the Chief of Air Corps should accompany the Supreme Military Commander into the field, and he accordingly made his assistant chief, General Westover, his executive officer in order that Westover would be able to take over all incumbent Zone of Interior duties in time of war.[47] Actually, however, the younger Westover commanded the provisional GHQ Air Force in the field maneuvers of 1933 and he also headed the air-mail operation. As a part of the planning for the organization of the GHQ Air Force under the Army's four army plan, Foulois got War Department approval for a procedure whereby officers from the Office of Chief of Air Corps would additionally serve as the mobilization staff of Headquarters, GHQ Air Force. Under this same type arrangement, Foulois intended that most of the officers of the Air Corps Plans Division would, in a war emergency, become the Aviation Section of the Army General Headquarters in the Field.[48]

In his argument for unity of command within the Air Corps, Foulois expressed his conviction that it was wholly impracticable to divorce the authority for training and operations from the functions and responsibilities for research, experimentation, procurement, supply, and repair. In what was widely interpreted as a direct rebuff to Foulois for his advocacy of a separate air force, however,[49] the Baker Board not only recommended increased General Staff supervision over the Air Corps but it also insisted that the primary functions of the Air Corps were (1) fighting, and (2) development, procurement, and supply of equipment and trained personnel. The first function should be assigned to the Commanding General, GHQ Air Force, who would be directly subordinate to the Army Chief of Staff. The second function should continue to be handled by the Chief of Air Corps, as a staff officer of the War Department.[50]

The War Department required little time to effect the top-level changed recommended by the Baker Board. The position of Assistant Secretary of War for Air had been left vacant when F. Trubee Davison resigned at the outset of the Roosevelt administration and this post would remain vacant.[51] On 24 August 1934, the War Department announced that four additional Air Corps officers were being detailed to General Staff divisions, bringing the number of Air Corps officers on the high staff level to nine, a proper quota in view of the relative size of the Air Corps.[52] Because the GHQ Air Force represented a "new conception," the War Department proceeded more

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cautiously with its organization. On 31 December 1934, the Secretary directed that the GHQ Air Force would be organized and would begin operation at a headquarters at Langley Field on 1 March 1935. Headquarters of the Air Force's three wings would be at Langley, at March Field, California, and at Barksdale Field, Louisiana, and all Air Corps pursuit, bombardment, and attack groups were assigned to the GHQ Air Force.[53] Lt. Col. Frank M. Andrews, an experienced Air Corps officer who had been serving on the War Department General Staff, was announced as Commanding General, GHQ Air Force, with a temporary rank of brigadier general. On 19 February 1935, the War Department provided Andrews with tables of organization for the new command, and he was directed to service test the new organization and to make a final report on its effectiveness before 1 February 1936.[54]

Along with its other organizational changes, the Baker Board had recommended the creation of an Air Corps Board to formulate uniform tactical doctrine. As has been seen, such a board had existed on paper since 1922, and had been moved with the Air Corps Tactical School from Langley to Maxwell in 1931. For more than two years, General Foulois resisted suggestions from within his own office that the Air Corps Board ought to be revitalized, both because he had a scarcity of senior officers and because he preferred to rely on the Air Corps Plans Division for policy recommendations. Although the Baker Board forced him to act, Foulois continued to plead that the Air Corps did not have the five to eight senior officers needed to man the Air Corps Board. He accordingly received permission to name the Commandant and Assistant Commandant of the Tactical School to serve on the board as additional duty. Two officers already at Maxwell, Major William O. Ryan and Lieutenant Gordon P. Saville, were assigned to the board on full-time duty. In a statement of mission, the Air Corps Board was directed to consider such subjects as might be referred to it by the Chief of Air Corps and to originate and submit to the Chief of Air Corps recommendations looking toward the improvement of the Air Corps.[55]

2. Development of Doctrine in the Air Corps and GHQ Air Force

Looking backward with regret at his failure to have convinced "those earnest and conscientious men" of the Baker Board of the urgent national need for a unification of military forces and for an independent air force, James H. Dolittle observed in 1945 that the report of the Baker Board should have borne the sub-title: "Pearl Harbor, Here We Come." "Basically," reminisced Doolittle, "the trouble was that we had to talk about air power in terms of promise and prophecy instead of in terms of demonstration and experience."[56] When the GHQ Air Force was organized and began to receive modern aircraft, the Air Corps was able to begin to base its doctrine on a lengthening record of demonstrations and experience.

Because of fundamental changes in the Air Corps mission resulting from the MacArthur-Pratt agreement and the Drum Board Report

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the War Department directed the Air Corps on 27 December 1933 to review and revise its training regulations and manuals in order to insure that the new principles and doctrines were disseminated. The project was assigned to the Air Corps Training and Operations Division, but it made little progress because of continuing changes in the Air Corps mission.[57] What the war Department General Staff judged the role and mission of the GHQ Air Force to be was demonstrated in a directive for a GHQ command post exercise prepared in the War Plans Division in June 1934. In the directive, the bombardment plane was said to be the "most important element" of the GHQ Air Force. The mission of the GHQ Air Force included bombardment of enemy establishments and installations beyond the range of artillery, pursuit action to counter enemy air operations, long-range reconnaissance, and attacks against critical targets in the battle area. In addition to furnishing air protection to bombardment, pursuit aviation was to be used to assist in preventing hostile aviation from operating over friendly territory. The most important point in the directive was the manner in which the GHQ Air Force would receive its targets: the preferred method would be one in which General Headquarters would designate objectives to the GHQ Air Force commander in order to "insure the cooperation of the Air Force with the ground units and that it will be directed against those objectives which will further the operations of the ground forces and the general plan of campaign."[58] In commenting on this directive, General Westover stated that because of its limited range of action pursuit would rarely be able to afford protection to bombardment or to long-range observation. Instead of the assignment of air objectives by General Headquarters, General Westover recommended that the GHQ Air Force commander be informed about the campaign and its objectives and that he be charged to prepare and present an air plan to support the campaign. This air plan could be modified by General Headquarters or by the GHQ Air Force as a result of mutual consultation that would be taking place as the campaign progressed.[59]

One of the reasons for the establishment of the GHQ Air Force was the MacArthur-Pratt agreement which had given the coastal air defense mission to the Army. This agreement apparently was not popular within the Navy, and the Navy Department promptly reopened the matter in Joint Board discussions following Admiral Pratt's retirement in June 1933. In these discussions, Navy spokesmen insisted that the Navy had a primary mission for "air operations in support of local naval defense forces operating for the protection of lines of sea communications and coastal zones against attacks by hostile submarines and surface raiders." Although the Baker Board report of July 1934 called for a resolution of this matter in accordance with the act of Congress of 5 June 1920, the Joint Board agreement of 26 September 1934, entitled "Doctrine for the Employment of the G.H.Q. Air Force," stated that the Navy would have "a paramount interest" in operations at sea when the fleet was present and free to act, and it authorized the Navy to maintain "shore

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stations at strategical centers, where scouting and patrolling seaplanes may be concentrated to meet naval situations."[60] Air Corps officers protested that this agreement gave the mission of coastal frontier air patrol to the Navy and permitted it to maintain as many shore bases and patrol planes as it deemed necessary in peacetime as well as wartime. The Navy apparently wanted to circumscribe the Army air mission still further. In its presentation to the Federal Aviation Commission in November 1934, the Navy urged that: "The Army should develop and build those types of airplanes required by the Army to fulfill its mission in land operations. The Navy should develop and build those types of airplanes required by the Navy in its operation over the sea or for operation from fleet air bases or naval stations. The Army should have paramount interest over the land and the Navy over the sea. Neither service should build or operate planes intended to duplicate the functions of the other."[61] At an assemblage of naval officers at San Diego on 14 June 1935, Admiral W. H. Standley, Chief of Naval Operations, stated that the Navy was going to build up a striking force of 1,000 aircraft.[62]

Convinced by the Baker and Howell hearings that the Army ought to arrive at a united front on the subject of aviation, General MacArthur directed that a statement of facts, principles, and doctines relating to the Army Air Corps should be prepared. In the past, the Air Service and the Air Corps had been permitted to initiate such work, but now the initial task was undertaken by the War Department General Staff. As a "sighting shot" the War Plans Division drew up a draft revision of War Department Training Regulations No. 440-15 from many sources, and General Kilbourne circulated the draft paper for criticism. As written, the WPD paper asserted that the "land campaign and battle" was "the decisive factor in war." While it noted that air force action would be intensive at the beginning of a war, it stated that the advantages of "alluring" air missions at such a time should be weighed against the requirement to keep superior air forces in being to support operations which would take place after the ground armies made contact. The greatest part of the paper dealt with the employment of air forces in continental defense: in fact, the paper defined "air defense" as the means whereby a nation exerts Air Power." During the period of strategical development before ground contact, the GHQ Air Force commander would work from "a broad general mission," but once battle began he would receive specific assignments from General Headquarters.[63]

A copy of the War Plans Division's proposed doctrinal statement was transmitted to Maxwell Field, where Colonel John F. Curry served both as Commandant, Air Corps Tactical School, and President, Air Corps Board. Since the Air Corps Board had only two full-time officers, the study and commentary on the WPD paper was made by the staff of the Air Corps Tactical School. In the introductory remarks to its study completed on 31 January 1935, the Tactical School pointed out that any doctrine which would receive more than lip service had to appeal to reason and to be acceptable in principle.

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The Tactical School was critical of the fact that the WPD paper was predicated upon the geographic isolation of the United States and emphasized a counter air force mission which was narrowly conceived in terms of continental defense. "The principal and all important missions of air power, when its equipment permits," stated the Tactical School critique, "is the attack of those vital objectives in a nation's economic structure which will tend to paralyze that nation's ability to wage war and thus contribute to the attainment of the ultimate objective of war, namely, the disintegration of the will to resist." When employed from bases in the United States, the GHQ Air Force would have such a limited range that the only positive way in which it could insure the success of the Army would be to defeat the hostile air force. The possibility of simultaneously defeating the hostile air force and of attacking the enemy army in support of friendly ground forces was described as an alluring but false doctrine. Only if the hostile air force were defeated would occasions arise when the GHQ Air Force would be able to attack targets in direct support of the ground battle.[64]

Very little of the thought contained in the Air Corps Tactical School critique appeared in the final draft of the War Plans Division paper which was officially published as War Department Training Regulations No. 440-15, Employment of the Air Forces of the Army, on 15 October 1935. This regulation defined air power as "the power which a nation is capable of exerting by means of its air forces," but it stated: "Air forces further the mission of the territorial or tactical commands to which they are assigned." It contemplated that a phase of air operations would probably precede the contact of the surface forces and that the outcome of this phase would exert a potent influence upon subsequent operations. The functions of the GHQ Air Force included air operations beyond the sphere of influence of the ground forces, in immediate support of the ground forces, or in coastal defense and other Army-Navy operations. The regulation stated that the effect which air forces were capable of producing and the extent to which they would influence warfare was still undetermined. Attainment of complete control of the air was said to be an unlikely prospect, but attacks were to be made against hostile air forces prior to ground army contact and the interdiction of enemy air reconnaissance and hostile attacking aircraft was to be a continuing function during ground battles. In effect, the new edition of Training Regulations No. 440-15 was a middle-ground compromise between extreme viewpoints of both air and ground officers. There were enough loop-holes to permit continued air force development: the regulation, for example, respected the unity of the GHQ Air Force and it allowed leeway for independent air operations that were to be conducted before ground armies made contact. For the first time, Major General Follet Bradley would later remark, the regulation spelled out an air doctrine "to which most Air Force officers could subscribe."[65]

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Much of the work in the reorientation of the Air Corps which was required when the GHQ Air Force was being established fell to Major General Oscar Westover, who moved up from Assistant Chief to Chief of Air Corps when General Foulois retired in December 1935. This reorientation had to do with organization, the procurement of new aircraft, and the promulgation of a uniform tactical doctrine for the employment of all branches of aviation. For the preparation of basic studies on each of these subjects, General Westover relied heavily upon the Air Corps Tactical School and upon the Air Corps Board, the latter being considered to be a portion of the Office of Chief of Air Corps on detached location at Maxwell Field. While he was Acting Chief of Air Corps in the absence of Foulois, Westover directed the Air Corps Board on 11 March 1935 to devote its efforts to the preparation of a uniform tactical doctrine for all types of Air Corps units, but he indicated that the board's mission would be expanded when more personnel could be assigned to it.[66] As an immediate solution to the tactical doctrine task, the Air Corps Board surveyed the Air Corps Tactical School's text books, and, following some changes in bombardment and pursuit pamphlets, it obtained authorization to make these books available to field units as doctrine.[67] In June 1935, Lt. Col. Jacob H. Rudolph was assigned as Director, Air Corps Board, and the Office of Chief of Air Corps reopened the question of the Board's mission. There was general agreement that the Board should be responsible for developing doctrine, making recommendations on air force organization, and making tactical evaluations of equipment. The Air Corps Materiel Division demanded that it continue to be responsible for preparing the specifications for, and conducting service tests on, new equipment, but it suggested that the Air Corps Board ought to function as a planning agency which would look several years ahead and visualize developmental objectives for air force equipment. All of these ideas were incorporated in the expanded mission of the Air Corps Board.[68]

Even though air officers considered the establishment of the GHQ Air Force to be a major psychological victory, they recognized that control of the Army's air force had been undesirably compartmented. On 2 November 1935, General Andrews decried the arrangement whereby the GHQ Air Force was responsible for combat efficiency while the Office of Chief of Air Corps selected equipment and personnel, prescribed tactics and methods of employing combat units, and controlled funds. General Andrews recommended the creation of an Air Division within the War Department General Staff, to be headed by an Assistant Chief of Staff who would be responsible for military aviation. Alarmed by the rumored possibility--said to be favored by Rear Admiral Ernest J. King, Chief of the Navy's Bureau of Aeronautics--that the Navy might try to take control of continental air defense and organize a large shore-based air force, the Air Corps Tactical School forwarded a study to Westover on 13 January 1936 which proposed to establish the United States Air Force as a part of the War Department under a Chief of Air Staff. Under this plan, the Chief of Air Corps would become the Deputy Chief

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of Air Staff and his office would become the Air Staff. Westover was unwilling to accept either General Andrews' suggestion or the Tactical School proposal, but he instead urged on 17 January 1936 that the GHQ Air Force be placed under the Chief of Air Corps. During the next two years, both Andrews and Westover continued to urge that unity of command was required in the Air Corps, but General Malin Craig, who became Army Chief of Staff on 2 October 1935, was quite opposed to according any preferential treatment to the Air Corps.[69]

With the Secretary of War's approval of the Drum Board report the Air Corps had an approved requirement for an expansion to 2,320 aircraft which were to be organized into 27 bombardment, 17 pursuit, 11 attack, and 20 observation squadrons. A substantial number of these squadrons were committed to overseas air garrisons in the Philippines, Hawaii, and Panama, and most of the observation squadrons were to be in the National Guard. The War Department did not indicate a time schedule for the achievement of the limited Air Corps expansion, and, as a matter of fact, it was going to authorize Air Corps personnel increases only in conjunction with an ordered expansion of the basic ground forces. Following the redesignation of one pursuit group as an attack bombardment group and the redesignation of long-range observation squadrons as reconnaissance squadrons, the GHQ Air Force at its organization in March 1935 consisted of four bombardment, three pursuit, two attack groups, and four reconnaissance squadrons, with a total of approximately 1,000 airplanes.[70] If this force could not be greatly expanded, General Andrews nevertheless desired a continued modernization of its aircraft. Because of the limited funds available to the Air Corps during the middle 1930's, however, a great amount of thought had to be given to the planned tactical usage and the state of the art of aviation technology prior to awarding contracts for aircraft purchase. Any arm or service or individual could propose military characteristics of a required type of equipment, and, after approval by the Office of Chief of Air Corps, these characteristics were submitted to The Adjutant General for General Staff study. Approval of the military characteristics by the War Department constituted a requirement for the item. Thereafter an aircraft went through a design phase, the letting of contracts for an experimental model, the testing and evaluation of the experimental model, the procurement of a small quantity of aircraft for service testing, and finally the procurement and delivery of standardized aircraft in numbers. So much time was involved in this process that when standard aircraft were put in service they were already obsolescent in the sense that newer ideas for tactical employment and subsequent advances in aeronautical science had already created a demand for improved types of planes.[71]

During the early and middle 1930's, the state of aeronautical technology, the strategic requirements of the Red-Orange war plans, and the industrial fabric theory of war which was being put together

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at the Tactical School melded together to produce an emphasis on the development of long-range bombers. Using the latest model P-26 pursuit aircraft and B-12 bombers in tests flown at March Field, California, in 1934, Lieutenant Colonel Arnold (who would become Assistant Chief of Air Corps in January 1936) concluded that the speeds of bombers and fighters were so evenly matched that "pursuit or fighter airplanes operating from front line airdromes will rarely intercept modern bombers except accidentally."[72] Arnold suggested that the Air Corps ought to develop a two-place, long-range pursuit aircraft that would be able to provide escort for bombers, and during 1935 the Air Corps Materiel Division experimented with the design of such a pursuit plane, which turned out to be basically a heavily-armed B-10 type. When the matter was referred to the Air Corps Board, it reasoned that a large pursuit plane with pursuit safety factors, with at least 25 percent greater speed than bombers, with at least the range of bombers, with a higher ceiling capability than bombers, and with an extremely high rate of climb would probably not be technologically possible. It recommended that continued experiments should seek to develop such a plane, but that bombardment should exhaust every conceivable means of defending itself before such long-range fighters were provided.[73]

The principal concern of the Air Corps continued to be the development of long-range bombers. From data developed in the Project A bomber program, the Air Corps Materiel Division reported early in 1936 that an 8,000-mile, 230-mile-per-hour bomber could be built. Ignoring some protest that such an "intercontinental" bomber would be a weapon of aggression not required for defense, the War Department authorized General Westover in April 1936 to secure a prototype plane from the Douglas Aircraft Company. Given the name of Project D and later (when it was completed in 1941) the XB-19, this intercontinental bomber would provide a great quantity of technological information needed for the development of long-range bombers, but, like the B-15, the XB-19 would be underpowered for its size and weight and would never be placed in quantity procurement.[74]

Already, as a result of design competitions announced in 1934, the Boeing Company offered a prototype XB-17 and the Douglas Company provided an XB-18. In its initial tests during 1935, the four-engine XB-17 flew nonstop at 232 miles per hour for a distance of 2,100 miles. The Air Corps was so favorably impressed that it wished to purchase 65 of these aircraft, but an unfortunate crash on 30 October 1935 destroyed the original XB-17 before it could be formally evaluated. As a result, the War Department awarded the 1935 bomber competition contract to Douglas for the purchase of 133 twin-engine B-18 aircraft. In February 1936, the Air Corps nevertheless obtained permission to order 13 YB-17's for service testing in a squadron. One justification used at this time was that a limited purchase order would assist Boeing in developing a commercial transport aircraft. Delivery of these thirteen planes was completed in August 1937.[75]

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During May 1937, the GHQ Air Force tested the first seven of the B-17's that were delivered to it in an Army-Navy maneuver off the Pacific coast. Possessing greater range and speed than the B-10's that also participated, the B-17's showed important advantages both in sea-search and in bombing operations against the battleship Utah, which was deployed for maneuver purposes under a fog bank 385 miles off the California coast. Using new Norden bombsights, the crews of the B-17's were able to score many hits with water-filled bombs with as little as five-second bomb runs over the battleship.[76] After nearly a year's service testing in the 2d Bombardment Group, Lt. Col. Robert Olds recommended that the B-17 be classified as standard and that the GHQ Air Force's three bombardment groups be equipped with them. Colonel Hugh J. Knerr, chief of staff of the GHQ Air Force, positively stated that his headquarters was convinced that the B-17 airplane "is the best bombardment aircraft in existence; particularly for coastal defense purposes."[77]

At the Air Corps Tactical School news of the superb performance of the YB-17 and the hope that the intercontinental XB-15 might prove practical strengthened proponents of strategic bombing. As demonstrated by its critique of the draft of Training Regulations No. 440-15, the Tactical School as early as January 1935 had rejected the idea that Air Corps doctrine be solely linked to continental defense and had argued that the mission of air power was to paralyze a hostile nation's will and ability to wage war. The Air Corps Tactical School text on The Air Force, issued on 1 March 1936, stated that a hostile air force was a primary strategic air objective but it argued that the defeat of an enemy air force might entail difficult and time-consuming operations which might not prevent the enemy from quickly attaining his purpose by direct attack. "In selecting the hostile air forces as the objective," the text stated, "it is intended to remove the only force that can successfully oppose the attainment of the ultimate objectives and thus achieve a status that will permit unhampered application of pressure against the nation."[78] By 1938 the School was teaching: "Air warfare may be waged against hostile land forces, sea forces, and air forces, or it may be waged directly against the enemy nation. The possibility for the application of military force against the vital structure of a nation directly and immediately upon the outbreak of hostilities is the most important and far reaching development of modern times."[79]

The concept of "bombardment invincibility" and of the defensive character of air battles was not implicity accepted throughout the Air Corps. Even at Maxwell Field, in the five years that he served as an instructor and post officer prior to his retirement in 1937, Major Claire L. Chennault argued that pursuit aviation was a weapon of opportunity which might be employed either offensively or defensively. To support his contention, Chennault devised and advocated a workable plan for aircraft warning and pursuit control services based upon visual aircraft observers and radio and telephone communications nets.[80] Lieutenant Colonel Millard F. Harmon subscribed wholeheartedly to the requirement for the development of bombardment

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but he was "irked no end" at the lack of prestige accorded to pursuit. Named to head a board of GHQ Air Force officers at Barksdale Field which reviewed the Tactical School's Air Force text in 1935, Harmon suggested that it was entirely possible that a hostile air force could be defeated by air combat and other activities. His board also argued that defense of the United States was the established national policy--not the destruction of vital elements within enemy nations.[81] Major O.S. Ferson, a member of the board at Barksdale, argued that improved interplane radio communications would enable an air commander to control large airborne forces and thus to fight major coordinated air battles.[82] Lieutenant Colonel A. H. Gilkeson, Commander of the 8th Pursuit Group, stated bluntly that "this recent academic tendency to minimize, if not entirely dismiss, the consideration of the fighting force as a powerful and extremely necessary adjunct of the air force has led to the teaching of doctrines which have not been established as being true and might even be fatally dangerous to our aims in the event of armed conflict." Gilkeson urged that "a superior fighting force will always gain control of the air in at least a restricted sense."[83]

In an effort to develop facts on pursuit aviation, General Westover directed the Air Corps Board in 1935 to determine whether the Air Corps had a requirement for the development of an interceptor type airplane. In February 1937 the Board reported that the most efficient means of neutralizing an enemy air offensive was to conduct a counter air force operation against the bases that supported the offensive. The Board nevertheless recommended that friendly defenses against hostile aircraft would be necessary, and it recommended an immediate development of an interceptor which would have aircraft cannon and at least 20 percent greater speed than proposed bombardment planes. It also recommended that immediate steps be taken to provide ground observer posts and aircraft reporting nets in the United States and its overseas possessions. Without having waited for the delayed Air Corps Board Report, the Air Corps Technical Committee in November 1936 had already stated military characteristics for an interceptor aircraft. During fiscal year 1937 the Air Corps ordered an XP-37 which would be the progenitor of the P-40 and an XP-38 which would become standard as the P-38 Lightning. Like the XP-39, which was ordered in fiscal year 1938, the Lightning would be a short-range, cannon-equipped interceptor.[84]

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During the 1920's, possibly because of Mitchell's enthusiasm for such an aircraft, the Air Corps had been interested in the development and employment of heavily-armored attack planes which would be able to seek out and destroy enemy personnel and materiel in low-level strikes. The Lassiter Board of 1923 recommended that both observation squadrons and a force of attack and pursuit aviation should be an integral part of field armies. The developmental assumption was that attack aircraft would be designed for strafing and

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fragmentation bombing. In the late 1920's, however, the Air Corps did not have a standard attack aircraft; in Air Corps maneuvers pursuit squadrons frequently were employed to simulate attack missions. In 1932, tests of the all-metal low-wing Curtis XA-8 aircraft led to the procurement the following year of 46 of these planes which were redesigned with radial engines and designated A-12's. Following another development of opportunity from a commercial aircraft model, the Air Corps secured delivery of 110 Northrop A-17's in 1936. These two-place monoplanes carried five .30-caliber machine guns and stowed fragmentation and demolition bombs internally.[85]

When the Army began its study looking toward a reorganization of its basic ground forces, the Air Corps initiated serious studies of ground support aviation. In a report on the modernization of the Army completed on 9 January 1936, the Air Corps Board recommended that there should be no change in the existing assignment of an observation group and a balloon observation group as organic parts of each corps and an observation group as an organic part of each field army. The Board, however, displayed misgivings about the proposed assignment of attack aviation as an organic part of an army. It noted that attack aviation would appear to be "an ideal weapon in the hands of an Army commander," but it argued that, because of its expense, relative scarcity, and capability to penetrate, attack aviation ought to be assigned to the GHQ Air Force, in order that it could be employed anywhere in a theater of operations as directed by General Headquarters. "A weapon capable of giving direct support to more than one subordinate unit," the Board reasoned, "should be assigned to a superior headquarters." The Board also indicated that one of the principal missions of attack aviation would be to disrupt the railways which supported an enemy's front; highways were thought to be much less vulnerable to air attack.[86]

At a meeting of the General Staff committee which was studying the reorganization of the Army on 13 April 1936, General Westover reported his approval of the Air Corps Board report. In some cases, Westover said that he would be willing to attach aviation to armies or corps, but he emphasized that aviation normally ought to operate in support of an army under the control of the GHQ Air Force. Westover further stated that because of the relative invulnerability of dispersed ground troops aviation should not be used against dispersed, front-line troops except in vital situations.[87] In commenting on one of the Army reorganization planning papers sent to him, General Andrews took strong exceptions to the term "air-ground military team" which was used in it. He could understand how observation aviation could be a part of the air-ground team, but he argued that pursuit, attack, and bombardment received no assistance from the ground forces in their combat operations. The War Department General Staff did not agree with these independent ideas: it insisted that "even independent air operations are carried out as part of the general plan of the Commander-in-Chief . . . and must be designed to support the general strategic purpose which he desires to attain."[88]

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Early in the 1930's, the War Department had been willing to permit the development of experimental long-range bombers, apparently because General MacArthur held a permissive attitude toward such endeavor. The attitude of the War Department General Staff switched abruptly after October 1935, when General Craig became Army Chief of Staff. Beginning in 1936, General Craig and his Deputy Chief of Staff, Major General Stanley D. Embick, pressed the entire Army to reduce expenditures for research and development.[89] In June 1936, the War Department turned down Westover's request for authority to buy a service test quantity of XB-15's and enough B-17's to equip at least two groups. At a General Staff bombardment conference held on 28 August, both Westover and Andrews argued that the four-engine bomber would be the most effective weapon that the Air Corps could procure, but the General Staff held that the "bulk of bombardment aviation operating with a mobile Army should be the size and capacity of the standard B-18 medium bomber." Additionally alleging that no action could be taken until the YB-17's were thoroughly service tested, the War Department cut B-17 procurement out of the Air Corps budget requests for fiscal years 1937 and 1938 and added twin-engine bombers. Because of the successful service tests of the YB-17's in the summer of 1937, however, the War Department later authorized the Air Corps to procure 26 B-17B's from fiscal year 1938 carry-over funds and 13 B-17B's from current funds in fiscal year 1939.[90]

Although the Air Corps was not obtaining the type aircraft that it felt necessary for the performance of its missions, the War Department procurement actions of the middle 1930's pushed the Air Corps up toward its authorized strength of 2,320 aircraft, which would be attained with fiscal year 1939 purchases. Looking toward the stabilization of Air Corps strength at this figure in annual modernization of it by the purchase of newer replacement aircraft, Secretary of War Harry H. Woodring directed the General Staff to provide him with a five-year aircraft replacement program which would take effect beginning in fiscal year 1940.[91] After it had been drawn up in conferences between Westover and Andrews and had been modified by the General Staff, Secretary Woodring on 18 March 1938 approved the Balanced Air Force Program--better known as the Woodring Program--which authorized the Air Corps to maintain a combat strength of 144 four-engine bombers, 266 twin-engine bombers, 259 attack aircraft, and 425 pursuit aircraft. Although the Air Corps had also asked to purchase a modest number of transport planes, Woodring instead directed that obsolescent bombers would be used for transport purposes. The Air Corps was specifically authorized to purchase 67 four-engine bombers in fiscal year 1940 and 48 in fiscal year 1941.[92]

Although the Woodring Program was said to manifest "an excellent spirit of cooperation with the ultimate objective of the Army," events were brewing which would cause the War Department to suspend heavy bomber procurement. In April 1937, the chairman of the House Appropriations Subcommittee that handled War Department estimates recorded his protest against the "unwise" tendency to build larger

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and more expensive bombers such as the B-17. On 23 September, however, Andrews forwarded an elaborate defense of the planned four-engine bomber procurement under the Woodring Program. He argued: (1) that the heavy-load, long-endurance, multi-engine bomber was a powerful instrument of defense, and, in view of the nation's fortunate strategic position and defensive policy, such an airplane, as the basic element of the GHQ Air Force, was essential to the accomplishment of the GHQ Air Force mission; (2) that such an airplane, with bomb and fuel loads interchangeable to a high degree, offered the most economical and efficient means of performing the functions of reconnaissance and bombardment (though not on the same mission); (3) that per ton load of bombs carried or per square mile of area reconnoitered, a multi-engine aircraft was actually cheaper to operate than medium bombers such as the B-10 or the B-18; and that (4), in view of these factors, the process of aircraft and engine experimental development had to continue so that bombers of longer range and superior performance could be made available.[93] On 9 October 1937, Andrews told an audience at the Army War College that: "From some sources comes the statement that the modern development of large bombers is for the purpose of aggressive action on the part of the United States. Often we hear of our large bombers spoken of as 'Weapons of Offense,' 'Superbombers,' and similar appelations. These terms are unfortunate and misleading."[94]

At the same time that General Andrews was pleading the cause of the multi-engine bomber, Army officers were drawing different lessons as a result of reports received from the Italian campaign in Ethiopia and the Spanish Civil War. A course at the Army War College conducted during September 1937 employed a text entitled Air Forces and War, which demonstrated that air power had limited value when employed independently and was chiefly useful as a support for surface operations. The text cited military attache reports received from Spain which said that high-altitude bombing was ineffectual, that the "Flying Fortress" concept had "died in Spain," and that small bombers and fighters, which could operate from cow-pasture facilities, were of the utmost utility.[95] What made the text seem more authoritative was the fact that Colonel B. Q. Jones, a long-time Air Corps officer who had served as a sector commander in the air mail episode and was now an instructor at the Army War College, completely endorsed it in a summary lecture on 9 September 1937. Colonel Jones (who would transfer to the Cavalry in 1939) stated that the Spanish Civil War had demonstrated that the capabilities of air power had not progressed markedly from those displayed in World War I, and he advocated the use of bombardment aviation as long-range artillery, the attachment of attack and bombardment to lower echelons of the Army for use in the same manner as artillery, and the employment of GHQ aviation in close support of ground forces. Seeking to counteract the influence of the Jones lecture in the War Department General Staff level, Lieutenant Colonels Ralph H. Wooten and Walter F. Kraus, who were the Air Corps officers assigned to the G-3 Division, drew up a paper which pointed out that Jones was inconsistent with

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approved Army doctrine incorporated in Training Regulations No. 440-15. General Embick, however, refused to accept this finding: "Aviation," he wrote on 23 October 1937, "is a new arm. Our present War Department doctrine has had to be based necessarily on theory and assumption rather than on factual evidence. Now we are getting evidence of that character. No doctrine is sacro-sanct, and of all military doctrines that of our Air Corps should be the last to be so regarded."[96]

Even though the Woodring Program authorized the procurement of four-engine bombers for the Air Corps, the War Department General Staff apparently had approved the program with severe misgivings. The whole matter was thrust back into controversy in May 1938, when General Westover, mindful of the fact that the B-17's were already four years old, requested the War Department to authorize the Air Corps to undertake the development of a new high-altitude, 4,000-mile-range bomber, which would be able to carry two tons of bombs. General Embick exploded into action. "Our national policy," he wrote on 9 May, "contemplates preparation for defense, not aggression. Defense of sea areas, other than within the coastal zone, is a function of the Navy. The military superiority of a plane the size of even the B-17 over the two or three smaller ships that can be procured with the same funds, remains to be established, in view of the vulnerability, air base limitations, and complexity, of the former type. . . . If the equipment to be provided for the Army Air Corps be that best adapted to carry out the specific functions appropriately assigned it under Joint Action as an integral part of the national defense team, there would appear to be no need for a plane larger than the B-17, and only the relatively small number of the latter desirable as potential reinforcing units for Oahu or Panama."[97]

At General Embick's instigation, the War Department referred Westover's request for the development of a high-altitude, long-range bomber to the Joint Army and Navy Board for its consideration and recommendation. On 29 June the Joint Board recommended that it visualized no likelihood that the Army Air Corps would be called upon in time of war to perform missions requiring the use of bombers with greater capabilities than those of the B-17. It believed, however, that the Air Corps would be called upon to perform many missions with aircraft of the less-expensive medium-bomber type. It therefore recommended that the largest proportion of Army bombardment and reconnaissance planes ought to be aircraft smaller than the B-17.[98] As the matter continued under General Staff study, the Assistant Chief of Staff G-4 estimated that the funds required to buy 67 B-17's in the first year of the Woodring Program could otherwise be used to purchase nearly 300 attack bombers, and he recommended that such a change in procurement should be made. General Craig approved the recommended change with the notation: "This is O.K. and solves the problem of 17-B's vs. medium bombers." On 29 July, the War Department informed Westover that the approval which had been given to the Woodring Program was withdrawn and that

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estimates for bombardment planes to be procured in fiscal year 1940 would be restricted to light, medium, and attack types.[99] On 6 August, Westover was additionally informed that the developmental expenditures for fiscal years 1939 and 1940 would be "restricted to that class or aviation designed for the close support of ground troops and the protection of that type of aircraft."[100]

In the same season that he curtailed four-engine bomber procurement, General Craig gave indications that he wished to transfer Army responsibilities for coastal defense to the Navy. As a part of the Navy expansion program submitted to Congress in January 1938 by President Franklin D. Roosevelt, the Navy not only requested funds to purchase a large number of patrol aircraft but also asked relief from the proviso which had been incorporated in all naval appropriation bills since 1920 which limited it to not more than six heavier-than-air bases on the coasts of the United States.[101] In the opening phase of the GHQ Air Force war games in the northeastern United States, however, General Andrews employed B-17 and B-18 bombers in sea-search and simulated attack missions against vessels in in-bound toward the United States. In one of these missions, flown on 12 May, three B-17's successfully located and simulated attacks against the ocean liner Rex at a distance of 725 miles out of New York.[102] To the Air Corps the interception of the Rex proved the value of the B-17 for coastal defense, but the demonstration of effectiveness apparently displeased either the Navy or the War Department General Staff. What happened next has never been exactly documented: General Arnold later suggested that the Navy protested the flight of the B-17's so far out to sea and that the War Department agreed to limit Air Corps patrol activities. Lieutenant General Ira C. Eaker, who was then a major, recalled that he was in General Andrews' office when General Craig telephoned and verbally instructed him to limit Army flights to a 100-mile zone off the nation's coasts. According to Arnold, the War Department would not put this order in writing, but it was nonetheless binding and evidently represented a coordinated Army-Navy policy.[103] Indicating that old policies had somehow changed, a revision of the Joint Action of the Army and the Navy manual issued on 8 August 1938 authorized shore-based naval aircraft "to operate effectively over the sea to the maximum distance within the capacity of aircraft development."[104] Army aircraft, on the other hand, had to operate at a reduced range. The report of the annual tactical inspection of the GHQ Air Force made on 28 July 1939 protested: "Navigation training in the GHQ Air Force has suffered because of the 100-miles restriction, except by special permission, placed by the War Department on the distance to which airplanes may fly to sea."[105]

After he had studied the War Department's disapproval of the Woodring Program, Westover procested that the action had set the development of the Air Corps back by at least five years and proposed to restore "hit or miss" procurement. He formally requested that the original Woodring Program be re-established and that the Air Corps be authorized to develop a successor aircraft to the B-17.[106]

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The War Department General Staff deliberated Westover's reclama at great length. In the end the G-4 Division provided General Craig with what he described as "a very able study" which was used as the basis for the carefully-weighed War Department decision rendered on 5 October 1938. In this decision the War Department professed to recognize the increased potential of aircraft, but it stated that "none of this progress . . . has changed the conception that the Infantry Division continues to be the basic combat element by which battles are won, the enemy field forces destroyed and captured territory held." It stated that all combat arms ought to be brought up to nearly-equal preparedness status and that it would not be possible "to maintain the Air Corps in a higher state of immediate war readiness than the other arms." It enjoined the Air Corps "to obtain and develop aircraft suitable for the close support of ground troops to the same extent that now pertains with respect to types suitable for strategic and more distant missions." Only one concession was made: in order to provide a replacement for the B-17 at some future date the restriction previously imposed on the development of four-engine bombing planes was rescinded.[107]

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At least in theory the Chief of Air Corps was responsible for the preparation of Air Corps doctrine, and in June 1935 General Westover had directed the Air Corps Board to formulate a uniform tactical doctrine for the Air Corps. With never more than five full-time members, the Air Corps Board found it difficult to complete such a doctrinal manuals project. At the top level in Washington--as Lieutenant Colonel Kraus pointed out--the War Department General Staff exerted "an important influence on the tactical doctrine" of the Air Corps since "such doctrines obviously must be governed to a large extent by the characteristics of the weapons made available."[108] Located at Maxwell Field, the Air Corps Board also was influenced by the fact that the Air Corps Tactical School was far from sympathetic toward official Army doctrine. As a matter of fact, the Tactical School frankly questioned and invited academic disagreement with all doctrine. "Battles have been won too often," stated Captain Laurence S. Kuter, in a Tactical School lecture on 2 March 1938, "by the judicious violation of doctrine. . . .Disagree with doctrine in the conference room--be familiar enough with it to violate it in the conference room--but know it well enough to know what it is and why you are violating it."[109] The School was able to think and teach about absolutes in war which were not necessarily related to current war plans. "Even though air warfare may be waged simultaneously against both the enemy armed forces and the enemy national structure," the School argued in 1938, "the main purpose of the air offensive will be to nullify the former so as to permit breaking down or conclusively threatening the latter."[110]

While the Air Corps Board was mindful of the mandate requiring it to provide a uniform tactical doctrine for the Air Corps, work on

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this project could not get underway prior to the final publication of War Department Training Regulations No. 440-15 in October 1935. Even when this regulation appeared, Colonel Rudolph, the Air Corps Board's director, pointed out that it did not contain the fundamental principles which were needed to guide Air Corps development. For one thing, the Army was not definitely committed to provide aviation for coastal defense. Rudolph pointed out these facts to General Westover in May 1936, and Westover verbally instructed the Board to prepare a study entitled "The Functions of the Army Air Force." This study recommended that the War Department commit itself to develop air forces for continental defense, for immediate support of ground combat, and for the conduct of strategic offensive operations. In April 1937, Brigadier General H. C. Pratt, commandant of the Tactical School and ex officio president of the Air Corps Board, requested that the War Department approve these functions as a guide for both the Board and the School. This the War Department refused to do, and it noted that such strategic questions had no place in an Air Corps field manual.[111]

In response to the War Department admonition, the Air Corps Board reduced the scope of its field manuals project to two volumes, the first to deal with tactics, technique, and training and the second to deal with maintenance, base functions, logistics, and staff data. Giving first priority to the first volume after April 1937, the Board completed a draft which was forwarded to the Office of Chief of Air Corps on 11 March 1938. General Pratt pointed out that the manual represented "an enormous amount of work, thought, and study . . . and constitutes the best available thought on the use of a D-day air force."[112] After some suggested changes in wording were made, the Office of Chief of Air Corps submitted the draft manual to the War Department on 14 September 1938. Within the General Staff the manual received six months of review, and on 29 March 1939 Major General R. M. Beck, Assistant Chief of Staff G-3, returned it with a suggested outline for its revision. Beck stated that the manual ought not to make any mention of "independent air operations" or of air attacks which were designed to destroy hostile civilian morale and that discussion of air action against naval forces should be avoided since this was within the province of Joint Board papers. Beck also provided a statement of basic Air Corps doctrine which had been drawn up in his division and which he directed would become the first chapter of the Air Corps manual. The basic tenor of this G-3 doctrinal statement, which was not to be changed without coordination with G-3, left little doubt that it was the intention of the War Department General Staff to develop and employ aviation in support of ground operations. "The mission of the air component of the Army," the statement read, "is to perform effectively the air operations devolving upon the Army in its assigned functions in the National Defense. . . . Air operations beyond the sphere of action of the surface forces are undertaken in furtherance of the strategical plan of the commander of the field force."[113]

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In the spring of 1938, while General Westover was providing theoretical arguments in favor of long-range bombers to the War Department General Staff and the Air Corps Board was completing an equally-theoretical statement of proposed Air Corps doctrine, Brigadier General Arnold, then Assistant Chief of Air Corps, expressed doubts that the roles and missions of the Air Corps could be justified on an abstract basis. Early in June, Arnold knew increasing concern about the forces of aggression which were building up in Europe and which could well threaten the Western Hemisphere. He accordingly conceived of the need for a study of the employment of the Air Corps in support of the national policy of the United States as represented by the Monroe Doctrine. He thought it best that the study remain unknown to the War Department until the Air Corps had "crystallized its own thought." Among its other undertakings, the Air Corps Board was already working on a study to determine the most effective methods of employing aircraft in defense of the continental United States. Arnold accordingly assigned the secret project relative to the Monroe Doctrine to the Air Corps Board on 6 June, and, when General Pratt protested that neither the Tactical School nor the Air Corps Board was equipped for making war plans, General Westover told him that the Board would nevertheless undertake the study with such assistance as it could get from the Tactical School faculty.[114]

Because of a shortage of personnel during the summer vacation season at Maxwell Field, the Air Corps Board made little progress on the Monroe Doctrine before August 1938, when Colonel J. H. Pirie and Major Orvil A. Anderson reported as the Board's director and recorder. As Anderson later recalled, the Air Corps Board had never before addressed a specific situation which so clearly demanded long-range bombers and quasi-independent air actions as did the requirement for an air defense of the Monroe Doctrine. After an analysis of the potential military requirements for support of the Monroe Doctrine, Anderson, who drew the logistical requirements for the study, was able to demonstrate the inherent efficiency of long-range aircraft in terms of planes, personnel, and bases required to defend the North American continent and the South American continent down to the 36th parallel against seaborne threat or invasion. The study was not developed in full detail because Arnold, who became Chief of Air Corps on 22 September 1938 following Westover's death in an air accident, demanded that it be put in his hands not later than 18 October, but it nevertheless recommended the development and procurement of bombardment and reconnaissance aircraft with a radius of action of at least 1,500 miles, a service ceiling of 35,000 feet or more, and the highest speed consistent with its range and altitude.[115] General Arnold immediately approved the Air Corps Board report, and, believing that the appeasement which had been manifested at Munich at the end of September portended an "almost certainty" that Germany would regain her former African colonies and would use them as a

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springboard for the establishment of points of strength in South America, Arnold began to argue that the Air Corps needed seven heavy bombardment groups and an equal number of heavy reconnaissance squadrons for stationing in the United States, Alaska, Panama, and Hawaii to close the "aerial doors" to the United States.[116]

3. Mobilization for Western Hemisphere Defense

In spite of the demonstration that Adolf Hitler had capitalized the superiority of the Luftwaffe at Munich at the end of September 1938 to apply pressure upon a fearful England and France, the American War Department continued to be committed to a phased-augmentation of all of its basic forces, including the Air Corps. In October and early November, General Arnold submitted a number of proposals to the War Department looking toward an increase in Air Corps strength and an immediate expansion of aircraft production industries, but General Craig could not see how these actions could be taken without upsetting the orderly balance of Army forces.[117] Whether any of the Air Corps proposals got through the General Staff to the White House appears in doubt, but President Roosevelt had his own sources of information and he was going to make decisions independently of the recommendations of the War Department. In a confidential letter on 11 July 1938, Ambassador Hugh Wilson in Berlin was emphatic in his discussion of the German air-potential either for war or political blackmail. In a long conversation with Roosevelt on 13 October, William C. Bullitt, the Ambassador to France, brought out the belief of the French military chiefs that Hitler's power rested upon his possession of an already large air force that was capable of rapid expansion from huge airplane factories already in operation. Both the British and French wanted the United States to increase its aircraft production rapidly in order that they might be able to buy planes to build up aerial fleets that would either overawe Hitler or, if war came, could help to defeat the Axis without American armed intervention.[118]

At a meeting of civilian and military leaders at his White House office on 14 November 1938, President Roosevelt issued instructions which General Arnold later described as the "Magna Carta" of the Air Force. Roosevelt announced that airplanes--not ground forces--were the implements of war which would have an influence on Hitler's actions. In view of the air orders of battle of the Axis nations, he continued, the United States had to prepare itself to resist assault on the Western Hemisphere "from the North to the South Pole." Roosevelt's desired objective was an Army air force of 20,000 planes and an annual productive capacity of 24,000 aircraft, but he did not think that Congress would approve more than 10,000 planes--2,500 trainers, 3,750 combat line, and 3,750 combat reserve--and this became the objective. Roosevelt's plan also called for the construction of seven government-financed aircraft plants, two of which would be put into operation, the remainder to be temporarily in reserve.[119]

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President Roosevelt's announcement that he would present an Air Corps expansion program to Congress in his State of the Union message early in January 1939 left little time for planning. At this time, the Office of Chief of Air Corps had no staff agency that was able to state immediately what the complexion of the Air Corps strength ought to be. Arnold quickly began to transfer into his office a roster of experienced Air Corps officers which included Lieutenant Colonels Carl Spaatz, Joseph T. McNarney, and Ira C. Eaker, and Major Muir S. Fairchild. When Captain Kuter stopped on a flight at Bolling Field to refuel, he found orders to report to the basement of the Munitions Building where Major Fairchild and Captain Kenney were attempting to determine how big an air force was needed and what it was needed for. Many of the answers came from an Air Corps Tactical School map problem which had focused on the defense of the Western Hemisphere against an Axis air threat from the direction of Dakar and Natal. Largely on the basis of this strategic concept, the Air Corps stated requirements for a 5,500 airplane program which promised to fall within the cost figure of $500 million which Roosevelt had said he would request for airplanes. When the plan went to the War Department General Staff for review, however, the War Plans Division insisted that an augmentation of ground combat strength would have to accompany the Air Corps buildup in order to combat Axis intrigue in South America. When Roosevelt was briefed on the final plan, he complained that the War Department offered him everything except the airplanes he wanted, and on 12 January 1939 he asked Congress for $300 million--instead of $500 million--for the Air Corps. In three months Congress passed the emergency Army air defense bill substantially as requested: the Air Corps was authorized a total strength of 5,500 aircraft and given authority to procure 3,251 new planes.[120]

As finally enacted, President Roosevelt's somewhat hastily managed Army air defense program promised a larger expansion of American aviation production facilities than an increase in the size of the active Army Air Corps. The War Department, however, inclined a more sympathetic ear to the Air Corps in part because of the personal influence of Brigadier General George C. Marshall, who replaced General Embick as Deputy Chief of Staff. Employing arguments long used by Air Corps officers, General Marshall on 29 November 1938 cited to General Craig numerous reasons why it was essential for the Air Corps to purchase maximum quantities of B-17B aircraft.[121] Yielding to Arnold's argument that unity of purpose and of planning were necessary for the attainment of the Air Corps mission, the War Department on 1 March 1939 placed the GHQ Air Force under the immediate responsibility of the Chief of Air Corps rather than the Chief of Staff.[122] In view of the impending retirement of General Craig on 1 September 1939, General Marshall became Acting Chief of Staff on 1 July. That same day he assembled ten new Air Corps officers who were joining the General Staff and told them that they had a war assignment. On 4 August, Marshall also brought Major General Andrews to the General Staff as Assistant Chief of Staff G-3.

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Andrews immediately organized an Air Section in the G-3 Division, thereby causing "lifted eyebrows" all over the Munitions Building.[123] On 24 August, the War Department's old restriction against Air Corps flights of more than 100 miles out to sea was finally rescinded by the issuance of an Air Corps circular which permitted air operations over the sea to the maximum range of multi-engine aircraft.[124]

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President Roosevelt's decision to emphasize air power touched off an expansion of the Army Air Corps, but it did not end the controversy as to what the mission of the Air Corps should be. Looking toward this end on 23 March 1939, Secretary of War Woodring appointed an Air Board to consider and recommend the fundamental policies which would govern the tactical and strategical employment of the Army's air force under current national policies, including hemispheric defense. Woodring designated Arnold as president of the Air Board and named as members Major Generals Andrews and Beck and Brigadier General George V. Strong, the latter being the Assistant Chief of Staff War Plans Division.[125] Privately to General Arnold, Lieutenant Colonel Spaatz urged that the Air Board could not perform its task until it first determined the Air Corps' mission, the doctrines for its employment, and the characteristics of the forces it would require.[126] At its first meeting on 31 March, the Air Board agreed to study each of these matters.[127]

In order to provide an input into the War Department Air Board, the Air Corps Board at Maxwell Field was required to expedite the preparation of its study on "Employment of Aircraft in Defense of the Continental United States," and, to hasten the work, the Air Corps Board found ideas in studies made at the Tactical School and in the answers to a questionnaire which it sent out to the GHQ Air Force and its unit commanders. Completed on 7 May 1939, the Air Corps Board study visualized the primary purpose of the national defense as being to hold U.S. territory inviolate, to discourage an enemy from attempting an invasion, and to defeat an invasion if it were attempted. The Board assumed that an enemy nation would employ combined air, ground, and naval forces in a series of expeditionary operations designed to establish bases progressively closer to vital areas of the United States. It defined air power as "a measure of a nation's capacity to wage air warfare," and it stated that air power would be effective only if it could strike an enemy decisively and simultaneously preserve its own integrity. Under this definition, the range of bombardment aircraft both increased the ability of a plane to apply pressure against the enemy and increased the security of the bombardment bases against enemy attack. Since air forces were said to lack the ability to control the air to a degree that would positively deny hostile air operations, an air force could be defeated only by attacks against its bases. The report asserted that the mission of air power was the offensive, and it accordingly argued that primary emphasis should be given to the development of

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striking force aviation (bombardment and attack) and secondary emphasis to security force aviation (pursuit and fighter) and to information aviation (reconnaissance and observation). While it would be desirable to have fighter escort for bombardment missions, such was believed to be impractical. The Board recommended that the main aircraft production capacity should be devoted to the production of the bombardment planes, which would be of greatest value in the initial phases of an attack against the United States. Although it was apparently valuable only for local air defense, pursuit aviation would be required and ought to be assisted by an aircraft warning service.[128]

The GHQ Air Force replies to the Air Corps Board questionnaire differed from the Board report in a few respects, principally in the characteristics of the aircraft desired for development. Where the Board wished to standardize chiefly upon 1,500-mile bombers required for hemisphere defense, the GHQ Air Force wanted a family of bombers, including a heavy bomber with a 5,000-mile radius to make reprisal attacks against an enemy's homeland, a medium-range bomber with a 2,500-mile radius for hemisphere defense, a short-range bomber with a 1,500 mile radius to attack hostile naval forces, and an attack bomber with a 500 to 750-mile radius to support ground forces. It wanted reconnaissance aircraft with ranges equal to bombers, a speedy 350-mile range interceptor, and a 1,500-mile range fighter. Like the Board, the GHQ Air Force assumed that bombers would not require fighter escort, but the 8th Pursuit Group in a subjoined statement said that the Air Corps had a requirement for a fighter aircraft that would be able to accompany bombers over enemy territory and render support in the vicinity of defended objectives. The 1st Pursuit Group, on the other hand, did not think that bombardment would require pursuit protection unless a situation demanded bomber operations over a prolonged period against a single objective or a number of objectives in a specific limited area.[129]

As formally undertaken on 12 June 1939, the Aviation Expansion Program authorized an approximate three-fold expansion of the combat strength of the Air Corps, and the construction of hemisphere defense bases in the northeastern and southeastern United States, in Alaska, in Puerto Rico, and in Panama.[130] The Air Corps planned to attain within two years an over-all strength of 24 groups--including five heavy bombardment, six medium bombardment, two light bombardment (formerly attack), seven pursuit interceptor, two pursuit fighter, one composite (for the Philippines), and one demonstration group (for Maxwell Field). The program also included nine corps and division observation squadrons. Each of the heavy (four-engine) groups and medium (twin-engine) groups of bombardment would have a reconaissance squadron of the same basic type aircraft.[131] Of the 5,500 aircraft in the expansion program, 2,084 combat aircraft were to be assigned to tactical units, 1,341 combat aircraft were to be maintained in a rotating reserve, and 2,073 training aircraft were to be in service or in reserve. The rotating reserve aircraft were apparently authorized in order to expand American aircraft production capacity, but

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the Air Corps believed that these planes would permit units to maintain themselves at full strength and that they would also replace any combat losses incurred between M-day and the time that aircraft facilities could meet wartime demands.[132]

New aircraft for the Air Corps were already on order or were quickly placed on order. In fiscal year 1939, when heavy bomber purchases had not been authorized, the Air Corps had already issued procurement orders for 206 Douglas A-20 attack bombers and for 200 Curtis P-40 pursuit interceptors. In fiscal year 1940, it ordered 70 B-17's and, in order to have a second source of production for four-engine bombers, it procured a service-test quantity of 16 new Consolidated B-24 aircraft. As replacements for the twin-engine B-18's, it ordered 183 North American B-25's and 201 Martin B-26's. Ordered as pursuit fighter planes were 66 Lockheed P-38's and as pursuit interceptors were 95 Bell P-39's. As a potential additional source for pursuit fighter aircraft, the Air Corps ordered a single experimental XP-47 from Republic Aircraft. Early in 1939, the Air Corps Materiel Division conducted investigations based on what had been learned from the design of the XB-15 and the XB-19. In May 1940, the Air Corps would be able to circulate a request for bids for the production of prototype bombers which would have a tactical operating radius of 2,000 miles, a cruising speed of 200 miles per hour, and a normal bomb load of 2,000 pounds. In the autumn of 1940, it would order an XB-29 from Boeing and an XB-32 from Consolidated Aircraft.[133]

After deliberating through a summer of sweeping changes, the War Department Air Board completed a report which was approved by General Marshall with a few changes on 1 September and by Secretary Woodring on 15 September 1939. The report declared: "Air Power is indispensable to our national defense, especially in the early stages of war. . . . Our aviation in peacetime, both its organization and its equipment, must be designed primarily for the application of Air Power in the early days of war. The basis of Air Power is the bombardment plane." Assuming that "a well led and determined air attack once launched may be interfered with, but it can rarely, if ever, be entirely stopped by local defense," the report stated that "the only reasonable hope of avoiding air attack is in the possession of such power of retaliation as to deter an enemy from initiating air warfare." Because of the vital relationship of air bases to air power, the report stated that such bases would be primary air objectives. For the defense of the United States and its possessions, aircraft with superior range were vital. The board recommended a 2,000-mile radius heavy bomber and a 1,000-mile radius medium bomber, and it judged that a 500-mile radius pursuit fighter would satisfactorily perform such support as bombers might require. The report functionally divided air power into Army Aviation--to include training and special purpose aviation, observation and liaison, and oversea garrison aviation--and GHQ Aviation--which included striking and defense forces. The major function of the GHQ Aviation striking force was to attack and destroy enemy aviation at its bases, whether on land or sea; the GHQ Aviation defense forces were intended only to

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provide reasonable protection to the most vulnerable and important areas. GHQ Aviation was also to include a nucleus of aviation which would be properly trained to support ground troops and would be capable of expansion to meet war requirements. In General Marshall's words, the Air Board report established "for the first time a specific mission to the Air Corps, and provides for its organization on functional lines."[134]

Given the approval of the Air Board report, Lieutenant Colonel Carl Spaatz, chief of the Air Corps Plans Section, called for an early completion of the Air Corps basic doctrinal mannual which had been held up for so many years. Early in October 1939, Spaatz called Colonel D. B. Netherwood, who was now the director of the Air Corps Board, to Washington, where, in conferences with the new G-3 Air Section, Netherwood not only received permission to junk the old statement of basic doctrine which had been prepared by the G-3 but also secured authority to prepare a small basic doctrinal manual which could be elaborated by several more detailed field manuals. A draft of the basic manual was put together while Netherwood was in Washington, and the completed project was published as Field Manual 1-5, Employment of the Aviation of the Army, on 15 April 1940.[135]

In approving the Air Corps basic field manual, which superseded Training Regulations 440-15, General Andrews remarked that the manual did not endorse radical theories of air employment. As a matter of fact, the portions of the manual dealing with mission, characteristics, and purposes of aviation were lifted bodily from the Air Board report. The manual continued to respect the old relationships between air and ground warfare: portions of GHQ aviation could be attached to armies or corps for the accomplishment of specific missions, but they were to revert to GHQ control as soon as the necessity for the attachment ended. Reconnaissance, observation, and liaison squadrons were to be assigned or attached to armies, corps, and divisions. Strategic air operations were to be undertaken by bombardment aviation "to nullify the enemy's war effort or to defeat important elements of the hostile military forces." Pursuit aviation was to be designed for the defense of important areas, installations and forces, and for the protection of other aircraft in flight. Since pursuit aircraft would have a shorter range than bombers, they would need to be based well forward of the aircraft which they might be called upon to escort.[136]

* * * *

The report of the War Department Air Board and War Department Field Manual 1-5, Employment of the Aviation of the Army, were based upon a theory of air warfare, but, with the German invasion of Poland and the beginning of World War II on 1 September 1939, air warfare was no longer theoretical but had become an actuality. The announced policy of the War Department continued to be one of planning and building for an adequate defense of the Western Hemisphere rather than for the preparation of expeditionary forces. The War Department

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nevertheless anticipated that the war in Europe would indicate the desirability of many changes, particularly in reference to air forces, since this was the first time in history that powerful air forces had been available for use in a war between major powers.[137]

Although the initial Luftwaffe operations in Poland were mainly in support of German ground forces, American air officers generally agreed in the autumn of 1939 that their theoretical doctrines were being substantiated in combat. At the Air Corps Tactical School, Lieutenant Colonel Donald Wilson wrote in September 1939 that Hitler's air force had "voluntarily undertaken the job of demonstrating our theories." The Luftwaffe had established control of the air by destroying the Polish air force on its airfields, it had conducted strong attacks against Poland's lines of communications, and then it had supported the invading ground armies in a blitzkrieg attack.[138] Operating under conditions of almost complete air superiority, the JU-87 Stuka dive-bomber proved to be a very effective weapon for the delivery of firepower and of terror. Air Corps officers, however, were quick to note that the Stuka was operating only against a little small calibre antiaircraft fire and they predicted that it would not be able to defend itself against determined opposition in the air.[139]

As he looked at the German campaign in Poland, however, General Arnold was far from happy. On 14 November 1939 Arnold stated that the doctrine so widely propounded in Air Corps circles for so many years to the effect that fighter aircraft could not shoot down large bombardment aircraft which were flying in defensive formations had been "proven wholly untenable." Arnold blamed the problem on the teachings of the Air Corps Tactical School and the fact that older and higher-ranking Air Corps officers had sought to avoid strenuous service in pursuit units, but he called on Major General Delos C. Emmons, commander of the GHQ Air Force, to submit a study looking toward the development of pursuit tactics, planes, and equipment. In the GHQ Air Force, Major Harold L. George, commander of the 96th Bombardment Squadron, advised Emmons: "There is no question in my mind but that American bombardment units could not today defend themselves against American pursuit units." A meeting of pilots in the 8th Pursuit Group, reported by Lieutenant Colonel W. E. Kepner, unanimously agreed that existing types of bombers would be subject to a probably 50 percent loss from attacks by existing-type fighters, unless the bombers operated at night. On the basis of these opinions, the GHQ Air Force stated: "Aerial operations of the present European conflict confirm the results of the World War; that is that the present bombardment airplane cannot defend itself adequately against pursuit attack."[140]

In the winter of 1939-40, the Air Corps gravely considered the matter of pursuit and bombardment, but no one found any definite answers. Even though prevailing testimony indicated that existing pursuit aircraft were already superior to existing bombers, the GHQ Air Force recommended means of improving pursuit aircraft and the caliber of pursuit personnel. Antedating what would later be called the weapon-system concept, the GHQ Air Force suggested that a pursuit

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plane should be built around a previously determined armament rather than being built as an airframe and fitted with whatever armament possible.[141] Working through the Christmas holidays, the Air Corps Board completed a report on "Fire Power of Bombardment Formations" on 3 January 1940. This report noted that the fire power of American bombers was decidedly greater than that of European bombers. It recommended increased numbers of guns as practicable, better sighting systems, and increased gunnery training. It also recommended that consideration be given to the development of a long-range fighter, a means whereby bombers could refuel accompanying fighters in flight, or a means by which bombers could carry, release, and recover high-performance pursuit aircraft. Despite the demonstrations of the vulnerability of bombardment aircraft, the Board recommended that no thought should be given to a reduction of the importance attached to bombardment aviation in Air Corps doctrine. While pursuit escort was "highly desirable" for bomber penetrations into heavily-defended areas in order to minimize bombardment losses, the absence of such pursuit protection should not justify the abandonment of important missions.[142]

During the spring of 1940 a steady stream of observer reports from France and England kept the War Department informed of the doctrinal lessons of the belligerents. These reports noted that the Luftwaffe preserved the integrity of its air fleets and air corps and employed them as unified and flexible striking forces in support of the blitzkrieg. On 11 and 12 May, for example, two air fleets supported the German northern army group in Belgium and Holland, but on 13 and 14 May the whole air mass shifted southward to place a tremendous concentration of fire on French defenses at Sedan in support of a few armored divisions. The British initially attached a Royal Air Force component to the British Expeditionary Force in France and maintained an independent Advanced Air Striking Force on the continent. On 15 January 1940, however, the British Air Ministry put all this aviation under the Commander, British Air Forces in France, who was directed to use the whole force to the best possible effect in support of the Allied armies as a whole. From Paris, Lieutenant Colonel Kenney reported that captive observation balloons were completely impracticable, as were slow and vulnerable observation planes.[143]

Even though he remained committed to heavy bombardment, General Arnold continued to be troubled about the ability of bombers to operate in the face of strong hostile fighter operation. Accordingly, on 2 March 1940, he instructed the Air Corps Board to obtain a consensus at Maxwell Field as to the types of pursuit and fighter aircraft required and the actions which could be made to develop them from existing aircraft types. Taking into consideration the existing defensive mission of the Air Corps, the Board report, rendered after seven days of study, recommended that highest priorities be given to the development of a fighter interceptor for local air defense. The only possible solution that the Board could see for the development of a bomber escort aircraft was to adapt some

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bombers to defensive purposes. While the Board was not entirely certain that such would be necessary if the bomber defenses were strengthened by additional machine guns, it suggested that some bombardment planes might be very heavily armed with extra guns and gun turrets. Three of these special aircraft could be employed as the rear element of a nine-plane bombardment flight in order to defend the vulnerable rear area of the formation from attacks by hostile fighters.[144] This solution apparently caught the attention of General Marshall, who asked Arnold on 13 June to consider the practicability of developing an "air cruiser" plane which would perform both air combat and bombardment missions. At this juncture, however, Arnold argued that the Air Corps had to emphasize production of existing equipment instead of research and development on an entirely new aircraft.[145]

As time passed, the German victories over British and French forces in Holland, Belgium, and northern France caused American air leaders to increase rather than to diminish their requirements for heavy bombers. On 12 June 1940, General Emmons advised Arnold that Great Britain had made a serious mistake in building a defensive air force consisting largely of interceptor fighters and light reconnaissance bombers. Emmons suggested that if the Royal Air Force had possessed a stronger bomber force it could have effected heavy destruction on the German troop and supply columns which had jammed the roadways leading toward Dunkirk. He recommended that the United States must materially increase its long-range bomber force.[146] On 4 June 1940, Brigadier General J. E. Chaney, commander of the new Air Defense Command at Mitchel Field, addressed a letter to General Marshall which argued that the United States must develop a long-range bomber force which would be able to carry destruction to Germany. Chaney believed that a huge force of bombers, capable of taking the war to Berlin, would prove to be the only effective threat to German aggression and permit counter air force operations against any attempt Hitler might make to establish bases in or near the Western Hemisphere. Chaney's letter was endorsed by both Andrews and Arnold.[147]

These Air Corps assessments had hardly been put on paper before the Luftwaffe launched into the Battle of Britain and commenced a phase of air combat which engendered still more thinking. Serving in London as a special observer from May to September 1940, Colonel Spaatz had a first-hand view of some of the heaviest fighting of the Luftwaffe blitz. As shown by his diary and his reports, Spaatz quickly reached a conclusion that the Germans had developed "a mass of air geared to the Army" which was not going to be able to prevail against the "real air power" developed by the British. German bombers were inadequately armed and lacked capabilities for heavy bombing attacks. Held to close support of bombers, German pursuit forces were unable to gain a general control of the air. Spaatz nevertheless noted that British airmen discredited the American concept that a hostile air force was easiest destroyed on the ground. They had found a well-dispersed air force to be an exceptionally

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difficult bombing target and they believed that it was more efficient to destroy hostile aircraft in the air by fighter attack. When enemy planes were shot down, both planes and crews were destroyed. "General opinion," Spaatz noted in his diary, "is that German fighters will not attack a well-closed-in day-bombing formation."[148] Visiting Great Britain in August and September 1940, Emmons reached much the same conclusion. He attributed the severe losses taken by the Luftwaffe to the large volume of fire that could be delivered by British fighters, the poor rear-hemisphere gun defenses of German bombers, and the German employment of vulnerable dive-bombing tactics, large inflexible formations, and poor air discipline. Emmons also reported that the British believed that six-plane formations of bombers, with sufficient guns and armor, could conduct daylight attacks without sustaining serious losses.[149] Early in 1941, Spaatz urged that every effort be made to expand American production of four-engine bombers. The British, he said, had committed themselves to short-range planes only to find that they urgently needed long-range bombers.[150]

In August and September, General Emmons and Colonel Spaatz also learned the well-kept secret that the British had developed a system of electronic early warning and fighter control, without which the R.A.F. Fighter Command probably could not have defeated the Luftwaffe during the Battle of Britain.[151] Actually, the basic principle that very short radio waves produced echoes when reflected from targets had become known quite early by scientists in all nations of the world. In 1925, scientists of the Carnegie Institution and Naval Research Laboratory had devised and used radio pulse ranging to explore the ionosphere. Using these same principles, the Naval Research Laboratory and Army Signal Corps scientists had developed prototype radio ranging and detection equipment, which would later be called "radar." On 18 and 19 May 1937, the experimental Signal Corps radar equipment and also an infra-red aircraft detector were demonstrated to the Secretary of War and a group of high-ranking Army officers, including General Arnold. On 21 March 1938, the New York Herald Tribune printed a very accurate and comprehensive description of radar. The Army had begun to develop a radar set to direct antiaircraft artillery guns and searchlights, and the Air Corps had stated a requirement for the development of an early-warning radar which would have a range of 120 miles.[152] Electronic development in Germany had produced a prototype radar by 1938, but neither the Wehrmacht nor the Luftwaffe considered the production of radar equipment sufficiently important to divert available facilities to it. In 1939, however, Hermann Goering, the Luftwaffe commander, preempted some 100 warning radar sets which had been ordered by the German navy and sited them along Germany's coasts and borders.[153]

Only the British had made a full development of the potential of radar. Recognizing the vulnerability of the British Islands to German air attack, the British Air Ministry had established a special Committee for the Scientific Survey of Air Defense, under the chairmanship of Henry T. Tizard in 1934. In a highly secret

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program, Robert Watson-Watt and other scientists had devised radio direction finding equipment, and a chain of these R.D.F. stations was sited to guard Britain in a hurried program following Munich. As a result of expedited research, the British developed air-to-surface vessel (ASV) search radar by September 1938 and experimental airborne-intercept (AI) radar by June 1939. The demonstration of a working model of a new type of microwave radar tube in February 1940 portended an additional important breakthrough in the whole field of radar.[154] "Unless British science had proved superior to German," Winston S. Churchill would subsequently write of the Battle of Britain, "and unless its strange sinister resouces had been effectively brought to bear on the struggle for survival, we might well have been defeated, and being defeated, destroyed."[155]

In the United States during the 1930's the existence of radar was a "heavy secret," and the air warfare theorists at the Air Corps Tactical School were uninformed about its potential. As long as aircraft warning services depended upon visual reports of ground observers (who could not be stationed within enemy territory) the problem of massing fighter defense against a bombing attack was practically insurmountable considering the great advantages possessed by the bomber force in selecting the time, altitude, density, and place of attack. In the 1938 Air Corps maneuvers, pursuit units had been unable to locate inward-bound bombers except on the occasions when the bomber crews intentionally revealed their positions by radio transmissions, thus allowing the pursuit pilots to get some intercept training. In short, the theorem that "a well planned and coordinated bombardment attack, once launched, cannot be stopped" was heavily based on the belief that pursuit aircraft would have great difficulty locating bombardment formations.[156] Looking backward at the air doctrine of the 1930's, Major General Haywood S. Hansell later commented that the Air Corps Tactical School had correctly assumed that modern bombers could penetrate to their targets within enemy nations, but the margin of the capability of the offense over the defense had been much narrower than anyone had believed. Hansell nevertheless remarked: "Our ignorance of radar development was probably a fortunate ignorance. Had this development been well known it is probable that theorists would also have reasoned that, through the aid of radar, defensive forces would be massed against incoming bomber attacks in a degree that would have been too expensive for the offensive. As it ultimately developed the School's basic concept that the offensive enjoyed a peculiar advantage in air warfare did later turn out to be substantially correct."[157]

In the winter of 1940-41, however, General Arnold was not inclined to be very philosophical. In view of reports from the Battle of Britain, he stated in September 1940 that the Air Corps might well have to conduct the bulk of its bombardment operations at night.[158] Based upon already completed development, the War Department placed production orders for SCR-268 antiaircraft artillery radars and for a new SCR-270 early-warning radar. Early in September 1940, Sir Henry Tizard brought the secret of the improved microwave radar to

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Washington.[159] In February 1941, Arnold complained that air defense was getting "nowhere fast." Asked whether the United States should produce existing early-warning radars or delay production in the expectation of getting improved microwave equipment, he stated that the Air Corps "was badly in need of detector equipment for tactical use" and required equipment without delay for training purposes, even if it was not the ultimate type which would be produced.[160] Arnold may well have been thinking about the new capabilities of electronic-directed pursuit when he wrote: "During daylight in good weather, when pursuit aviation is present in strength in an area, it can pretty nearly bar the air to the bomber."[161]

4. Mobilizing the Army Air Forces for War

To President Roosevelt the German victories in Europe in the spring of 1940 presaged increased aerial threats to the Western Hemisphere. Apparently selecting a good round number which would jolt the nation's thinking, Roosevelt asked Congress on 16 May to provide 50,000 planes for American defense and a productive capacity for at least that many more planes each year. In addition to building up the Army and Navy, Roosevelt had in mind an "even Stephen" division of new bombers with the British.[162] Shortly after he took office, the new Secretary of War, Henry L. Stimson, declared on 9 August: "Air power has decided the fate of nations; Germany, with her powerful air armadas, has vanquished one people after another. On the ground, large armies had been mobilized to resist her, but each time it was additional power in the air that decided the fate of each individual nation."[163]

Despite the President's willingness to talk about large numbers of planes and an increasing awareness that the United States might be required to fight overseas, the expansion of the Army Air Corps was related to the defensive Rainbow War Plans, which originated in the General Staff's War Plans Division and were put into final shape by the Joint Army and Navy Board. With the approval of Secretary Stimson on 12 July 1940, the Air Corps was authorized to expand to 54 combat groups and 6 transport groups. Under this program--called the Army's First Aviation Objective--the Air Corps authorized 4,006 combat aircraft, including 498 heavy, 453 medium, and 438 light bombardment, 1,540 pursuit interceptors and 220 pursuit fighters, 539 observation, liaison, and photo planes, 252 transports, and 66 amphibian aircraft. The group strength included 14 heavy, seven medium, and seven light bombardment groups, five fighter and 18 interceptor pursuit groups, and three composite groups. The large increase in pursuit units over the old 24 group program apparently required little justification, but both Congress and the National Defense Advisory Commission asked questions about the heavy bombers. Arnold defended the requirement for the heavy bombers by citing the strategic mobility they afforded.[164] Assistant Secretary of War Robert P. Patterson explained to the National Defense Advisory Commission that the range of four-engine aircraft was mandatory

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for the distances involved in hemispheric defense, and that, in the event of military operations in the Far East, long-range bombers would be the only weapons which could exert immediate pressure.[165]

Hardly before the First Aviation Objective was underway, General Marshall discussed the national need to expedite aircraft production in government-owned plants with representatives of the Air Corps Plans Division on 24 October 1940, and at this time Marshall asked whether the Air Corps ought not to visualize expansion beyond the 54 group program. As a result or this conversation, the Air Corps planned a Second Aviation Objective, which was not so much designed to increase the number of air groups as to provide an internal augmentation of existing units. As far as possible, the Air Corps handled an additional number of aircraft by increasing the unit equipment of squadrons, by activating one additional squadron in bombardment and transport groups, and by the addition of two squadrons (one designed to be a training squadron) in each interceptor and fighter pursuit group. In addition to these augmentations, the Air Corps expanded its over-all force objective to 84 groups, including 24 heavy, 12 medium, and 13 light bombardment, five fighter and 18 interceptor pursuit, 11 observation and one photographic groups. Not included in the 84 group strength were seven transport groups. Because General Marshall announced that he wanted to see significant numbers of JU-87 Stuka type aircraft in the program before he would approve it (and postively overruled the objection of air officers that dive-bombers would be very vulnerable), the 84 group program included 12 groups of dive bombers in the light-bombardment category. On the basis of this planning, the War Department approved the plans for the Army's Second Aviation Objective on 14 March 1941, thus authorizing a combat strength of 7,799 planes, including 1,520 heavy bombers, 1,059 medium bombers, 770 light and dive bombers, 2,500 pursuit interceptors, 525 pursuit fighters, 806 observation, liaison, and photo, 469 transport, and 150 amphibian aircraft.[166] The Second Aviation Objective was designed and was justified as being necessary for hemispheric defense.

* * * *

Early in 1940, General Arnold opposed suggestions for a Congressional reorganization of the armed forces designed to provide air autonomy because he felt that the main requirement was to get on with the expansion of the Air Corps. With the expansion of the Army, however, General Marshall found it more and more difficult to get decisions through the War Department General Staff. Making a move to decentralize the War Department, Marshall established General Headquarters, U.S. Army, under Brigadier General Leslie J. McNair at the Army War College on 26 July 1940. According to the plan for the decentralized GHQ field headquarters, General Headquarters received command over the GHQ Air Force. The War Plans Division assured General Arnold that this development would cause no substantial change in the relationship between the Chief of Air Corps

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and the GHQ Air Force,[167] but neither this disclaimer nor the explanation that the establishment of General Headquarters meant no more than an effort to take training out of the G-3 Division of the General Staff satisfied Arnold, who ordered his Plans Division to prepare a study showing why the GHQ Air Force should remain under the Chief of Air Corps. In lieu of the General Headquarters plan, Arnold formally proposed that three Army deputy chiefs of staff, one each for ground, air, and service forces should be established and that each should have broad authority under the Chief of Staff to control the field activities of their respective forces. The War Department General Staff disapproved the plan, observing: "The Air Corps believes that its primary purpose is to defeat the enemy air force and execute independent missions against ground targets. Actually, its primary purpose is to assist the ground forces in reaching their objective." As an immediate compromise, however, Marshall appointed Arnold as Acting Deputy Chief of Staff for Air on 30 October 1940. Major General George H. Brett became Acting Chief of Air Corps, and on 19 November 1940 the GHQ Air Force was removed from the control of the Office of Chief of Air Corps and placed under General Headquarters.[168] In December 1940, General Brett further recommended that there ought to be three Assistant Secretaries of War to correspond to the three Deputy Chiefs of Staff. Late in December, Secretary Stimson named Robert A. Lovett as his special assistant for all air matters, and in April 1941 Lovett would be named to the post of Assistant Secretary of War for Air which had been vacant since 1933.[169]

The Army's First Aviation Objective necessitated an expanded subordinate command organization within the GHQ Air Force. On 26 February 1940, the GHQ Air Force had already established an Air Defense Command at Mitchel Field, and it planned to establish a Bombing Command, which, like the Air Defense Command, would be directly subordinate to the GHQ Air Force commander. Instead of moving in this functional direction, however, the Army's First Aviation Objective demanded a geographical distribution of air units into the Northeast, Northwest, Southeast, and Southwest Air Districts, which were thought of as being defensive air theaters of operations within the United States. In the event of the establishment of theaters of operations outside the United States, Arnold suggested that the GHQ Air Force commander would detail one of the air district commanders to command the air component of the theater. These districts were activated on 18 December 1940, with headquarters at Mitchel Field, McChord Field in Washington, MacDill Field in Florida, and March Field in California. The Air Defense Command at Mitchell was superseded and absorbed by the Northeast Air District.[170]

"A numerically inferior air force has been phenomenally successful in stopping the unbroken chain of victories of the world's strongest air power," wrote Brigadier General Carl Spaatz on 29 February 1941 in reporting his observations of the British victory over the Luftwaffe. "A great part of this British success has, undoubtedly," he continued, "been due to the realization for the

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necessity of a unified command which centralizes control of all military air matters under an air high command concerned solely with air matters." Having been promoted to higher rank and made Chief of the Air Corps Plans Division, Spaatz recommended that a staff study be initiated at once "with a view to adopting the better features of the British Air Organization and providing an air organization and an air high command for the efficient control of the military aviation of the United States."[171]

Although the Air Corps had gained increased autonomy, General Brett continued to protest that too much vital time was lost in getting air matters cleared through the General Staff. After conference with Brett and Arnold on 26 and 27 March 1941, Marshall issued orders that the Chief of Air Corps would prepare for final action all papers pertaining to purely Air Corps matters, except those pertaining to war plans and intelligence, and that the Deputy Chief of Staff for Air would be responsible for coordination in air matters. Secretary Stimson, moreover, directed that still further steps would be taken to place the air arm under one responsible head. By May 1941 the Air Corps Plans Division prepared a reorganization which was put into effect by the publication of a new Army Regulation 95-5 on 20 June 1941. This regulation created the Army Air Forces, headed as chief by Arnold, who continued to be Marshall's Deputy Chief of Staff for Air. The Army Air Forces was given authority to coordinate the Office of Chief of Air Corps, the Air Force Combat Command (the GHQ Air Force was so redesignated), and all other Army air elements. Direct responsibility for Army aviation matters was given to the Chief of the Army Air Forces, who was to be assisted by the Air Staff. Arnold formed the Air Staff by removing most of the Plans Division from the Office of Chief of Air Corps and designating its sections as A-1 Personnel, A-2 Intelligence, A-3 Operations and Training, A-4 Supply and Maintenance, and Air War Plans. The Air War Plans Division was charged to prepare "over-all plans for the control of the activities of the Army Air Forces."[172]

Within the Air Force Combat Command, the beginning of the Army's Second Aviation Objective demanded further internal expansion. At its establishment, the Air Force Combat Command took command over the First, Second, Third, and Fourth Air Forces, the former air districts which had been redesignated on 17 March 1941. Placed under command of the similarly numbered air forces, the I, II, III, and IV Interceptor Commands were constituted on 26 May 1941 and were activated a few days later. The I, II, III, and IV Bomber Commands were constituted on 4 September 1941 and were quickly activated.[173] With the implementation of the Second Aviation Objective, the War Department also resolved to make reforms in the organization of the corps and army observation squadrons, which had always been assigned to ground force commands. As a result of fiscal year 1938 expansions, eleven corps and army observation squadrons were included in the Air Corps strength, and 21 National Guard observation squadrons were inducted into federal service during fiscal year 1941.

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Based upon the lesson that Luftwaffe fighters easily destroyed slow-flying Allied observation planes and captive observation balloons, the War Department decided in the autumn of 1940 to abandon observation balloons and develop two types of observation planes: a short-range, slow-flying liaison type and a long-range, relatively high-performance observation aircraft. In the Army's spring maneuvers of 1941, however, General McNair concluded that observation equipment and tactics had not progressed any since 1918. In Washington there was a growing appreciation of the fact that the observation squadrons were orphans which had been cut off for too long from the advancing Air Force. On 3 July 1941, General Emmons and General McNair accordingly agreed to establish an Air Support Section which would represent General Headquarters and Air Force Combat Command and that all observation squadrons would be gathered into groups and assigned to five air support commands under the Air Force Combat Command. The War Department directive for the reorganization was issued on 25 July, and on 30 August Command issued orders establishing the 1st (Mitchel), 2d (Will Rogers Field, Oklahoma), 3d (Savannah, Georgia), 4th (Hamilton Field, California), and 5th (Bowman Field, Kentucky) Air Support Commands. These commands were designed to support the four continental armies and the armored force. They were immediately charged to organize parent groups for all observation squadrons: while the groups would continue to be assigned to armies, corps, and armored forces, they would be detached from the ground forces for a considerable portion of each year in order that the air support commands might superintend their basic air training.[174]

* * * *

With the expansion of the Air Corps after 1939, the capabilities and functions of the Air Corps Board were progressively reduced and eventually dissipated. Following the successful completion of Field Manual 1-5, Employment of the Aviation of the Army, in the winter of 1939-40, the War Department and the Office of Chief of Air Corps charged the Board to produce a number of manuals on tactics and techniques concerned with air attack, air fighting, air reconnaissance and observation, air navigation, aerial photography, combat intelligence, and signal communications, the whole task to be completed not later than 1 June 1940. Since the preparation of manuals was only a part of the small Air Corps Board's mission of tactical testing and development, it had always depended heavily upon the Air Corps Tactical School for much of its "pick and shovel work." During the school year 1939-40, however, the Tactical School ran four accelerated courses, each for 100 officers, and had little time to assist the Board. In the winter of 1939-40, moreover, several of the mature officers of the Board completed their tours at Maxwell and other experienced officers preferred command assignments to the often-discouraging work on the Board. Recognizing that Lt. Col. Edgar P. Sorenson, who took over as Air Corps Board director in January 1940, faced personnel difficulties, the Air Corps directed

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him to use Tactical School people where possible and to call in experts from other air commands to perform needed research. Using temporary duty personnel, the Board completed drafts of each of the required tactics and techniques manuals and forwarded them to Washington early in May 1940, where they were subsequently published with little or no revision.[175]

As a part of the Army's First Aviation Objective and in view of the establishment of the 23d Composite Group at Maxwell Field for test and demonstration purposes, Colonel Walter R. Weaver, Commandant of the Air Corps Tactical School, proposed on 17 January 1940 that an Air Corps Tactical Center be established at Maxwell with academic, research, and test departments. Weaver also recommended that the Air Corps Board should be reorganized to comprise the commander of the Tactical Center and three departmental directors. General Arnold was willing to commend the proposal, but he was unwilling to act on it. He specifically feared that the Air Corps Board might become a "rubber stamp agency" for academicians at Maxwell.[176] As a result of the accelerated course, moreover, nearly all regular air officers completed the Tactical School, and the Air Corps needed Maxwell Field to become the site of a new Southeast Training Center. Effective on 30 June 1940, the Tactical School was accordingly suspended and its faculty was reduced to seven caretaker officers. Looking at the new state of affairs in September 1940, Arnold asked his Plans Division why the Air Corps Board should not be brought to Washington and put to work evaluating information received from Europe. The Plans Division agreed that the Board ought to evaluate these lessons but it considered that it was "vital that the Air Corps Board continue its present work at its present location and away from the turmoil of this office."[177]

In view of the many changes which were sweeping the War Department in 1941, it is possibly remarkable that any doctrinal lessons at all were committed to paper that year. In the spring of 1941, however, Colonel Sorenson, who was now both the Commandant of the inactive Tactical School and the Director of the Air Corps Board, used available personnel to complete a revision of Field Manual 1-5, to include matter on the aerial support for armored forces and to prepare a new manual on weather. Pointing out that the responsibility of the Air Corps Board for preparing training literature was causing undesirable delay in its accomplishment of more important test and evaluation studies, Colonel Sorenson recommended that he be permitted to organize a small Training Literature Unit, with at least four qualified officers and five professional civilians, and put it under the Tactical School. With approval from the Army Air Forces, this action was taken on 1 July 1941.[178] This decision was no sooner made than General Brett pointed out that Army Regulation 95-5 charged the Air Force Combat Command with "the development of doctrines of air tactics and technique of Air Force." Brigadier General Muir S. Fairchild, the Executive of the Office of Chief of Air Corps, protested that the arrangement would be too awkward to work, but General Spaatz, now Chief of Air Staff of the Army Air

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Forces, ruled that the Air Force Combat Command would develop doctrines and forward drafts of such literature to the Chief of the Army Air Forces. The Chief of Air Corps would receive the drafts, prepare them for publication, and, following final approval of the Army Air Forces, submit them to the War Department Adjutant General for publication.[179]

In July 1941, Colonel Sorenson was summoned to Washington to serve as Assistant Chief of Air Staff, Intelligence, and several acting directors now headed the Air Corps Board, which was physically transferred from Maxwell to the new Air Corps Proving Ground at Eglin Field, Florida, on 10 September 1941. During the summer of 1941, the Air Corps Tactical School with its Training Literature Unit was physically transferred to Washington, where it was made responsible to the Air Corps Training and Operations Division. Here the Training Literature Unit was greatly expanded by the assignment of reserve officers from colleges and universities, but its major work was the editorial production of technical manuals and extension courses. At Eglin Field, the remnant of the Air Corps Board became moribund. According to the recollection of Colonel H. G. Montgomery, who was assigned to the Board in the autumn of 1941, the Board continued to do good work but many of its reports were promptly filed and forgotten by Air Staff divisions which disagreed with the conclusions and recommendations. In a final effort to save the Board, its director wrote personally to Arnold recommending that a whole new group of officers should be assigned to the Board if the ones serving were not to be believed. This action went without result.[180]

As General Fairchild had protested the divided responsibility for the formulation and promulgation of doctrine was indeed awkward and the contemplated cooperation was not going to materialize. Under the Air Force Combat Command, test and experimentation in air defense was centered at the I Interceptor Command at Mitchel Field. Major Saville, now the executive officer of the I Interceptor Command, visited Great Britain early in 1941, and, in the autumn of that year, following the nation's first large-scale air defense maneuvers, he prepared the draft of an air defense doctrine which integrated pursuit interceptors, antiaircraft artillery, barrage balloons, and signal air warning units into a coordinated air defense establishment. This draft manual distinguished for the first time between "air defense," which was a direct defense against enemy air operations, and "counter air force operations," which were said not to be properly within the scope of air defense.[181] The draft of the manual provided a basis for air defense training and organization, but it would not be officially approved and published. Based upon the agreement between Emmons and McNair, the Air Support Section of their respective commands was made responsible for the supervision of cooperative air-ground training and for the development of air support doctrine. With the passing of time, the Air Support Section would produce a doctrinal manual, but during 1941 no one knew how an air support command was to support an army or what its composition would be. The only War Department letter touching on the subject

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on 7 October 1941 merely stated: "Air Support Command may be attached to army or armored force upon entry into Theater of Operations or as directed by the Theater Commander."[182]

With the Air Corps Board in a moribund condition, the Army Air Forces turned to other devices for basic thinking. On 11 October 1941, the Assistant Chief of Air Staff, Operations, thus assembled a special board of knowledgeable officers headed by Colonel Earl L. Naiden to study and make recommendations on the future development of pursuit aviation. This ad hoc board assembled, studied the problem, and recommended on 27 October that the Army Air Forces should develop high and low altitude interceptors and night fighters and long-range, multi-place fighter escorts, with the lowest priority to be given to the escort fighters. Although it arrived at a decision, Naiden's ad hoc Pursuit Board protested that no group of men ought to be expected to plunge into the middle of a complex problem, assimilate background material, and formulate definitive answers. The Pursuit Board accordingly recommended that the Army Air Forces should establish an operational requirements agency which would be able to maintain a current familiarity with developmental problems and be prepared to recommend guidance to General Arnold.[183]

* * * *

Although War Department planning remained committed to the defense of the United States and its possessions, President Roosevelt grew increasingly aware that America's security required the defeat of the Axis powers. In May 1938 the Joint Army-Navy Board and its adjunct Joint Planning Committee addressed themselves to the preparation of a new series of Rainbow strategic war plans, of which Rainbow 5 visualized hemispheric defense coupled with concerted action between the United States, Great Britain, and France to effect the decisive defeat of either Germany or Italy, or both. The collapse of France and the adherence of Japan to the Axis on 27 September 1940 required the scope of Rainbow 5 be broadened and expanded.[184]

In recognition of the growing peril of the Axis to the Free World, Anglo-American military staff conferences began in Washington on 29 January 1941 with the purpose of laying down principles of cooperation "should the United States be compelled to resort to war." The three aviation experts at the conference were Air Vice-Marshal John C. Slessor of the Royal Air Force, Colonel J. T. McNarney, an Air Corps officer assigned to the War Plans Division, and Captain DeWitt C. Ramsey of the Navy. On 27 March, the military experts formally approved a document subsequently cited as American-British Conversations-1, or more usually ABC-1, which visualized a basic Anglo-American war plan and a summary of strategic policies. Since Germany was the most powerful Axis partner, the main Allied effort would be conducted in the European theater. The United States would expect to depend largely upon its Pacific Fleet to maintain a defensive against Japan in the Far East. The Allied offensive in

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Europe was to include economic pressure through blockade, a "sustained air offensive" against German military power, early defeat of Italy, and the build-up of forces for an eventual land offensive against Germany. As rapidly as possible, the Allies would achieve "superiority of air strength over that of the enemy, particularly in long-range striking forces." On the basis of ABC-1, the Joint Planning Committee rapidly completed War Plan Rainbow 5, and the Secretaries of War and Navy approved both ABC-1 and Rainbow 5 and sent them to President Roosevelt on 2 June 1941. The President indicated his satisfaction with the plans, which he said should be returned for his formal approval in case of war.[185]

In Order to provide some realistic guidance to the Office of Production Management (which had superseded the National Defense Advisory Commission), President Roosevelt requested the Secretaries of War and Navy on 9 July 1941 to explore "the over-all production requirements required to defeat our potential enemies."[186] In the War Department, the War Plans Division broadened the scope of the problem by undertaking to base the production program on a prior determination of strategic concepts, and, after some delay, the Army Air Forces Air War Plans Division, headed by Lieutenant Colonel Harold L. George, was brought into the problem. At this time the only other officers assigned to the Air War Plans Division were Lieutenant Colonels Orvil Anderson and Kenneth Walker and Major Haywood S. Hansell, but George secured the temporary services of several other officers including Lieutenant Colonels Max F. Schneider (A-4) and Arthur W. Vanaman (A-2) and Majors Hoyt S. Vandenberg (A-3), Laurence S. Kuter (G-3), and Samuel E. Anderson (Combat Command). The War Plans Division had asked only to know the maximum number of air squadrons which the Army Air Forces might ultimately require to garrison a great number of geographic sites and to hold as "reserves of opportunity," but George and his associates (most of whom had been faculty members at the Air Corps Tactical School) undertook to prepare a comprehensive air plan for the defeat of the Axis. Beginning on 4 August, teams of two or three officers worked up separate subjects and supporting tabs, and AWPD-1, "Munitions Requirements of the Army Air Forces" was completed on 12 August 1941."[187] The completion of the first major strategic air war plan by the newly-formed Army Air Forces staff in only nine days was a notable achievement which marked both the apex of prewar air force doctrinal thought and a blueprint for the air war which would follow.

As conceived in AWPD-1 the military mission of the United States was the defeat of the nation's potential enemies--Germany and her allies. The air mission outlined followed ABC-1 in that it required a sustained air offensive against German military power, supplemented by air offensives against other regions under enemy control which contributed to that power. The air mission also required the air force "to support a final offensive, if it becomes necessary to invade the continent" and "to conduct effective air operations in connection with Hemisphere Defense and a strategic defensive in the

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Far East." The air planners thought it improbable that a land invasion could be mounted against Germany for at least three years, and, if the air offensive were successful, a land offensive might not be necessary. Three lines of U.S. air action were open against a German economy and society that was already strained by the military camapign in Russia. The first line of air action--which would accomplish the air mission in Europe--required disruption of Germany's electric power system and transportation system, destruction of Germany's oil and petroleum resources, and undermining of Germany's morale by air attack against civilian concentrations. The second line of air action--representing intermediate objectives which might be essential to the accomplishment of the principal effort--required neutralization of German air forces by attacks against their bases, aircraft factories, and aluminum and magnesium factories. A third line of action--which might have to be undertaken to safeguard operating air bases--included actacks against submarine bases, surface seacraft, and invasion ports. The planners advocated a concentration of daylight precision-bombing attacks against the principal objectives. They did not favor attacks against cities unless the enemy people were known to be low in morale either because of sustained suffering and deprivation or because of a recognition that their armed forces could not win a favorable decision. The planners believed that by relying on speed, massed formations, high altitude, defensive fire power and armor, and simultaneous penetrations at many places, heavy bombers could make deep penetrations of German defenses in daylight hours. They nevertheless felt that it would be wise to develop a large, heavily-armed escort fighter, which would have the range of and a speed slightly superior to the bombers it would escort.

Simultaneously with the strategic air campaign against Germany, other Army Air Force units would be dispersed in Alaska, Hawaii, Iceland, and South America to maintain Hemispheric Defense. To maintain a strategic defensive in Asia, the planners visualized a build-up of bomber forces in the Philippines and the shuttle employment of B-29 or B-32 aircraft from Alaska and the Philippines to a refueling and staging area in Siberia. This concept was so persuasive, in fact, that the planners urged immediate efforts be made to deploy four groups of B-17's or B-24's to the Philippines in order to deter the Japanese from moving toward the Netherlands East Indies. It was assumed that the Hemisphere and Asian defensive forces would provide the aircraft needed to control adjacent seas against the operation of hostile seacraft.

In establishing requirements for pursuit aircraft, the planners reasoned that the principal role of pursuit was defensive--the protection of bases and vital areas--and that air superiority would be won by bombers. Because of an anticipated shortage of air bases, especially in England, the air planners urged that pursuit complements should be kept at a minimum level consistent with safety in order that the strength of the bombardment strike force would not be reduced. Much the same line of reasoning was applied to air support

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aviation: ground operations were not expected to be mounted until strategic air campaigns had already attained a preponderant air superiority, and, in appropriate situations, all available combat aviation would support theater operations of ground armies. Both for training with ground forces and for eventual oversea employment in air support forces, however, the Air Force required pursuit aircraft, light bombers, dive bombers, observation aircraft, photo mapping planes, and transports and gliders. In addition to the transport aircraft required for employment of airborne forces, the air planners placed a requirement for long and medium range transport aircraft which would provide quick delivery of essential aircraft and engine spares from air depots to worldwide operating units.

Lacking any valid aircraft production data based on experience, the air planners could not offer a definite schedule for the attainment of the air units they visualized. They expected, however, that by 1943 or 1944 the Army Air Forces would have an "interim expedient force" which would include 203 groups and 108 observation squadrons and a grand total of 59,727 airplanes. Of this force, 10 groups of B-25's and B-26's, 20 groups of B-17's and B-24's, 24 groups of B-29's, and 21 groups of pursuit would be committed to the air offensive against Germany. The smaller bombers would be used only because they were available, and the planners specified that an ideal force from a standpoint of economy would consist entirely of B-29's. The major difficulty in mustering the air attacks against Germany appeared to be the scarcity of airfields in England and in the Middle East, the latter area being tentatively designated as the operating location for long-range B-29's. Based on intelligence of 154 strategic targets in Germany, expected bombing accuracy, and a desire to complete the air campaign in a six months' period, the planners computed that 98 bombing groups would be required, of which only 54 could be based in England and the Near East. For this reason, they stated an urgent requirement for the development of 44 groups (3,740 aircraft) of bombers which would have a 4,000-mile tactical operating radius. These planes would be able to operate against Germany from bases in Newfoundland, Greenland, Africa, India, or the northeastern United States. The employment of these 4,000-mile bombers would permit some reductions in other type units, with the result that the "ultimate force" which could not be ready before 1945 would comprise 239 groups and 108 observation squadrons and a grand total of 63,467 planes.

At its completion on 12 August 1941, AWPD-1 was signed by General Arnold and its findings were immediately the subject of almost daily briefings to Air Corps and War Department officers. Comments were generally favorable, although Lieutenant Colonel Clayton Bissell, an Air Corps officer in the War Plans Division, argued that the need for an escort fighter was just as great as the need for a 4,000-mile bomber, and he thought it peculiar that the plan called for only 13 experimental escort fighters but called for 3,740 of the 4,000-mile bombers, when the latter would be just as much a developmental problem as the former.[188] Mr. Lovett tacitly

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approved the study and General Marshall marked it "Okay G.C.M." on 1 September. On the afternoon of 11 September and the morning of 12 September, George, Walker, and Kuter presented AWPD-1 to Secretary Stimson and Assistant Secretary John J. McCloy. Mr. Stimson apparently accepted the study as a matter-of-fact statement of the air forces required to defeat the Axis, but he mentioned that the expansion of aviation manufacturing facilities and Air Corps training establishments proposed in the plan would depend entirely upon the nation being in a war spirit or at war. McCloy expressed pleasure that AWPD-1 was offensive instead of defensive in nature because, he said, ground and air plans were being stifled by the out-of-date conception of hemispheric defense. McCloy felt that both the ground and air forces had made a major error in failing to press for an early seizure of African air bases.[189] While the briefings were in progress, AWPD-1 also went forward to the War Plans Division and from there to the Joint Army and Navy Board. There was some reason for optimism that the plan might be acceptable to the Joint Board, since, in view of the increased importance being accorded to air operations, General Arnold and the Chief of the Navy Bureau of Aeronautics had won seats on the Joint Board on 2 July 1941. On the board, however, General Arnold had found that he was not a full-fledged member. "When air problems came up," he would recall, "I sat as a member of the Board; at other times I could sit in as a 'listener' but not as a member."[190]

When the Joint Board issued its "Estimate of United States Over-All Production Requirements" on 11 September 1941, it accepted AWPD-1 as a statement of Army Air Forces requirements and incorporated its tabulations in the joint estimate. Like AWPD-1, the Joint Board estimate proposed that hemispheric defense was an insufficient national policy. The major national objectives of the United States which were related to military policy were believed to be: preservation of the territorial, economic, and ideological integrity of the United States and the Western Hemisphere; prevention of the disruption of the British Empire; prevention of further expansion of Japanese territorial dominion; eventual establishment in Europe and Asia of balances of power which would most clearly ensure political stability in those regions and the future security of the United States; and, as far as practicable, the establishment of regimes favorable to economic freedom and individual liberty. The fundamental military policy of the United States was hemispheric defense, but the attainment of the complete list of national policies could be effected "only through military victories outside this hemisphere, either by the armed forces of the United States, by the armed forces of friendly powers, or by both."[191]

Based upon its assessment of the strategic objectives of Germany and Japan, the Joint Board stated that "the principal strategic method employed in the immediate future should be the material support of present military operations against Germany, and their re-enforcement by active participation in the war by the United States, while holding Japan in check pending future developments."

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In view of the impossibility of mounting an early land offensive against Germany, the Board recommended a continuation of the economic blockade, the conduct of land offensives in distant regions where German troops were weak, the prosecution of air and sea offensives against German military, economic, and industrial resources, and the support of subversive activities in conquered territories. The Board warned: "Naval and air power may prevent wars from being lost, and by weakening enemy strength may greatly contribute to victory. By themselves, however, naval and air forces seldom, if ever, win important wars. It should be recognized as an almost invariable rule that only land armies can finally win wars."

The Joint Board's statement that "only land armies can finally win wars" indicated a polite disbelief of the contention in AWPD-1 that a strategic air offensive against Germany might preclude the need for a land campaign. In its annex to the Joint Board report, the Army insisted that the United States should have forces in being for a land offensive against Germany by 1 July 1943 and that prior to the undertaking of a land campaign against the Continent of Europe sea and air forces should have established control of the Atlantic, accomplished "overwhelming air superiority," rendered the economic and industrial life of Germany ineffective, weakened the combat effectiveness of German air and ground units, and reduced the popular support of the German people for the continuation of the war.

Although a summary with verbatim extracts of the Joint Board Estimate was published in the Chicago Daily Tribune on 4 December 1941 as an exposure of Roosevelt's "secret war plan," neither the Joint Board Estimate nor AWPD-1 was a war plan, but rather an effort to provide the Office of Production Management with a good feel for what America's wartime military requirements might be. As a matter of fact, the visualization in AWPD-1 to the effect that the Army Air Forces would require an "ultimate force" of 239 air groups and 108 observation squadrons turned out to be an estimate that was remarkably similar to the 269 tactical groups that the Army Air Forces would possess at its maximum strength during World War II.[192] Much of the strategic thought expressed in the two studies would turn up in one form or another during World War II. The studies, moreover, were productive of at least two immediate actions. On 11 April 1941 the Air Corps had initiated a design competition for a high-altitude, 10,000-mile intercontinental bomber, and on 19 August General Arnold indicated that the project must be pushed. Both Douglas and Northrup submitted preliminary designs, and on 15 December 1941 a contract for the development of two experimental XB-36 aircraft was awarded to the Douglas Aircraft Company.[193] AWPD-1 also provided new hope that Japanese aggression could be deterred and that the Philippines could be defended.

In November 1938, when he had stated that only long-range bomber aircraft could affect Hitler's mad course toward war, President Roosevelt had appeared to grasp the close relationship between effective military force and the national foreign policy

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objectives. On 26 July 1941, however, President Roosevelt issued an executive order freezing Japanese assets in the United States and halting all trade with the aggressor nation. Both General Marshall and Admiral Harold R. Stark recommended against this action, reasoning that an embargo on Japan's oil supplies would force Japan either to surrender its long-range aggressive aims or--much more likely--strike for oil in the Netherlands Indies at the cost of war with the United States. Only belatedly, after the diplomatic move had been made, attention was given to the strengthening of the defense of the Philippines. In order to maintain the strategic defensive in the Far East, AWPD-1 recommended and the Joint Board Estimate accepted an immediate need for the movement of additional air units--principally four heavy bombardment groups--to the Philippines. On 18 August, Secretary Stimson approved a Philippine reinforcement plan including the movement of one B-17 group without delay and the arrival of three other groups there by February 1942. Whether or not the reinforcement could have been effected as scheduled--the Air Force Combat Command had difficulties getting together 35 B-17's for the first group and there was doubt that air facilities could have been readied by February--would remain academic for the Japanese found themselves becoming weaker as a result of the economic embargo at the same time that the United States was strengthening its Pacific garrisons. On 6 September 1941, Japan made the fateful decision to preempt with military force if diplomatic negotiations could not end the embargo. When negotiations deadlocked the Japanese began the war with an attack on Pearl Harbor on 7 December 1941, coinciding with a parallel assault on the Philippines.[194] Military ideas, concepts, and doctrine would now be tested in global warfare.

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CHAPTER 4

AIR FORCE THINKING AND WORLD WAR II

1. Planning and Analysis in the Army Air Forces

"In the nineteen-thirties, when air power was the unseen guest at those grim conferences which marked the Nazi march to power," observed General Henry H. Arnold on 4 January 1944, "the Army Air Corps, which preceded the Army Air Forces, had drawn its blueprints for war." The Air Corps Tactical School, Arnold would note, had developed the "strategic and tactical doctrines that would later guide our air campaigns in World War II."[1]

One week after the Japanese attack at Pearl Harbor, the Air War Plans Division sought to commit the United States and Great Britain to an air strategy against the Axis. Representing the thought of Harold George, Hansel, Walker,* and Orvil Anderson, AWPD-4, "Air Estimate of the Situation and Recommendations for the Conduct of the War," which appeared on 15 December 1941, advocated that the United States should give first concern to the protection of the Western Hemisphere and Great Britain and the sustenance of America's fighting men in the Philippines and then bend every effort toward the implementation of an air offensive against the Axis powers in Europe. Since a successful air offensive would have to precede the launching of any land or sea offensive, and, in as much as a powerful air offensive might be decisive in itself, the Air Plans study recommended that first priorities in war production should be given to the Army Air Forces and that sea and ground force priorities should be allocated "in the light of their contribution to the Air Force mission."[2]

The plan of action recommended by AWPD-4 included three phases of activity and sets of subordinate tasks, many of which would be undertaken concurrently. The first phase was to safeguard the United States and Great Britain through defense of existing possessions and extension of the defenses to Natal, the Cape Verde Islands, and Dakar. The second phase was to wage a decisive air offensive against the Axis powers in Europe, a defensive effort in the Far East, and to conduct a land invasion of Europe "when and if it becomes necessary." After the defeat of European enemies, the

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*This would be the last contribution of the 44-year old Kenneth Walker to Air Force doctrinal thought. Having been promoted to the rank of brigadier general, Walker was transferred to the Southwest Pacific in June 1942 where he assumed command of the V Bomber Command. He was killed in action on 15 January 1943, while on a B-17 mission over Rabaul. In 1943 he was posthumously awarded the Congressional Medal of Honor, and in 1948 Roswell Air Force Base, New Mexico, was renamed Walker Air Force Base in his honor.

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third phase was to be a sustained air offensive against the sources of Japanese military and civil strength, the employment of land forces when and if necessary, and the maintenance of sufficient flexibility to exploit opportune openings for decisive action against Japan. The plan recommended an air force of 90,000 airplanes, 3,000,000 men, and a production rate of 3,000 airplanes a month. The recommended air order of battle included 13 medium bomber, 64 heavy bomber, 32 B-29 or B-32 bomber, 59 long-range (4,000-mile) bomber, 35 light and dive bomber, 72 pursuit, and 82 transport groups, plus 159 observation and photographic squadrons. The plan posed a requirement for naval strength "capable of safeguarding our essential sea lanes of communication" and for ground forces sufficient to maintain the security of Allied base areas and eventually to undertake a final surface invasion of Germany and then Japan, if such became necessary.[3]

In reply to a request for information, the Air War Plans Division on 9 January 1942 also sought to attain a high degree of autonomy for the Air Force. On 24 October 1941, Brigadier General Spaatz had already formally proposed that GHQ be eliminated, that over-all command be returned to the Army Chief of Staff, that the General Staff be limited to considering broad policy, and that broad responsibilities should be delegated to the chiefs of Ground, Service, and Air Forces (the last already in existence). In its suggestions, the Air War Plans Division proposed that coordinate ground, air, and naval services be created, with unity of command to be secured by a common head of all armed services, who would report directly to the President and would have a small staff of ground, air, naval, production and supply, and political and economic warfare representatives. The Air War Plans Division urged that such an organization would provide each service with a desired freedom of action and at the same time ensure unity of command.[4]

Although the Air War Plans Division had forcefully asserted prevalent air doctrines, the United States was not going to adopt an undiluted air strategy nor would the Air Force attain full-fledged autonomy. Meeting in Washington between 22 December 1941 and 14 January 1942, the Anglo-American Combined Chiefs of Staff Arcadia conference did not favor such an overriding priority as AWPD-4 would have accorded to aircraft production but instead favored a Victory Program, calling for increases of air, land, and naval forces and for the allocation of resources for the manufacture of munitions in a sequence of limited schedules geared to successively approved operations. The combined staff planners accordingly accepted AWPD-1, with some modifications, rather than AWPD-4. As a result of agreements with the British, Secretary Stimson on 19 January 1942 authorized the Army Air Forces to expand during 1942 to a total of 115 groups, including 34 heavy bomber, 12 medium bomber, 10 light bomber, 31 pursuit, 12 transport, and 16 observation groups.[5]

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The Arcadia conference also established the mechanism for the direction of the Anglo-American war effort and a precedent looking toward unified command of combined forces in theaters of operations. From his experience in World War I in France, General Marshall held a conviction that "there must be one man in command of the entire theater--air, ground, and ships." Despite a lack of enthusiasm among the other military chiefs, Marshall convinced President Roosevelt and Prime Minister Churchill of the need to establish a unified American-British-Dutch-Australian Command (ABDACOM) in the Western Pacific-East Indies. From this time, the U.S. War Department believed that the Allies were committed to the establishment of a "Supreme Commander" in combined operations, but, as a matter of fact, ABDACOM would be disestablished on 23 February 1942, and future Allied theater commanders would not be given "supreme" authority. The question of the manner in which an Allied theater commander would receive his directives was solved at Arcadia by the establishment of the Combined Chiefs of Staff, a composite organization of the British chiefs of staff for army, navy, and air force and their American opposite numbers. The use of the British chiefs of staff committee as a model for the Combined Chiefs of Staff raised an awkward complexity in that the Army Air Forces was a part of the U.S. Army, whereas the Royal Air Force was a separate service. Arnold was nevertheless recognized as a member of the Combined Chiefs of Staff and of the Joint Chiefs of Staff. Replacing the old Joint Army and Navy Board, the Joint Chiefs of Staff informally came into being at Arcadia and held its first formal meeting on 9 February 1942.[6]

Sweeping changes in the organization of the War Department and the Army Air Forces closely followed the Arcadia agreements. Effective on 9 March 1942, the War Department was consolidated into three coordinate forces each under a commanding general: the Army Air Forces, the Army Ground Forces, and the Services of Supply (later the Army Service Forces). General Headquarters, the Office of Chief of Air Corps, and the Air Force Combat Command were abolished. The War Department General Staff was shaken up and approximately 50 percent of its personnel were to be from the air arm. The War Plans Division, soon renamed the Operations Division (OPD), became a central command post and planning authority for the War Department. Under the reorganization the mission of the Army Air Forces was specified as being "to procure and maintain equipment peculiar to the Army Air Forces, and to provide air force units properly organized, trained, and equipped for combat operations." Headquarters, Army Air Forces, thus became a supply and training agency, not primarily concerned with actual combat operations or strategic planning.[7]

As a part of the changes in the War Department, Headquarters, Army Air Forces, was rebuilt effective on 9 March 1942 on two levels of staff activity. At the policy staff level, the functions of planning and establishing policies were lodged in A-1 (Personnel),

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A-2 (Intelligence), A-3 (Training), A-4 (Supply), and Plans. The Plans Division was viewed as a coordinating agency for the other four policy staff divisions, since in theory it was not to be concerned with war planning. Three major directorates--Military Requirements, Technical Services, and Management Control--were the principal components of the operating staff level. At this level, Major General Muir S. Fairchild's Directorate of Military Requirements was described as a group of functional specialists whose research was to be the media through which combat lessons were to be reflected in training and procurement programs. General Fairchild had under him Directorates of Air Defense, Bombardment, Ground Support, War Organization and Movement, Base Services, and Individual Training. The directors of Air Defense, Bombardment, and Ground Support (which were usually called "type" directorates, because they were concerned with types of aviation) were to be experts in their respective classes of aviation and were charged with development of tactics and techniques for their specialties. The Director of Individual Training was charged with directing, supervising, and giving final approval to Army Air Forces training literature.[8] Since so much experience was now concentrated in the Directorate of Military Requirements, the Air Corps Board at Eglin Field was inactivated when the Army regulation that authorized it was rescinded on 20 May 1942. The Air Corps Tactical School was suspended as an active unit on 24 June 1942, and the people in its Training Literature Unit were integrated into the Training Aids Division of the Directorate of Individual Training.[9]

Although the War Department reorganization removed responsibility for operational planning from the Army Air Forces, President Roosevelt asked General Arnold on 24 August 1942 to submit his judgment as to the combat aircraft which should be produced in 1943 in order to gain complete air ascendancy over the enemy. Such a judgment could not be divorced from operational planning, although it had to follow approved strategy and thus define the air mission in terms of cooperation with surface campaigns. Brigadier Generals Kuter, now Deputy Chief of Air Staff, O. A. Anderson, Chief of Air Plans, and Hansell, who had been named Deputy Commander of the Eighth Air Force, undertook the study, which, when completed on 9 September 1942, was entitled AWPD-42, "Requirements for Air Ascendancy."[10] Requirements were based on air operations visualized for 1943 and early 1944 to include: an air offensive against Europe to deplete the Luftwaffe, destroy the sources of German submarine construction and undermine the German war-making capacity; air support for a land offensive in Northwest Africa; air support for land operations to retain the Middle East; air support for surface operations in the Pacific and Far East to regain base areas for a final offensive against Japan proper; and hemispheric defense, including antisubmarine patrol. To meet such a schedule of operations, the planners calculated the Army Air Forces would require 281 combat groups by 1 January 1944, including 76 heavy bomber, 43 medium bomber, 26 light and dive bomber, 70 fighter, 20 observation, 12 photo reconnaissance, and 34 troop carrier groups. The

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study proposed that 130,906 aircraft should be produced in 1943--75,416 for the Army, 33,050 for the Navy, and 22,440 for the Allies.

While it was prepared by several of the same officers who had written AWPD-1, AWPD-42 revealed something of the change in doctrinal thinking which was taking place in 1942. The former study had posed large requirements for B-29 and B-36 aircraft, but AWPD-42 expected few B-29's and no B-36's to come from production in 1943. It was also evident that it would be possible to base more bombers in Great Britain than had been thought earlier. The strategic philosophy of the two studies was virtually the same, but a new study of Germany's target systems was included in AWPD-42. The priority targets were stated to be airplane assembly plants, aircraft engine plants, submarine yards, transportation, power, oil, aluminum, and rubber. The air campaign would thus be designed to prepare the way for surface attack. While the changed target priorities reflected a growing demand for the establishment of air superiority over Germany, AWPD-42 confidently predicted that "our current type bombers can penetrate German defenses to the limit of their radius of operation without excessive losses."

Both AWPD-1 and AWPD-42 visualized that a land invasion of Europe would probably follow the strategic bombing campaign, but the timing of the air offensive had been changed. AWPD-1 had expected six months of intensified bombing to begin in mid-1942 but AWPD-42 necessarily postponed it until late 1944. The failure to receive overriding priorities for aircraft production, plus the diversion of heavy and medium bombers to the U.S. Navy for patrol and antisubmarine warfare, had forced a postponement of the strategic bombing offensive. In order to conserve strategic bomber resources, AWPD-42 proposed that there should be no allocations of heavy or medium bombers to the Navy from 1943 production.[11] This provision, together with the competition that the proposed aircraft production program would have posed to the building of ships, aircraft carriers, and naval aircraft, caused the Navy to reject AWPD-42 out of hand. In a compromise on 26 November 1942, President Roosevelt finally approved a 107,000 aircraft program and substantial portions of the Navy shipbuilding program.[12]

The decisions made in the winter of 1942-43 as to the final force objectives of the United States marked great changes in the internal composition of the Army. In the summer of 1940, the U.S. Victory Program had called for a ground army of 215 divisions and an air force of 84 groups, but in the winter of 1942-43 the U.S. Army changed its force plans to include 89 divisions and 273 air force groups, the 273 groups being considered to be the "saturation point" in the development of Army air power. Looking toward the accomplishment of the 273 group objective, the Army Air Forces activated a total of 269 combat groups by December 1943. Some of these groups were paper units and not a few of them were pledged to hemispheric defense. An agreement between the Army and Navy on 10 June 1943 led the Navy to take charge of antisubmarine defense, thus

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reducing Army requirements for hemispheric defense air groups. As air planners had earlier predicted, moreover, the acquisition of more efficient B-29 Superfortress bombers permitted reductions in the number of bomber units needed. In a readjustment of the Army Air Forces program, most of the paper units among the 269 combat groups were inactivated in the spring of 1944. Thereafter the Army Air Forces built upward toward the maximum combat strength of 243 groups which it would attain in February 1945. This maximum combat strength included 25 very heavy bombardment, 72 heavy bombardment, 20 medium bombardment, 8 light bombardment, 71 fighter, 13 reconnaissance, 29 troop carrier, and 5 composite groups.[13] Neither the peak strength of 269 groups nor the maximum combat strength of 243 groups equalled the 281 combat groups which AWPD-42 had predicted would be required for air supremacy over the Axis, but reduction in requirements for hemispheric defense and the arrival of the B-29 very heavy bombers in the combat inventory permitted reductions in total group requirements.

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During the frantic months in which the Army Air Forces was mobilizing for war, General Arnold obviously considered it appropriate that the largest concentration of experienced air officers should be situated in Headquarters, Army Air Forces. The organization of the Headquarters also reflected Arnold's notions about how a staff should work. Arnold often remarked that laborious staff review procedures tended to emasculate bold air concepts and decisions: "termites" in a staff could eat up good ideas before they could get through to the top. Arnold accordingly saw nothing wrong in the division of his headquarters into a policy and operating staff wherein 31 individuals had direct access to him and authority to sign action papers by his authority.[14] Air Force field commanders, on the other hand, complained of conflicts in orders and directives. The same thing was true of doctrinal and policy statements. While the Director of Military Requirements was chiefly concerned with the formulation of doctrine and employment policies, his status was essentially advisory and other directorates issued instructions in various forms. Numbers of miscellaneous publications, each containing specialized fragments of air force ideas, were sent out to field commanders. These collections became too voluminous for any commander to study, and the whole collection did not form a consistent and complete statement of air doctrines and employment policies. Colonel Charles G. Williamson, a division chief in the Directorate of Bombardment, pointed out these facts in a discussion of air policies and doctrines written on 3 March 1943. "In military matters, especially those of the magnitude of the operations of the present war, where mistakes and inconsistencies cost thousands of lives and millions of man-hours," Williamson warned, "it is all the more important that there be

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clearly expressed guiding principles which are clearly understood by all planners, as well as by all who are charged with the handling of the forces in the field."[15]

Heavily concerned with day-to-day operations which allowed little time for reflective thought, the type directorates of Air Defense, Bombardment, and Ground Support within the Directorate of Military Requirements began to employ different means for the evaluation and preparation of the doctrine that they were expected to provide. In the March 1942 reorganization of the Army Air Forces, the Directorate of Ground Support, headed by Colonel David M. Schlatter, superseded the Army Air Support Staff Section which had been jointly manned by General Headquarters and the Air Force Combat Command. Colonel Schlatter inherited a virtually complete draft manual which had been drawn up on the basis of experience with the new air support commands in the Louisiana and Carolina maneuvers of 1941, and this manual was published as War Department Field Manual 31-35, Aviation in Support of Ground Forces, on 9 April 1942. This manual was heavily concerned with organization and had little to say about operations. It provided that the air support commander would function under the Army commander: it stated that an air support command, as one of several air force commands in a theater of operations, was "habitually attached to or supports an army in the theater." Aviation units, moreover, could be "specifically allocated to the support of subordinate ground units." The commander of a supported unit was given the authority to make the final decision as to target priorities: "the most important target at a particular time," the manual stated, "will usually be that target which constitutes the most serious threat to the operations of the supported ground force." At best, the air support command would provide a centralized control for observation groups, transport groups, or other combat air units assigned or attached to it. Both Colonel Schlatter and Colonel William E. Lynd, who had shared in drawing up the manual, considered that Field Manual 31-35 was highly tentative and subject to change.[16] As a matter of fact, ground force officers did not like the centralized control of support aviation inherent in the air support command, for they frankly favored the attachment or assignment of air units directly to the ground units they would support. Beginning on 7 December 1942, a special Air Support Board with ground and air members met in Washington to make revisions in the manual, but, even though this board proposed no radical changes in the manual, the revised manuscript was not approved by either the Army Air Forces or the Army Ground Forces.[17]

Recognizing that the Army Air Forces had much to learn about air defense and electronic fighter control, the Air Force Combat Command shortly before its demise laid plans for the establishment of a special school to deal with these matters, and on 26 March 1942 the Third Air Force accordingly established an Air Defense Operational Training Unit at Orlando, Florida. When the reorganization of the Army Air Forces was completed, the Orlando activity was

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designated as the Fighter Command School and placed directly under Headquarters, Army Air Forces. In its mission statement, Colonel Gordon P. Saville, Director of Air Defense, charged the school to train air defense personnel to develop doctrines, tactics, and techniques of air defense, to test air defense equipment and operational procedures, and to recommend the organization of air defense for the United States and overseas theaters. A pursuit group, an aircraft warning regiment, a searchlight battalion, and other necessary troops were assigned to the school. In order to accomplish its research missions, the Fighter Command School established an operational requirements department and a tactics and technique development department, and it established an Air Defense Board, with the directors of the school's academic and research departments serving as members. As a first project, the Air Defense Board revised the draft air defense manual which Saville had prepared in the winter of 1941-42. The product was published as War Department Field Manual 1-25, Air Defense, on 24 December 1942. By this time, the Air Defense Board had either completed or had under test 74 other air defense projects.[18]

By the spring of 1942 the Air Staff in Washington began to recognize that the closing of the Air Corps Tactical School--while doubtlessly necessary--had been essentially short-sighted. In June 1942, Colonel Don Z. Zimmerman, the Director of Weather, called attention to the great lack of tactical experience among new Air Force officers and recommended that the Army Air Forces should reopen the Tactical School, using returned combat veterans as an instructional staff. General Fairchild enthusiastically received the proposal, and the Training Aids Division was charged to lay the ground work for the new school. Decision was soon made to recreate an expanded tactical school at Orlando and to use the Fighter Command School as one of the departments of the new school.[19]

After a summer of planning, the Army Air Forces School of Applied Tactics was established at Orlando on 27 October 1942 and charged both to "train selected officers under simulated combat conditions" and to "develop, prepare, and standardize training literature and . . . other training material."[20] In an additional development on 12 November, the Army Air Forces established, within the School of Applied Tactics, the Army Air Forces Board, the Directorate of Academic Training, the Directorate of Tactical Development, the Directorate of Operations and Facilities, and the Directorate of Training Aids. Within the Directorate of Academic Training were established Departments of Air Defense, Bombardment, Air Support, and Air Service. The AAF Board was to consist of a chairman, an executive, and additional members to be appointed by General Arnold as well as the commandants of the school departments. It was charged to "determine major questions of policy and doctrine for all activities of the school and such other matters as may be assigned to it by competent authority." The Director of Tactical

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Development was charged with conducting test operations of aircraft and equipment and with improving the strategy, tactics, and techniques of air warfare. The Army Air Forces undertook to exercise control over the School of Applied Tactics through the Directorate of Military Requirements, and the Directors of Air Defense, Bombardment, Air Support, and Base Services were to approve the doctrines, tactics, and techniques taught in the departments of the school.[21]

The terse language of Army Air Forces regulations give the impression that the AAF Board was to be a school activity, but on 16 November 1942 General Fairchild instructed Brigadier General Hume Peabody, the Commandant of the AAF School of Applied Tactics, that the AAF Board ought to be developed as an Army Air Forces activity. "The purpose of the Army Air Forces Board," Fairchild wrote, "is to study the over-all picture of Air Force matters with a view to making recommendations to the Commanding General, Army Air Forces, on such matters as Air Force strategy, technique, organization, equipment, training, etc., of all units making up an Air Force and of the Air Forces as a whole."[22] Since the Air Defense Board was already active, General Peabody directed the Air Support, Air Service, and Bombardment Departments to form similar boards of key officers to conduct research, development, and tests of techniques, organization, and equipment as directed by the AAF Board, the directorates in Washington, or other authorized governmental agencies. In addition to the four sub-boards, Fairchild directed Peabody to form an Equipment Board as a fifth sub-board. This board received directives for testing from the AAF Materiel Command and usually reassigned its projects to one of the other departmental sub-boards, depending on the type of equipment to be tested.[23] General Peabody assumed the duty as chairman of the AAF Board, and he planned that it would function in a supervisory capacity. The AAF Board held its first recorded meeting on 2 February 1943, and it was soon meeting at regular intervals to review completed projects and to forward them after approval to Headquarters, Army Air Forces.[24]

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The organization of the Headquarters, Army Air Forces, adopted in March 1942 had been designed to build quickly the world's most powerful air force. An operating echelon had been established to perform typical functions found in an air task force, and the directors of the operating echelon had been authorized to act with broad discretion on behalf of General Arnold. By the winter of 1942-43, however, the expansion program was firmly in hand. Upon his return home from the meeting of the Combined Chiefs of Staff in Casablanca in January 1943, General Arnold stated that AAF Headquarters "must stop operating" and spend its time thinking "in order that we can correctly tell our commanders what to do and maybe sometimes when to do it" but not how to do it. As a result of

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continuing study, Headquarters, Army Air Forces, was greatly consolidated on 29 March 1943. Most staff functions were concentrated in six Assistant Chiefs of Air Staff: Personnel; Intelligence; Training; Materiel, Maintenance, and Distribution (MM&D); Operations, Commitments, and Requirements (OC&R); and Plans. The old sub-directorates were abolished. The functions of the Air Defense, Bombardment, and Air Support Directorates were divided between OC&R and Training, and the Directorate of Individual Training was transferred to Training. Among the responsibilities assigned to OC&R were those for determining proper tactics and techniques of aerial warfare, maintaining observers in theaters of operations, and supervision of the AAF School of Applied Tactics and the AAF Proving Ground Command. Within OC&R, the Requirements Division was made responsible for tactical development, and it was equipped with Air Defense, Bombardment, Air Support, and Tactical Service Branches.[25]

Even though he stated that the Army Air Forces ought not to tell subordinate commands how to perform their jobs, General Arnold was sensitive to the charge that the Air Force had no compact body of doctrine to guide the thinking of its thousands of newly-commissioned officers. In the staff study completed within the Directorate of Bombardment on 3 March 1943, Colonel Williamson noted that "the most important single adverse factor, the condition which is the greatest cause of general failure of the Air Forces to attain proper results, is the lack of an authoritative and concise statement of AAF doctrine and employment policies. A ready guide is not available, and each combat zone is improvising its own doctrine or interpreting older doctrines that have not been kept up to date." Recognizing early in March that "seasoned and experienced officers are spread far and wide" and that there was a need for a "tool of instruction whereby every officer may acquaint himself with both an over-all and a particularized view of Air Force structure and objectives," General Arnold charged Brigadier General Byron E. Gates, Chief of AAF Management Control, to direct the preparation and publication of a volume that would "present . . . a comprehensive picture of the objectives of Air Forces in Theaters of Operations and of the organization available to attain those objectives." As laid out by Management Control, the volume which would be published on 1 June 1943 under the title of The Air Force in Theaters of Operations: Organization and Functions included six booklets with a total of 27 chapters that completely described the organization and missions of the Air Force as they existed in the spring of 1943. "The volume," Arnold stated, "represents Air Force doctrine. It is not rigid doctrine. It is subject to change when change is indicated. It points out what can be done with the means at our disposal, but it must not prevent us from utilizing those means fully in other ways and for other purposes."[26]

In many ways The Air Force in Theaters of Operations was the most ambitious and comprehensive doctrinal publication ever issued by the Air Force, and it was conveniently organized as a series of

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looseleaf pamphlets which could in theory be revised and kept up to date. Unfortunately, however, the volume appeared at the very moment when air organization and doctrine were profoundly changing and most of it was almost immediately out of date. Despite a statement in the introductory chapter on "Air Force Mission and Organization" that some air forces could be considered "strategic" and others "tactical," the principal pamphlet of the book described an operational air force as comprising the traditional air defense, bombardment, air support, and air service commands. This pamphlet was the product of the AAF Board and the four departments of the School of Applied Tactics in Orlando. The chapter on "The Air Support Command" was forward-looking in its implications--it noted, for example, that the new North American A-36 (P-51) aircraft would be a substantial advance over dive bombers since it could both deliver bombs and serve as either a fighter bomber or a fighter escort plane--but it was completely conservative in its wording and conformed to the approved air-ground doctrine established in Field Manual 31-35. Although the booklet which described the functions of squadrons in an air force was kept in print, and another pamphlet which described the functions of air force groups was published, the main portion of The Air Force in Theaters of Operations was soon obsolete and few AAF officers apparently ever knew that it had been issued.[27]

Early in 1943, while it was seeking a headquarters organization suitable to its mission and was attempting to prepare a comprehensive doctrinal manual, the Army Air Forces also began to take a searching look at the results of combat operations in North Africa--the first major American air-ground offensive of World War II. Organized into standard air defense, bombardment, air support, and air service commands, the Twelfth Air Force enjoyed very little flexibility in its operations in Northwest Africa. In February 1943, the XII Air Support Command failed to give good results when it was attached to the U.S. II Corps for the support of its operations in Tunisia. While the Americans sought new ideas, General Bernard L. Montgomery, commander of the British Eighth Army, issued in January 1943 a small pamphlet describing his experience in war and entitled "Some Notes on High Command in War." As a result of his experience in cooperation with the British Western Desert Air Force, Montgomery emphasized that the greatest asset of air power was its flexibility and he maintained that this flexibility could be realized only when air power was centrally controlled by an air officer who maintained a close association with the ground commander. "Nothing could be more fatal to successful results," Montgomery wrote, "than to dissipate the air resources into small packets placed under command of army formation commanders, with each packet working on its own plan."[28] In February 1943 in North Africa, Major General Carl Spaatz organized the Northwest Africa Allied Air Force and gave it command over a Strategic Air Force, a Coastal Air Force, and a Tactical Air Force. Writing to Arnold on 7 March 1943, Spaatz emphasized that "the air battle must be won first. . . . Air units must be centralized and cannot be divided into small packets among several armies

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or corps. . . . When the battle situation requires it, all units, including medium and heavy bombardment must support ground operations."[29]

In the United States, General Marshall and other influential Army officers accepted General Montgomery's basic principles relative to the control of air power.[30] Air Force leaders liked Montgomery's basic thinking, but there was some feeling that the air striking force ought not to be divided into a strategic air force and a tactical air force. As Assistant Chief of Air Staff for Plans, Brigadier General Orvil Anderson urged that offensive air power ought not to be divided and maintained that the same air weapon system which fought through the decisive phase of a war ought to be available for subsequent exploitation operations, including all-out support of land operations. General Arnold, on the other hand, wished to insure a freedom of action for the strategic air force, and he was willing to provide the tactical air force in order to free the strategic air force from a routine requirement to support ground forces.[31] Brigadier General Laurence Kuter, who returned from a tour of duty as American Deputy Commander, Northwest African Tactical Air Force, and became Assistant Chief of Air Staff for Plans on 15 May 1943 actively supported the concept of a tactical air force. "It is the pattern of the future," Kuter wrote, "the way in which air power in collaboration with armies in the field will beat the enemy and win the war."[32]

Acting in response to an Air Force request, the War Department on 9 June 1943 named Colonel Morton H. McKinnon, Commandant of the Air Support Department of the School of Applied Tactics, Colonel Ralph F. Stearley, commander of the I Air Support Command, and Lieutenant Colonel Orin H. Moore, Armored Force liaison officer at AAF Headquarters, as a board to revise official doctrine in the light of theater-proven operations. Working intimately with the General Staff G-3 Division, this board of officers produced in three weeks' time the draft of War Department Field Manual 100-20, Command and Employment of Air Power, which was published on 21 July 1943. "The inherent flexibility of air power," stated the manual, "is its greatest asset. This flexibility makes it possible to employ the whole weight of the available air power against selected areas in turn; such concentrated use of the air striking force is a battle-winning factor of the first importance. Control of available air power must be centralized and command must be exercised through the Air Force commander if this inherent flexibility and ability to deliver a decisive blow are to be fully exploited. Therefore, the command of air and ground forces in a theater of operations will be vested in the superior commander charged with the actual conduct of operations in the theater, who will exercise command of air forces through the air force commander and command of ground forces through the ground force commander." The manual also stated that land power and air power were coequal and that the gaining of air superiority was the first requirement for the success

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of any major land operation. It described the mission and composition of a strategic air force, a tactical air force, an air defense command, and an air service command.[33]

As soon as Field Manual 100-20 was published, General Arnold directed that a copy of it should be distributed to every Air Corps officer. In a letter to each AAF commander, he emphasized that: "The interrelated role of air power must be constantly impressed upon all airmen through the medium of command."[34] Since the War Department had published Field Manual 100-20 without soliciting its concurrence, the Army Ground Forces viewed the manual with "dismay" and described it as the "Army Air Forces' 'Declaration of Independence.'"[35] Within the Air Force, moreover, General Orvil Anderson would continue to deplore the division of air power represented by the tactical air force. At least one other old-line Air Corps officer--Brigadier General Robert C. Candee--would suggest that the Air Force had "swallowed the RAF solution of a local situation in Africa hook, line and sinker, without stopping to analyze it or report it in 'Americanese' instead of British speech." Candee agreed that air power should not have been divided into tactical and strategic forces.[36]

* * * *

The reorganization of Headquarters, Army Air Forces, and the publication of Field Manual 100-20 caused substantial changes at the AAF Board, AAF School of Applied Tactics, and the AAF Proving Ground Command. At the time of the reorganization, the Assistant Chief of Air Staff for Training took control over the Training Aids Division, and in May 1943 it was physically moved from the School of Applied Tactics to New York City, where it was closer to commercial publishing and motion picture resources.[37] On 17 April, Brigadier General Saville, who had been Director of Air Defense, was assigned at Orlando as Director of Tactical Development. With characteristic energy, Saville began a reorganization of the AAF Board, leading to the issuance of an AAF regulation on the subject on 2 July 1943. The Assistant Chief of Air Staff OC&R was named president of the Board and the Director of Tactical Development was made ex officio executive. The Commandant of the School of Applied Tactics and the commander of the Proving Ground Command were named as members of the Board. The Board was expected to coordinate the activities of the School, the Proving Ground, and of the Director of Tactical Development, the latter being described as directly responsible to the Assistant Chief of Air Staff OC&R and specifically responsible for preparing programs, reviewing standards, and recommending appropriate actions to the Board. In its essentials, the new regulation made the AAF Board a review agency and held the Directorate of Tactical Development responsible for much of the planning which had been formerly done in Washington by the Directorate of Military Requirements. General Saville was beginning to

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secure personnel for the Directorate of Tactical Development, when late in July 1943 he was ordered to North Africa where he would take command of the XII Fighter Command.[38]

The new strategic and tactical concept of the Army Air Forces antiquated the four department organization of the School of Applied Tactics, and General Peabody and Brigadier General Eugene L. Eubank, who reported to Orlando as Director of Tactical Development in September 1943, faced this fact as they began to reorganize the School and the AAF Board. Peabody's announced object was to secure an organization which would accomplish "deep thinking."[39] Earlier in the year, Dr. Robert L. Stearns, the educational advisor at the School of Applied Tactics, had pointed out that the research--or tactical development--function ought to be separated from the academic function, since both were full-time tasks,[40] and the reorganization authorized in AAF regulations on 8 October 1943 and effected three weeks later accepted this objective. The AAF Tactical Center was established under the command of General Peabody as the superior headquarters over a consolidated School of Applied Tactics and a Demonstration Air Force, whose tactical units and field installations were organized into model strategic and tactical air forces and an air defense wing.[41]

The reorganization of the AAF Board was the work of General Eubank, who had earlier served as AAF Director of Bombardment. By a revised AAF regulation published on 8 October 1943, the AAF Board was declared to be an agency of Headquarters, Army Air Forces, and was empowered to develop tactics, techniques, and doctrines, and to determine all military requirements for the Army Air Forces. The Assistant Chief of Air Staff OC&R, the commander of the AAF Tactical Center, the commander of the AAF Proving Ground Command, and the Executive Director of the Board (Eubank's new position following the discontinuation of the Director of Tactical Development) were members of the AAF Board. Since the AAF Board was domiciled away from Washington, an AAF Board Control Office was established within OC&R. With the elimination of the departmental structure of the School of Applied Tactics and the old sub-boards, General Eubank was authorized to secure sufficient qualified personnel to discharge the AAF Board's responsibilities.[42]

As the reorganized AAF Board began to operate, Colonel William F. McKee, Deputy Assistant Chief of Air Staff OC&R announced on 13 December 1943 that it would be expected to perform a substantial portion of the work of OC&R's Requirements Division. "If there is any question as to whether a project should be carried out here or at the Board," he stated, "the issue should be resolved in favor of sending it to the Board."[43] For his own part, General Eubank, who became president of the AAF Board with a change in regulation on 26 April 1944, wanted the Board to grow in stature from what was in effect a projects board for OC&R into an agency which would serve as an advisory body to General Arnold on all general policies.[44] Enjoying high priorities for experienced officers rotated home from

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overseas, the Board built up to a strength of 98 officers, 65 enlisted men, and 53 civilians in September 1944 and kept this strength approximately during the remainder of the war. Five liaison officers were assigned to the Air Forces in the major combat theaters and these men proved to be an important source of information for the Air Operations Briefs which were published beginning on 30 November 1944 to disseminate combat lessons throughout the Air Force. Over Europe in the autumn of 1943, bomber formations devised by the AAF Board helped cut down Eighth Air Force combat losses, and another study--"Development of Tactics and Techniques for the Destruction of the German Air Force"--was a guiding doctrine in the establishment of American air superiority over Europe. General Spaatz stated that Board reports and lectures by its liaison officer, Lt Colonel Robert C. Richardson, III, were of great assistance in overcoming the menace of German jet fighters. The massed B-29 fire raids over Japan begun in March 1945 were initiated in accordance with a plan visualized in an AAF Board project entitled "Incendiary Attack on Japanese Cities."[45]

Although it was active in testing aircraft and equipment and in developing and disseminating tactics and techniques for the employment of air power, the AAF Board made slow progress in revising doctrinal manuals and in preparing new doctrinal publications. After some delay caused by high priority given to a study on the "Initial Post-War Air Force," the AAF Board approved and forwarded to Washington on 4 May 1944 a study entitled "The Tactical Air Force: Organization and Employment" which it considered to be an adequate revision of the obsolete Field Manual 31-35. With the completion of another study entitled "Combat Fighter Formations" the Board considered that it had provided an adequate revision of the old Field Manual 1-15, Tactics and Techniques of Air Fighting, and it believed that it had accomplished all outstanding manual projects. This optimism was premature on two counts. While the Board had been working on the tactical air force study, Colonel Stearley had been assigned to the Office of the Assistant Chief of Air Staff for Training in Washington, and he had assembled a committee in March 1944 that had prepared a draft paper on air-ground cooperation. The Army Air Forces submitted the paper on air-ground cooperation and the study on the tactical air force to the War Department G-3 for approval and publication as War Department training circulars, but the G-3 refused to approve the tactical air force study until the air-ground cooperation paper was coordinated with the Army Ground Forces. On 22 June, moreover, Brigadier General Mervin E. Gross, chief of the Requirements Division of OC&R, called attention to the fact that "all Field Service Regulations and Field Manuals dealing with air force subjects, with the exception of FM 100-20, are abominably obsolete and confusing." Gross proposed to designate the AAF Board as the single agency responsible for preparing all AAF doctrinal publications and to augment its strength to permit it to handle the complete task of reviewing, writing, and compiling

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manuals which would be approved and published by the Army Air Forces. General Gates, however, offered a counterproposal that the AAF Board would be responsible for the substance of operational manuals, Management Control for administrative manuals, and Materiel and Services for supply and maintenance manuals, and that the Training Aids Division would prepare all manuscripts for final publication. General Gates' recommendations were accepted by a meeting of representatives from the interested agencies held during June, and the AAF Board was accordingly directed to institute a continuing project to prepare, review, and revise all field service regulations, field manuals, and publications which established AAF operational and training doctrine.[46]

Because of the added responsibilities for the preparation of the doctrinal publications and the new Air Operations Briefs, General Eubank organized an Evaluation Division within the AAF Board, and the Policy Branch of this division received the task of reviewing and determining requirements for doctrinal manuals. Having determined the need for a manual, the Policy Branch was expected to establish committees made up of qualified personnel from the AAF Board, the School of Applied Tactics, the Proving Ground Command, and any other interested command to make a draft of the manual. While the Policy Branch outlined a comprehensive series of air manuals which should be written, it was not notably successful in producing manuals. For one thing, the Policy Branch had difficulty committing qualified personnel to its project committees and the preparation of a draft manual required the examination of a mass of pertinent reports and the solicitation and evaluation of suggestions from many different headquarters. It was also very difficult to get anything coordinated with the Army Ground Forces. Headquarters, Army Ground Forces, for example, would not approve the draft training circular entitled "Air-Ground Cooperation" which was forwarded to it in April 1944: it complained that it was theoretical and contained far too much of the thinking incorporated in Field Manual 100-20. As the debate continued, Headquarters, Army Ground Forces, broadened the discussion to include attacks on Field Manual 100-20. In January 1945, for example, it challenged the statement that the gaining of air superiority should be the first requirement for the success of any major land operation and the proposition that in the absence of air supremacy the initiative passed to the enemy by citing the success of the German army in launching its Ardennes offensive without possessing air superiority. As a result of the delays in the negotiations, the several theaters of operations were compelled to adopt their own techniques for air-ground cooperation. After more than a year had passed, the War Department G-3 patched up compromises which enabled it to issue definitive of doctrine required in preparation for the invasion of Japan. On 20 April 1945, the War Department published Training Circular No. 17, "Air-Ground Liaison," and on 19 June 1945 it released Training Circular No. 30, "Tactical Air Command: Organization and Employment."

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Another project at the AAF Board indicated the long amount of time required for coordination: on 11 February 1944, the Board initiated a manual project entitled "Tactical Doctrine of Troop Carrier Aviation," but it did not complete the text in final form until 21 August 1945.[47]

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Especially under the leadership of General Eubank, the Army Air Forces Board became a respected and valuable agency for making evaluations and devising solutions to far-reaching problems encountered in the theaters of operations, but the Board never attained the authority to recommend air policy to General Arnold to the same degree that the Navy Board possessed. As World War II progressed, moreover, other agencies began to undertake a large part of the work that might have fallen within the province of a more powerful AAF Board.

Having recognized the close relationship between scientific development and warfare during the 1930's, the Royal Air Force had gotten good results from the employment of groups of highly-qualified civilians who possessed unusual scientific or analytic talents for operations analysis--a function which was described as the study of operations within a command for the purpose of improving tactics, equipment, methods of training, or methods of supply. In the United States in 1940, President Roosevelt named Dr. Vannevar Bush, who was then chairman of the National Advisory Committee on Aeronautics, to be chairman of the National Defense Research Committee in order "to coordinate, supervise, and conduct scientific research on the problems underlying the development, production, and use of mechanisms and devices of warfare, except scientific research on the problem of flight." In May 1941, Roosevelt expanded the committee into the Office of Scientific Research and Development. As early as April 1942, a group of about 20 civilian analysts began to work with the Navy and the Army Air Forces in search of solutions to the problem of antisubmarine warfare, and Dr. Edward L. Bowles, the head of the group, ultimately devised the system of radar and related techniques which effectively checked the Nazi submarine menace during the latter half of 1943. At the request of General Spaatz, eight civilian operations analysts joined the Eighth Air Force in the United Kingdom on 15 October 1942. A few days later, on 24 October, General Arnold authorized the establishment of operations analysis sections throughout the Army Air Forces.[48]

In the course of a conversation on the afternoon of 3 December 1942 in the office of General Gates, Chief of AAF Management Control, General Fairchild recalled some of the perplexities that had confronted him since he had begun to serve on the Joint Strategic Survey Committee of the Joint Chiefs of Staff. The Joint Intelligence Committee had made many criticisms of the air target list included

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in AWPD-42 and some of the criticisms appeared fully justified. When Gates' executive, Colonel Guido R. Perara, joind the conversation, Fairchild suggested that he might like to find the answer to the fundamental matter in question: "How can Germany be so damaged by air attack that an invasion of the continent may be possible within a relatively short period, say one year?" After thinking about the matter overnight, General Gates addressed a memorandum to Fairchild pointing out that nowhere in the War Department was there a group of analysts or research workers who were capable of assembling raw data and drawing conclusions from it. In search of a solution to the problem, Colonel Perara and Major W. Barton Leach, who had been recruiting operations analysts for air force commands, proposed that a high-level Committee of Operations Analysts should be formed to study Germany and to recommend target systems to General Arnold. Receiving Arnold's prompt approval, General Gates assembled a small group of distinguished scholars and industrialists in a first meeting of the Committee of Operations Analysts on 10 December 1942. By the early spring of 1943, the Committee of Operations Analysts would make its first report on German target systems to Arnold, and, after this, it would address itself to a determination of the strategic vulnerabilities of Japan to air assault.[49]

While the Committee of Operations Analysts provided recommendations to General Arnold, Leach, who was promoted to colonel and would serve both as a member of the Committee and as chief of the AAF Operations Analysis Division, provided general guidance to the build-up of some 17 operations analysis sections throughout the Air Force. By the end of the war more than 400 civilian and military analysts were serving in the Air Force. These operations analysts, most of whom were civilian specialists, followed "a considered policy of keeping very quiet--not asking for recognition, not claiming credit for accomplishments, not getting publicity." In general, the operations analysis sections lent their peculiar skills to such command problems as bomb and fuze selection, bombing accuracy, battle damage and loss, and general mission analysis. The memorandum reports of each operations analysis section were forwarded to Washington and were circulated to other interested commands. At the IX Bomber Command in Europe, for example, three operations analysts prepared a basic aerial gunnery manual called "Get That Fighter," which was eventually adopted for use in the Army Air Forces, the Navy, and the Chinese Air Force. The operations analysts dealt with many of the same problems that the AAF Board was charged to consider, but the principal difference was that the operations analysis sections were prepared to solve problems on the spot in combat theaters. On some occasions the findings of the operations analysis sections disagreed with those of the AAF Board. On 18 October 1944, for example, the AAF Board issued what it considered to be a definitive doctrine on weapons selection entitled "Selection of Bombs and Fuzes for Destruction

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of Bombardment Targets," but Air Force commanders preferred to follow the recommendations of their operations analysis sections, which were in serious conflict with the Board recommendations.[50]

In its initial report on the strategic vulnerability of Germany to air attack, the Committee of Operations Analysts recommended on 8 March 1943 that a continuing analysis of the successes and failures of air operations ought to be maintained. The Army Air Forces did not act on this recommendation until the spring of 1944, and then it made two approaches to the problem of evaluating air operations. In response to a request for such authority, the War Department directed General Arnold on 29 June 1944 to establish AAF Evaluation Boards in the several combat theaters and charge them to make "a critical evaluation of the effectiveness of air attack." "It is essential," the War Department stated, "that we determine now the merits of our past use of air power so that we may, with economy, direct and employ air power to the attainment of maximum results during the war and in the future." Each of the boards would be expected to forward evaluations with supporting data to the Army Air Forces at 30-day intervals, and the reports were to be screened by OC&R and Plans and sent to the AAF Board for thorough analysis. Within a few weeks, the evaluation boards departed for the combat theaters, each headed by an experienced air officer: Major General Jacob E. Fickel for the European Theater of Operations, Major General John F. Curry for the Mediterranean Theater of Operations, Major General William E. Lynd for the Southwest Pacific Area, Brigadier General Shepler W. Fitzgerald for the China-Burma-India Theater, and Brigadier General Martin F. Scanlon for the Pacific Ocean Areas. The boards were given a list of suggested topics for investigation, but they had complete freedom in selecting the exact subjects they investigated, the only criteria being that the subject was to be of sufficient importance "to permit intelligent redirection of policy and effort in attaining maximum economy of forces in the employment of air."[51] In the theaters, the AAF Evaluation Boards generally undertook to prepare evaluations of air actions by campaigns rather than by months. As a result their often voluminous reports would provide an important source of documentation about air operations in World War II, but the reports were not as valuable as they might have been for a current evaluation of the war effort. At the end of hostilities, the European Theater and Southwest Pacific AAF Evaluation Boards had not completed all of their reports, and after September 1945 a part of the personnel of these two boards was returned to Orlando to finish their tasks.

When the matter of evaluating air operations was under discussion in the Air Staff in March 1944, General Fairchild suggested that a separate analysis should be made of strategic bombing, and he recommended that General Spaatz would have the U.S. Strategic Air Forces in Europe submit a plan for a comprehensive evaluation. In a letter to Arnold on 5 April, Spaatz endorsed the proposal for a survey of American strategic bombing effort, and he suggested

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that the survey be headed by a civilian of high caliber and reputation. Although the British wanted to make a joint bombing survey, Spaatz argued against this because he wanted to get plain facts from a committee headed by an impartial chairman, because he feared that the Soviets might be offended at being excluded from a combined undertaking, and because he wanted a quick survey that would be concluded in time to be of use in planning for the strategic air campaign against Japan. While preliminaries to the establishment of a strategic bombing survey were underway, the arrival of General Fickel's Evaluation Board threatened some duplication of effort, but Fickel agreed to confine his studies to the tactical air warfare effort.[52]

When the necessary groundwork had been laid, President Roosevelt directed Secretary Stimson on 9 September 1944 to form a qualified and impartial group to make a study of the effect of strategic aerial attack against Germany. On 3 November, Stimson requested Mr. Franklin D'Olier, president of the Prudential Insurance Company, to serve as chairman of the U.S. Strategic Bombing Survey. Various civilian experts were selected as directors of proposed divisions. The research activities of the survey were divided into three large units of military studies, economic studies, and civilian studies, each broken down into divisions. At the end of hostilities in Europe, Major General Orvil Anderson came to the survey as chief of the Military Analysis Division and chairman of a panel of military advisors which included General Omar N. Bradley and Vice Admiral Robert L. Ghormley. As finally constituted, the U.S. Strategic Bombing Survey in Europe consisted of some 300 civilian experts, analysts, technicians, and production men, assisted by 350 officers and 574 enlisted men. Getting underway in November 1944, teams of investigators followed Allied military forces into Germany and secured the basic information required for 208 published reports. The investigators secured their data from inspections and examinations of target areas, from captured records of the German government and industrial corporations, and from interviews and interrogations of thousands of Germans, including practically all of the surviving German political and military leaders.[53]

When the U.S. Bombing Survey was completing its field work in the European theater, President Harry S. Truman asked D'Olier to continue to head a survey which would conduct a joint Army-Navy analysis of the conduct of the air war against Japan. Truman directed that the Japanese survey would be given help by the Secretary of the Navy, thus making it a joint function, although still to be controlled by the civilian chairman and his associates. Mr. Paul Nitze, who had directed the equipment and utilities division of the survey, became acting vice-chairman under D'Olier. Many of the same civilian directors agreed to serve in the Pacific, and the military advisors included General Anderson, Rear Admiral Ralph A. Ofstie, Major General Leslie R. Groves, and Brigadier

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General Grandison Gardner. Some 485 individuals were on the roster of the Pacific survey, and by 3 October 1945 the survey and its detachments were located in Tokyo and in other places throughout Japan.[54]

In analyzing the Pacific War, the U.S. Strategic Bombing Survey depended heavily upon interrogations of more than 700 Japanese government, military, and civilian leaders, and, while many records had been destroyed, the survey was able to secure reasonably accurate statistics on Japan's economy and war production. After a hard-hitting, fast-moving field investigation, D'Olier and Nitze returned to Washington on 5 December and the key survey personnel assembled there early in January 1946 to complete the 108 volumes of evaluation on the Pacific war which would be published. In view of the great public interest in atomic warfare, Truman decided to receive and to release the survey's principal reports personally, and the three principal reports were coordinated with the State Department. During July 1946 Truman released the three main reports: Summary Report (Pacific War), Japan's Struggle to End the War, and The Effects of Atomic Bombs on Hiroshima and Nagasaki.[55]

* * * *

During the course of expansion and rapid growth of the Army Air Forces there had been a tendency to multiply both the number of Headquarters, Army Air Force, functions and the number of Army Air Forces field commands. When the Army Air Forces reached its maximum strength, General Arnold thought that it would be proper that many of the details of operations that had burdened the Air Staff should be handled at appropriate field commands. This program for decentralization and consolidation began on 31 August 1944 with the combination of the Air Materiel Command and the Air Service Command into the Air Technical Service Command, which would be expected to administer operating programs in the fields of materiel and supply. On 1 April 1945, the Continental Air Forces was organized to assume jurisdiction over the four domestic air forces and the I Troop Carrier Command. In another move designed to clear up lines of authority, the AAF Center was established on 1 June 1945 to exercise command over the AAF School (the former AAF School of Applied Tactics) and the AAF Proving Ground Command. The Army Air Forces Board--whose members would be the Board president, the commander of the AAF Center, and the commanding general of the AAF Proving Ground Command--was authorized to report directly to General Arnold rather than to the Assistant Chief of Air Staff OC&R, and it would continue to be responsible for the development of tactics, techniques, doctrines, and other military requirements of the Army Air Forces.[56]

For a few months it appeared that the AAF Board might achieve a status similar to that of the Navy General Board, but the end of World War II brought a sudden decrease in its work. Publication of the Air Operations Briefs was terminated. At the peak of its

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wartime activities on 15 March 1945, the Board had 514 active projects underway, but on 15 September 1945 it had only 230 projects in work, mostly operational suitability tests on new items of equipment which were in the production pipelines at the war's end.[57] In the hope that it would be possible to record operational experience while it was still fresh, the Army Air Forces on 7 September 1945 directed the AAF Board to prepare a field service regulation which would incorporate all of the proven air-ground doctrine of World War II. On 8 October, it further directed the Board to revise Field Manuals 100-5 and 100-20 and then to bring all Air Force field manuals in the 1- series into conformity with the two basic manuals. Drawing both upon the great body of Air Evaluation Board data that had been sent to Orlando and upon the assistance of ground force liaison officers, the AAF Board completed a draft of a combined air-ground operations manual on 14 March 1946. Representing the best thought to come out of World War II, the manual was coordinated through the War Department G-3 and the Army Ground Forces, and it was published as War Department Field Manual 31-35, Air-Ground Operations, on 13 August 1946.[58] In view of the fact that General Eubank was unable to obtain experienced personnel to undertake the other manual projects, the revision of these manuals would have to await the period of readjustment that would mark the establishment of the postwar air force.

Thus as World War II ended it was doubtlessly the best reported and most thoroughly documented conflict of all time. The great volume of the documentation which recorded the experience meant, however, that few persons--military or civilian--would have the time or the incentive to master it. One natural result, according to the civilian scholar Bernard Brodie, was "the divorcement of doctrine from any military experience other than that which has been intensely personal with its proponents."[59] Under such circumstances, the operational experience of World War II could be cited to "prove" almost any preconception. In 1946, for example, reports by ranking Army officers such as General Omar Bradley, General George S. Patton, and Lieutenant General L. K. Truscott were offered as a justification of a continuing requirement for horse cavalry in the postwar Army.[60] "If you will only let experience be your teacher," warned Major General Orvil Anderson, "you can have any damn lesson you want." Anderson believed that the lessons of the past had to be interpreted in terms of the potentialities of the future. "Progress in the development of military science and strategy," he said, "is vitally dependent upon the soundness of the evaluations of past battle experience and upon the boldness, inspiration and depth of the projected thinking which creates the solution for the future."[61]

2. Examination of the Strategic Air War

"Because the last war saw the weapons of all services employed in profusion," wrote General Spaatz, who had commanded the U.S.

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Strategic Air Forces (USSTAF) in Europe and the U.S. Army Strategic Air Forces in the Pacific, "one may argue the exact degree of contribution made by strategic bombing to the final decision." As Spaatz saw it, "the war against Germany was fundamentally an infantry war supported by air power, much as the war against Japan was fundamentally a naval war supported by air."[62] Writing in 1948, an Air University instructor noted that the "Douhet Theory did not receive a thorough test in World War II." "That the Douhet Theory was somewhat less than an unqualified success in World War II," the same officer added, "was due to the inability of the equipment of the times to fulfill Douhet's expectations."[63] Bernard Brodie, on the other hand, considered World War II to have been a "fair test" of Douhet's ideas. "If we disregard the over-all vision and consider only specific assertions," Brodie wrote, "it is clear that in World War II Douhet was proved wrong on almost every important point he made. . . . But it is also true that he was able to create a framework of strategic thought which is considered by many responsible airmen to fit the atomic age astonishingly well."[64]

"No useful purpose would be served now," Spaatz wrote in 1948, "by refighting these wars [against Germany and Japan] as the airman might have wished to fight them."[65] In their effort to establish a conceptual basis for forward thinking, other Air Force officers nevertheless sought to draw what lessons they could from World War II. To General George C. Kenney, who had commanded the Allied Air Forces Southwest Pacific Area and the U.S. Far East Air Forces, one of the major lessons of the war against Japan was the value of air power for keeping the peace. "I believe that air power," he said in November 1945, "is this Nation's first line of defense and that only in air power can we find a weapon formidable enough to maintain the peace." In a lecture several years later, Kenney developed the same theme: "If the value of air power in the defense had been recognized a few years earlier our national policy would not have accepted the inevitability of losing the Philippines at the outbreak of a war with Japan. Fairly strong bomber and fighter forces in the Philippines and in Hawaii, with the warning services available at that time, could have prevented the disasters at Pearl Harbor, Bataan and Corregidor. It is extremely doubtful that Japan would even have challenged us at all."[66] In a Senate hearing in October 1945, General Arnold emphasized that responsibility for the defense of the United States rested upon the Air Force. "The defense," he said, "has got to be an offensive mission against the source [of enemy power] . . . . But, better still, the actual existence of these weapons of our own in sufficient quantities and so located that a potential aggressor knows we can use them effectively against him, will have a very deterring effect, particularly if the aggressor does not know the whole story and only knows part of the story."[67] General Marshall agreed that "the future peace of

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the world will largely depend not only on the international policies of the United States but even more on our practical ability to endow those policies with the strength to command international respect." He insisted, however, that "the national security is measured by the sum, or rather the combination of the three great arms, the land, air, and naval forces."[68]

The Anglo-American military strategy for the defeat of the Axis that emerged in 1941-42 contemplated early initiation of sustained air offensives against Germany and later against Japan, but it did not accord overriding production priorities to the air forces for undertaking these offensives. Instead, the strategic planners posed requirements for the development of land, sea, and air forces to accomplish a series of surface campaigns designed eventually to culminate in invasions of the German and Japanese homelands. According to Brigadier General George A. Lincoln, chief of the War Department General Staff Plans and Policy Group, Anglo-American political objectives required for the guidance of military planning were available in the form of the Atlantic Charter, the master U.S. lend-lease agreement which pledged recipients to encourage freer postwar trade, and the United Nations declaration of 1 January 1942 that pledged that the Allies would work for a postwar world political organization, but General Lincoln nevertheless noted that these political objectives were stated in such broad language that they give little precise guidance to military strategy.[69] Lieutenant General Albert C. Wedemeyer recalled that he as a military planner was "vague about the national aims of our own country."[70] One result of the broad political guidance was Major General Hansell's recollection that American military planners eventually tended to ignore the fact that the war should be fought "from the standpoint of continuing international relations to which the war was an unhappy interlude." "My military bosses and my associates and I," Hansell recollected, "were consumed with one overpowering purpose: How to win the war with assurance and fewest American casualties. We had little concern for what happened afterward."[71]

In the early months of 1942 the Allies were on the defensive, but, at Casablanca in January 1943, the Anglo-American heads of state and combined military staffs undertook to define their war aims and to visualize offensive operations against Germany. On 7 January, prior to leaving Washington for the conference, President Roosevelt met with the Joint Chiefs and told them that he intended to secure an agreement that the Allies would not end the war until they had attained the "unconditional surrender" of the Axis nations. No military staff work had been done on "unconditional surrender," and Roosevelt did not invite military discussion of the matter. To Roosevelt, the statement of unconditional surrender as the war aim simplified the political complexities of Allied alliance diplomacy. "We have the British, DeGaulle, the Russians, and several other elements," he would explain in private, "all of whose war aims are

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totally divergent. If we, the United States, now state our war aims, we will split asunder the allied war effort which will result in squabbling over the particular interests."[72]

The unconditional surrender formula was useful in rallying popular support and effecting cohesion in the Grand Alliance. Moreover, it could be attained by military operations. American military planners nevertheless viewed it as an unfortunate war aim which would make the people of Germany and Japan resist to the bitter end. At Casablanca as assistants to Generals Marshall and Arnold, Brigadier General Wedemeyer and Colonel Jacob E. Smart insisted that the Allies should direct their war aims against the Axis governments and not their people, but their reasoning was not accepted and the Allied objective of unconditional surrender was announced on 23 January 1943. Viewed after the fact, the unconditional surrender objective not only prolonged the resistance of Germany and Japan, but, in the case of Germany, resulted in a complete military and political disintegration which opened central Europe to the entry of Soviet Russia. Japan, moreover, refused to surrender until the unconditional surrender formula had been relaxed.[73] "During World War II," General Lincoln observed in 1947, "we had driven home to us the accepted principle that military power and military policy are related to political policy, and that these two policies must be closely integrated. We realize very clearly what this inextricable relationship between political and military policies means, that our military policies and actions are based on international political policies and that these two policies must be closely integrated."[74]

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"Had the revolutionary potentialities of the strategic air offensive been fully grasped," General Spaatz concluded, "some of the fateful political concessions made to hold the Russians in the European war and to draw them into the Japanese war might never have been made."[75] Because the Allied strategy was directed toward unconditional surrender, the Casablanca conferees logically laid out a strategic air campaign against Germany in terms of the eventual physical capture of that nation by surface forces. On 21 January 1943, the Casablanca combined bomber directive stated that the ultimate objective of the air campaign would be "the progressive destruction and dislocation of the German military, industrial and economic system, and the undermining of the morale of the German people to a point where their capacity for armed resistance is fatally weakened." Addressed to "the appropriate British and United States Air Force commanders," the Casablanca directive established no definite command authority for the combined bomber offensive but it assumed that the Army Air Forces would conduct daylight attacks and that the RAF Bomber Command would continue its night attacks against area targets. The function of the strategic bomber

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offensive would be to soften the enemy nation preparatory to surface invasion. "The air weapon system," General Kuter would comment, "was assigned a supporting role to facilitate the implementation of this conventional surface stracegy."[76]

Where General Arnold advocated the establishment of an over-all air command for Europe and Africa in December 1942, the Casablanca conference merely charged Sir Charles Portal, Chief of Air Staff RAF, with the "strategical direction" of British and American bomber operations from the United Kingdom. This responsibility did not include decisions on matters of tactics or techniques which remained the province of Lieutenant General Ira C. Eaker, commander of the U.S. Eighth Air Force, and of Sir Arthur Harris, commander of the RAF Bomber Command. In view of the impending "Overlord" ground invasion of Europe, the Allied Expeditionary Air Force was established on 17 November 1943 under the command of Air Marshal Sir Trafford Leigh-Mallory, with operational control over the RAF Tactical Air Force, the Air Defence of Great Britain, and the U.S. Ninth Air Force. At this same time, the U.S. Joint Chiefs of Staff proposed to establish a strategic air commander in the United Kingdom to control the operations of the Eighth and Fifteenth Air Forces, the latter being based in Italy. The British Chiefs of Staff did not favor the plan, but it was nevertheless effected on 1 January 1944 when Lieutenant General Spaatz assumed command of the U.S. Strategic Air Forces in Europe (USSTAF). Since the RAF Bomber Command remained outside this framework, Sir Charles Portal continued to be the coordinating agent of the Combined Chiefs of Staff for strategic bombing until 14 April 1944 when USSTAF passed to the control of General Dwight D. Eisenhower as Commander, Allied Expeditionary Forces. Following completion of "Overlord," the Combined Chiefs reassumed control of the strategic bomber forces on 14 September 1944.[77]

Looking backward at the air command effected for "Overlord," Major General Orvil Anderson, who served as chairman, Combined Operational Planning Committee, England, from June 1943 to January 1944 and as assistant chief of staff for operations of the VIII Bomber Command from January to June 1944, was critical of the division of "fighting air" and "exploitation air" represented in the command arrangements. Anderson thought that all air power should have been concentrated for coordinated attacks against Germany until the strategic air campaign had been accomplished and that all air power then could have been employed to support exploitative surface operations. The Eighth Air Force would possess 15 fighter groups and the Ninth Air Force 18 fighter groups by the time of the Overlord invasion. When the Ninth Air Force established itself in Great Britain on 16 October 1943 it took control of those fighter groups designated for it which had arrived in Great Britain. This was said to be necessary in order that the groups might receive fighter-bomber training, but the Eighth Air Force was actively in combat and retained the right to request fighter support from the

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Ninth Air Force. Anderson recollected that it was often difficult to coordinate requirements for fighter support. On the other hand, when he was asked about Anderson's statements on command arrangements, General Spaatz held a different viewpoint. "There was no difficulty in using Ninth Air Force fighters when we needed them," he said. "If we had a mission we could always get them."[78]

While the combined bomber offensive against Germany was designed to prepare the way for a surface invasion of the continent, the build-up of Anglo-American bomber forces was relatively slow, and, in the end, the major weight of the strategic bombing attack followed rather than preceded the invasion of Europe. Weak at the war's beginning, the RAF Bomber Command did not begin strategic bombing attacks against Germany until May 1940. After a slow build-up, the Eighth Air Force conducted its first daylight bombing mission from bases in the United Kingdom on 17 August 1942, but much of the strength of this small air force was soon drained away to support the Allied land campaign in North Africa. In January 1943, the Army Air Forces had only 12 heavy bombardment groups deployed in theaters against Germany, and the maximum strength of 62 heavy bomber groups was not attained against Germany until May 1944, less than a month before the invasion of Normandy on 6 June 1944. The total of first-line B-17's and B-24's deployed against Germany increased from 413 in January 1943 to a maximum of 5,072 in March 1945.[79] The RAF Bomber Command's strength increased from a miscellany of 515 light, medium, and heavy bombers in January 1943 to a total of 1,609 Halifax, Lancaster, and Mosquito bombers in April 1945.[80] Of the total of 2,770,540 tons of bombs dropped by AAF and RAF aircraft against Germany, only 17 percent fell prior to 1 January 1944 and only 28 percent prior to 1 July 1944.[81] By mid-1944 the limited strategic air campaign had fatally weakened Germany's capacity to counter the Allied ground invasion, but the maximum military benefits did not accrue to the invading forces because the greatest weight of the strategic air attack had not yet been felt by the German people or the German military forces.[82]

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One of the basic premises of Army Air Forces doctrine was that its heavy bomber aircraft, flown in massed and self-defending formations, could successfully penetrate enemy defenses and perform precision-bombing attacks in daylight hours. In confidential talks with General Arnold in December 1941, moreover, Air Marshal Portal had asserted that British bases were going to be saturated with aircraft and that the Army Air Forces ought to concentrate on moving bombers to Britain and to delay the deployment of fighters there until they were needed to support a ground invasion of Europe.[83] While it was decided to limit the deployment of American fighters to the United Kingdom to a few groups required for local air defense, AAF programs nevertheless gave a reasonable priority to

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the activation and training of the fighter groups that would be needed to provide a canopy for the invasion of Europe.[84] Although penetrations were relatively shallow, early Eighth Air Force bomber attacks seemed to indicate that the bombers could defend themselves. The Casablanca directive nominated the German aircraft industry for destruction and directed the Eighth Air Force "to impose heavy losses on the German day fighter force and to contain German fighter strength away from the Russian and Mediterranean theaters of war," but it made no requirement for the establishment of air superiority over Germany.[85]

During the first half of 1943, General Eaker employed Eighth Air Force P-47's and RAF fighters to assist the heavy bombers in penetrating the German fighter belt inward from the Channel Coast, but he remained convinced that his main requirement was for larger bomber forces which would permit the planes to fly more effective defensive formations and additional deception missions. But opposition began to build up to Eaker's position. As early as 23 March 1943, Eaker's plans section argued that "our primary objective should be the German Fighter Force in the air, on the ground, and the industry which supports it. . . . A sufficient depletion of the German Fighter Force is the one essential preliminary to our imposing our will by the use of air power on any portion of the German war effort which may be subsequently selected, be it submarines, oil, transportation or morale." Back in the United States, following the old Air Corps Board's idea for the development of a "bomber-destroyer" aircraft, the AAF Board tested several YB-40's--heavily-armed B-17's designed to provide tremendously augmented firepower to a bomber formation. A similar modification of the B-24 called the YB-41 was also tested at Eglin Field. These experiments indicated methods of increasing the armament on basic B-17's and B-24's, but when the YB-40's were employed in combat in May 1943 they were too heavy to stay in formation with B-17's and the whole concept proved impracticable.[86]

Alarmed by the increasing success of Luftwaffe fighters (which were now armed with cannon and could out-range the bombers' defensive fire), the Combined Chiefs of Staff directed in June 1943 that the "first priority in the operation of British and American bombers based in the United Kingdom shall be accorded to the attack of German fighter forces and the industry upon which they depend." On 28 June, Arnold gave the Army Air Forces six months to provide some escort aircraft which would be able to accompany bombers to targets deep within Germany, but the heavy losses suffered by Eighth Air Force bombers on the long-range missions to Schweinfurt and Regensburg on 17 August and on the repetitive attack on Schweinfurt on 14 October gave warning that escort planes would be required well before 1 January 1944. In Washington, Kuter pointed out to Arnold that the invasions of Europe--"Overlord" on the Normandy coast and "Anvil" in southern France--tentatively set for May or June 1944, might not be possible unless immediate efforts were made to establish air superiority.[87]

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In the United Kingdom, General Eaker was under a good bit of pressure to abandon daylight bombing and to convert to night attacks, but he believed that a climax was approaching in the air war, and--abandoning the idea of unescorted bombers--he asked Arnold to send him every available fighter. Eaker also asked the AAF Board to study his problem and recommend solutions. By December 1943, the AAF Board recommended that immediate efforts be made to provide pressurized, droppable fuel tanks to extend the range of P-51 Mustang and P-38 Lightning aircraft. Developed on its own initiative by the North American Aviation Company, some Mustangs had been sold to the British, and the Army Air Forces had bought some of them for employment as A-36 dive bombers. Other agencies had liked the P-51 before this, but the attention focused on it by the AAF Board speedily resulted in its development and quantity procurement as a high-performance, long-range fighter which would be able to accompany bombers to any target in Germany.[88] Effective on 1 January 1944, General Spaatz was given command of both the British-based Eighth Air Force and the Italian-based Fifteenth Air Force, and, between October 1943 and February 1944, the number of heavy bombardment groups operating against Germany increased from 26 to 48. The strategic air forces thus gained in mass at the same time that they got P-47 and P-51 fighters for escort.

"It is a conceded fact," General Arnold told the Commanders of the Eighth and Fifteenth Air Forces on 27 December 1943, "that Overlord and Anvil will not be possible unless the German Air Force is destroyed. Therefore, my personal message to you--this is a MUST--is to, '<u>Destroy the Enemy Air Force wherever you find them, in the air, on the ground and in the factories</u>.'" On 13 February 1944, the Combined Chiefs of Staff issued a new directive for the combined bomber offensive which ordered: "The progressive destruction and dislocation of the German military, industrial and economic systems, the disruption of vital elements of lines of communication and the material reduction of German air combat strength, by the successful prosecution of the combined bomber offensive from all convenient bases."[89]

Because of vagaries of weather, which on given days closed some strategic targets while others of another category were open, both the U.S. Strategic Air Forces and the RAF Bomber Command found it difficult to give overriding priority to sustained attacks against any one category of targets. Taking advantage of a short period of good flying weather beginning on 20 February 1944, USSTAF nevertheless directed six extremely heavy bombardment attacks at German fighter aircraft production plants, and the RAF Bomber Command flew night attacks against area targets related to aircraft production. Benefiting from fighter support flown by the Eighth, Ninth, and Fifteenth Air Forces and the RAF Fighter Command, the USSTAF bombers incurred a lower percentage of losses in daytime operations than did the RAF Bomber Command. The "Big Week" broke the back of the Luftwaffe fighter force, and in effect it established

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Allied air superiority over Germany. As a result of the experience, the usual interpretation was going to be that bombers required fighter escort in order to operate. General Orvil Anderson, however, would point out that the attainment of Allied air superiority over Europe was in no small part attributable to mistakes made by Hermann Goering. For one thing, the German fighters never attempted significant morning attacks over Great Britain when the American bombers were taking off and laboriously forming up for missions and would have been most vulnerable. For another, the German fighters could have met the P-47's and P-51's near the Channel Coast and forced them to drop their wing tanks, thus making it impossible for the Americans to continue their missions. Instead, the German fighters preferred to meet the American formations deep within Germany, usually over the bomber target. But in Anderson's opinion, Goering made his greatest mistake at the end of December 1943, when he ordered his fighter pilots to avoid Allied fighters and concentrate their attack on the bombers. This order ignored the basic fact of air fighting that when aircraft of roughly equal performance meet, the one that seeks to avoid combat is automatically at an almost certainly fatal disadvantage. After some argument, Anderson was able to persuade Major General James H. Doolittle to issue orders on 4 January for Eighth Air Force fighters to take the offensive--"to pursue the Hun until he was destroyed"--rather than to continue to provide position defense to friendly bombers. Goering's mistake and the Eighth Air Force's quick recognition of what it meant apparently had a good result in the attainment of Allied air superiority.[90]

A close reading of Air Force correspondence of the Schweinfurt-Regensburg time period reveals a confidence that strategic bombers, employed in force, could still perform their missions over Germany but that an early attainment of Allied control of the air was necessary if the surface invasions of Europe were to succeed. The U.S. Strategic Bombing Survey, however, would state that the establishment of Allied domination of the air over Europe had proven "essential" to the strategic bombing campaign. Without domination of the air, the Bombing Survey reported, "attacks on the basic economy of the enemy could not have been delivered in sufficient force and with sufficient freedom to bring effective and lasting results."[91] After its description of the Schweinfurt-Regensburg losses the official Air Force history of World War II concluded: "The fact was that the Eighth Air Force had for the time being lost air superiority over Germany. And it was obvious that superiority could not be regained until sufficient long-range escort became available."[92] When questioned in October 1949 about the validity of this statement and about the history's general conclusion that the Eighth Air Force had sustained "unacceptable" losses late in 1943, General Hoyt S. Vandenberg pointed out that, in spite of strong enemy defenses, bombers had been able to get through to their targets "No bombing mission set in motion by the Army Air Forces in World War II," Vandenberg pointed out, "was ever stopped short of its

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target by enemy opposition." He further explained that the question of "acceptable" or "unacceptable" losses to a bomber force depended upon "the destructive effect of bomber weapons and the value of the strategic target."[93]

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Army Air Force doctrine in the 1930's displayed little concern for the effect that hostile antiaircraft artillery fire might have on strategic bomber missions. Ground fire had not been effective against aircraft in World War I or in the Spanish Civil War. When American heavy bombers began to make daylight strikes against enemy targets in France in the autumn of 1942, however, it suddenly appeared that hostile flak might be more of an obstacle to the bomber mission than enemy fighters. When Colonel Curtis E. LeMay was enroute to England with the 305th Bombardment Group in October, he and his key officers happened to be in Prestwick at the same time that Colonel Frank A. Armstrong, Jr., was heading back through there to Washington. Armstrong had led the first daylight bomber mission to Rouen-Sotteville on 17 August, had flown two additional missions after this, and was as much of an expert as the fledgling airmen had ever seen. Armstrong told LeMay and his staff that a heavy bomber crew would not be able to survive over a gun-defended target if it maintained a straight course for more than 10 seconds. "This," LeMay recalled, "was pretty discouraging information." Even good peacetime bombardiers could hardly hit a target precisely with such a short run. LeMay knew that his crews would need to fly a straight-in bomb run in order to get enough aiming time, but the question was whether they could survive with such tactics. Using an old ROTC manual on the French 75-millimeter Field Artillery gun, LeMay worked out a fire problem on the number of rounds that a gun crew would require to hit a target the size of a B-17, sitting still on a hillside at a distance of 25,000 feet. He computed that the gun crew would have to fire 372 rounds. These looked like good odds, and LeMay convinced his group that it would go straight-in and make its attack without evasive action. Over St. Nazaire on 23 November 1942, with LeMay leading, the 305th encountered intense flak which damaged six of the 16 B-17's on the mission (including LeMay's lead plane), but no planes were lost and the target was well covered with bombs. "We never did take any evasive action from then on," LeMay recalled, "and within three weeks no one else was taking evasive action either."[94]

Operating over France and Germany, American heavy bombers and other aircraft met exceedingly strong antiaircraft artillery defenses. From the start of the war Germany had accorded flak equipment an equal production priority with aircraft, and in December 1944 she gave it an even higher priority. By the end of 1944, German flak defenses included 16,000 heavy guns, 50,000 light and mobile guns, 7,500 searchlights, and 1,500 barrage balloons, manned by more than

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1,000,000 men. Important targets were defended by all-around emplacements of heavy guns--the principal gun being the 88-millimeter piece that could fire 20 rounds per minute. The great Ruhr defenses were capable of hurling 200 tons of metal and explosives into the air every minute; the Cologne defenses, 80 tons; the Berlin defenses, 70 tons. The total German flak defenses, firing for one minute, could have put 5,000 tons of shells into the sky.[95] Within the Ninth Air Force flak evaluation intelligence and counter-flak tactics helped tactical aircraft maintain the element of surprise that they needed to survive fire from very-mobile, always-moving light flak.[96] The Eighth and Fifteenth Air Forces also used flak intelligence in the planning of their missions, but, in view of the all-around defenses at most strategic targets, about the best that could be said was that a mission approaching a hypothetical target from the north might be expected to draw 372 rounds while one from the east would receive 374. In the last months of the war some bombs would be directed at flak emplacements for flak suppression purposes, but, for the most part, strategic bomber mission planners usually ignored flak and picked target approaches for some other tactical reason such as a course that would have a good initial point or that would keep the sun at the backs of the bombardiers. The best tactic against heavy flak was to get as many bombers over a strategic target as quickly as possible in order to saturate the defenses.[97]

In the early years of the war in the European theater, hostile flak and fighters worked together effectively; many of the bombers shot down by the Luftwaffe were first crippled by flak and forced to straggle. When the back of the German air force was broken early in 1944, antiaircraft artillery became the major combat risk. On combat missions in the European theater from August 1942 through May 1945, the Army Air Forces lost 4,274 aircraft in air-to-air combat (2,452 heavy bombers, 131 medium and light bombers, and 1,691 fighters) and 5,380 aircraft to hostile antiaircraft fire (2,439 heavy bombers, 492 medium and light bombers, and 2,449 fighters). Figured in terms of total effective combat sorties flown in the European theater (274,921 by heavy bombers, 96,523 by light and medium bombers, and 527,314 by fighters) the loss rate of American aircraft that met these most effective of World War II defenses were less than 2 percent. Interestingly enough, when the Army began to test modern methods of war gaming shortly after the war ended, it played the B-17's and B-24's against the German fighter and 88-millimeter gun defenses of World War II: the war gamers concluded that the heavy bombers could not live in such an environment, this despite the fact that the loss rates in the actual war had been less than 2 percent. "Experience, I think," General LeMay observed when he was told about these conclusions, "is more important than some of the assumptions you make."[98]

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The Anglo-American strategic air campaign against Germany marked the first significant effort to do something drastic to an enemy other than to defeat his combatant forces. In this pioneer effort, planners sought to describe air target systems, whose destruction would accomplish desired objectives. One of the major problems facing these planners was a lack of basic information about German industry when the war began. As strategic bombing commenced, German industries were dispersed, adding to the complexity of the target identification process. Hitler, moreover, did not order full-scale German mobilization for war until 1942, and the German economy thus had a cushion of capability that could be employed to expand production in 1943-44.[99]

Thinking in terms of a survey of the strategic vulnerability of U.S. industry to strategic air attack which had been made at the Air Corps Tactical School in the early 1930's, the air officers who drew up AWPD-1 recommended strategic air attacks against Germany's electric power, transportation, oil and petroleum, and civilian morale. AWPD-42 specified the order of priority of air targets as being: aircraft and aircraft engine factories, submarine building yards, transportation, electric power, oil, aluminum plants, and rubber plants. The major difference between the two target lists was that AWPD-1 assumed that an air offensive might eliminate the necessity for a subsequent ground invasion while AWPD-42 looked toward the establishment of an air ascendancy necessary to subsequent surface operations. The strategic target systems suggested in AWPD-1 much more closely approximated the findings of the U.S. Strategic Bombing Survey as to what the optimum target system for the destruction of Germany's industrial life would have been than did either AWPD-42 or the attack program which, under orders from higher authority, was actually implemented.

Under directives from the Combined Chiefs of Staff, the Eighth Air Forces was required to direct much of its effort against target systems which were selected in context with surface warfare requirements. Because of heavy Allied ship losses in the Battle of the Atlantic, the Casablanca directive of January 1943 required the strategic bombers to give first priority to attacks against German submarine bases and construction yards. Tons of bombs were dropped on the heavily fortified submarine pens without material effect: the ultimate solution for the German submarine menace proved to be their detection and destruction at sea after May 1943.[100] Lacking sufficient force to handle decisive target systems, General Eaker attempted to discover a "long-chance objective" whose destruction would produce very important results greatly out of proportion to the effort involved. In Washington on 8 March 1943, General Arnold's Committee of Operations Analysts recommended that the destruction of three plants at Schweinfurt which produced ball-bearings would eliminate 43 percent of a most essential ingredient to the Axis war effort. "On the basis of American experience, as well as in the opinion of responsible authorities in the United Kingdom,"

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stated the Committee, "ball bearings represent a potential bottleneck in German industry, particularly in the manufacture of war material."[101] Although about 12,000 tons of bombs were dropped on the ball-bearing plants in a series of attacks beginning on 17 August 1943, the U.S. Strategic Bombing Survey later reported that "there is no evidence that the attacks on the ball-bearing industry had any measurable effect on essential war production."[102]

By the time of the organization of USSTAF in January 1944, General Spaatz had a growing capability to destroy selected strategic target systems in Germany. In the months which followed "Big Week," however, USSTAF strategic bombing capabilities were diverted to attacks against German V-weapon sites and to missions in direct or general support of Allied ground troops in Europe. Even though Spaatz was permitted to begin attacks against Germany's oil resources on 12 May 1944, it is fair to state that a massive sustained air campaign against strategic air targets in Germany did not begin until after D-Day, when Allied ground troops were safely ashore on the Normandy coast. By December 1944, German reserves of fuel were insufficient to sustain effective military operations. Undertaken intensively in September 1944, the strategic air campaign against Germany's transportation was described by the U.S. Strategic Bombing Survey as "the decisive blow that completely disorganized the German economy." Contrary to the intention of early AAF planners, the German electric power system was never a principal target. "Had electric generating plants and substations been made primary targets. . .," the U.S. Strategic Bombing Survey stated, "the evidence indicates that their destruction would have had serious effects on Germany's war production." Under the full force of strategic bomber attack and with war requirements multiplying more swiftly than production could handle, the economic life of Germany virtually collapsed by December 1944. "The German experience," stated the U.S. Strategic Bombing Survey, "suggests that even a first-class military power--rugged and resilient as Germany was--cannot live long under full-scale and free exploitation of air weapons over the heart of its territory."[103]

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In the Pacific the pattern of Allied operations and commitment of forces was different from that employed in Europe, but the strategy relative to the employment of air power was essentially the same. Because of Japanese expansion in the first year of the war, Air Force planners recognized that even the very-long-range B-29's would be unable to reach the Japanese homeland until the enemy's perimeter had been reduced. "Our armed forces in the Far Eastern Theater," stated AWPD-42, "are not within effective striking distance of the vital sources of Japanese military policy. . . . Hence from the standpoint of air requirements, the Far Eastern operations may be divided into two phases: (1) Air operations in

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support of our land and sea forces to regain bases within striking distance of Japan. . . . (2) Air operations against Japan proper to destroy her war making capacity." During 1942 defensive battles at the Coral Sea and Midway contained Japan's efforts to extend her perimeter, and limited American offensives in the Solomon Islands and eastern New Guinea added security to Allied bases. In Washington early in 1943, the Joint Strategic Survey Committee favored a carrier-aircraft supported drive across the Central Pacific to the China Coast, where air bases could be established to permit an extended air campaign against Japan. In the Southwest Pacific Area, however, General Douglas MacArthur urged the wisdom of an advance along the New Guinea-Philippines axis to the China Coast. At the Quadrant conference in Quebec in August 1943, the Combined Chiefs of Staff authorized limited operations along both lines of advance. Between Quadrant and the Sextant conference, which would be held in Cairo in November-December 1943, the Washington Joint Staff Planners debated two controversial ideas at length and with some heat.[104]

Easiest to resolve of the two controversies was the concept of operations to be set forth in a Joint War Plans Committee overall plan for the defeat of Japan. The initial draft of the concept included a statement to the effect that it had been clearly demonstrated in Europe that air forces by themselves were incapable of decisive action and that as a result an invasion and conquest of the Japanese home island would be necessary to conclude the war. When he returned from Europe and became chief of the Combined and Joint Staff Division of AAF Plans in November 1943, Brigadier General Hansell could not get the basic thought in the concept paper eliminated, but he managed to get it materially modified. The new concept noted that it had not been demonstrated thus far in Europe that air power could of itself bring a powerful modern nation to defeat, but that the circumstances in the island nation of Japan were quite different from those in Europe and it had not been proved that such an achievement could not be attained in the Japanese case. In any event, whether or not Japan could be brought to surrender by air attack, Japanese resistance would have to be drastically reduced through a sustained bombing effort if an invasion of the Japanese homeland was to be feasible. Hence, whether or not an ultimate landing might be necessary, a preliminary air offensive would be essential. Thus a first priority would have to be given to the development and employment of air forces to conduct a sustained offensive against the Japanese homeland.[105]

The second part of the planning controversy had to do with the prospective employment of the new B-29 Superfortress bombers, which had been bought from blueprints and would be service-tested in combat beginning in 1944. With General MacArthur's support, Lieutenant General George C. Kenney wanted to station the B-29's at Darwin, Australia, and to employ them against strategic targets in the Netherlands East Indies, but General Arnold was determined

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that the B-29 force would be used against targets in or adjacent to the Japanese home islands. In March 1943, AAF Plans had begun to study a project for the employment of B-29's against Japan from bases in south-central China, and Arnold had asked the Committee of Operations Analysts to prepare an analysis of potential strategic targets in Japan. This planning got approval at the Sextant conference in December 1943: it was agreed that the "Matterhorn" project would include the construction of bases near Calcutta in India and at Chengtu in south-central China for the employment of the USAAF XX Bomber Command and two wings of B-29's. The Committee of Operations Analysts recommended that the B-29's be employed against merchant shipping, steel production, urban industrial areas, aircraft plants, the anti-friction bearing industry, and the electronics industry as preferred target systems. The committee believed that it would be possible to immobilize Japan's steel production by the destruction of a few coke plants in Manchuria and Japan. It also pointed out that Japan's urban industrial areas were few, concentrated, and very vulnerable to incendiary attack.[106]

Because of logistical problems the XX Bomber Command would be able to operate only a few B-29 groups from bases in isolated south-central China. From Chengtu, moreover, the B-29's would not have enough range to reach Tokyo and other industrial targets on Honshu. Quite early AAF planners favored the Mariana Islands as potential bases for B-29's, but they had no real information as to the number of bases that could be built in these islands, which were held by the Japanese. Bases were accordingly constructed in the Aleutians at Adak and Shemya to accommodate four B-29 groups; an existing airfield on Ceylon was enlarged to permit B-29 staging for attacks against the oil fields in the Netherlands East Indies; and consideration was given to the eventual establishment of a B-29 command in the Philippines. At the Sextant conference in Cairo, however, Arnold urged that B-29 operations ought to be begun from China in May 1944 and also from the Marianas before the end of that year. Once again, the Combined Chiefs of Staff authorized continued advances through the Central and Southwest Pacific, without definitely accepting either line of attack as being better than the other. In Washington, during February 1944 the Pacific strategy was more fully debated by representatives of General MacArthur and of Admiral Chester W. Nimitz, Commander-in-Chief of the Pacific Fleet and Pacific Ocean Areas. Siding with Nimitz's representative, General Hansell presented the AAF concept of the Pacific war, which stressed the importance of the Marianas and the bomber offensive which could be conducted from them, to the Joint Chiefs of Staff on 15 February. After hearing all parties, the Joint Chiefs on 12 March 1944 ordered Admiral Nimitz' Pacific Ocean Areas forces to invade the Marianas beginning on 15 June 1944. Since a new XXI Bomber Command would be based in the Marianas, the Joint Chiefs limited the size of the XX Bomber Command to a single wing of four B-29 groups.[107]

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If the B-29 forces had been assigned to the European Theater of Operations they doubtless would have been organized into the same USSTAF command structure under the general direction of the Combined Chiefs of Staff as was used to control the heavy bomber strategic forces. The conduct of a strategic air war against Japan, however, posed different command problems. Only after the end of European hostilities could British air forces expect to be employed in the Pacific, and in the Pacific the B-29's would be based in several different theaters of operations. Arnold would later remember that a visit to the Pacific in the autumn of 1942 had made him realize that he would have to retain command of the very long range B-29's: "There was nothing else I could do," he remarked, "with no unity of command in the Pacific." In the first thinking about Matterhorn, the AAF staff favored the establishment of a strategic air force headquarters in Washington, similar in concept to the old GHQ Air Force, which would be directly responsible through Arnold to the Joint Chiefs of Staff. When the Joint Chiefs accepted this concept, the U.S. Twentieth Air Force was activated on 4 April 1944. Arnold assumed personal command as the executive agent of the Joint Chiefs; Hansell was designated chief of staff; and members of the Air Staff doubled in duty as the staff of the Twentieth Air Force. Commanders of the theaters in which the Twentieth Air Force's XX and XXI Bomber Commands were based were directed to coordinate B-29 operations with other air operations in their theaters; to construct and defend B-29 bases; and to provide logistical support and common administrative control of the B-29 forces. Should strategic or tactical emergencies arise requiring the use of the B-29 forces for purposes other than the missions assigned to them by the Joint Chiefs, the theater commanders were authorized to use the B-29 forces, immediately informing the Joint Chiefs of such action. As will be seen, the B-29 command organization would be revised again in 1945, but several years later an Air Force officer would describe the wartime establishment of the Twentieth Air Force as "one of the most important events in United States Air Force history. If that had not occurred," he thought, "we might still be parcelling out our big punch in penny packets to numerous theaters and lower commands."[108]

Except for the fact that the Japanese army and navy air forces had already been reduced to low effectiveness by earlier theater air battles, the early operations of the Twentieth Air Force's XX Bomber Command were similar to the early indecisive results of the Eighth Air Force in Europe. Like the fledgling Eighth Air Force, the XX Bomber Command was a piecemeal commitment of too little capability to perform effective strategic air attacks, and, once again, the available force was employed against "long chance" objectives. Called upon to operate the new B-29 planes on very long range missions against priority iron and steel targets in Japan and Manchuria, the XX Bomber Command faced the additional problem of providing logistical support across the Himalayas to the forward operating bases at Chengtu. In final analysis, only about 14 percent of the command's

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capability could be employed against the enemy, the remaining 86 percent being absorbed by the use of B-29's as tankers to haul fuel from India into China. At the initiation of its operations on 15 June 1944, the XX Bomber Command nevertheless sent 47 B-29's to attack the Yawata iron and steel works on Kyushu. By January 1945, the command would have dropped about 800 tons of bombs on targets in the Japanese home islands, but the raids were of insufficient weight and accuracy to produce significant results. Several daylight precision attacks were flown against coke ovens at Anshan, Manchuria, but these attacks were later determined to have had little strategic significance since Japanese iron and steel production had already been severely curtailed because of a loss of shipping needed to transport raw materials.[109]

In an effort to get results from the XX Bomber Command, Arnold sent Major General LeMay to take command of it on 29 August 1944. In the months that followed, LeMay substantially improved the operating record of the B-29's, but there was little that he could do to increase the effectiveness of attacks against Japanese targets that were physically too far distant from the Chengtu bases. In the autumn of 1944, the XX Bomber Command was used to attack targets on Formosa, in Burma, at Singapore, and in the Netherlands East Indies. In January 1945, LeMay was transferred to the Marianas, and in the following months the XX Bomber Command was also moved to Pacific bases. Looking backward at the XX Bomber Command experience, Brigadier General John B. Montgomery, who had been the deputy chief of staff for operations of the XXI Bomber Command, concluded that the piecemeal employment of the B-29's had provided a psychological boost for China's sagging morale, but from a military standpoint he suggested that the B-29 effort flown from China and India might just as well have been saved until facilities were ready to permit the B-29's to be marshalled and employed as an effective striking force. "Had we done that," Montgomery thought, "we would have saved airplanes and crews . . . and I think the war would have been over at about the same time."[110]

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Only three days after Admiral Nimitz' forces invaded the Marianas on 15 June 1944, construction of a B-29 base began at Isley Field on Saipan. When General Hansell, who had taken command of the XXI Bomber Command, landed the first B-29 at Isley on 12 October, however, he found that only a single unpaved airstrip had been built. In the Marianas, the B-29 command would find it difficult to obtain adequate logistical support from a theater command which was primarily intent on building a fleet base and other facilities to support continuing surface operations.[111] Back in Washington, while facilities were being built in the Marianas, Twentieth Air Force target planners were making a new appreciation of the strategic vulnerability of Japan to air attacks that could be flown

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by the XXI Bomber Command. During the summer the target planners lost their enthusiasm for Japanese iron and steel targets and favored predominant attacks against Japan's aircraft plants. At Arnold's request, the Committee of Operations Analysts submitted a fresh appreciation of Japan's strategic vulnerability based on the separate assumptions that Japan might either be defeated by an air and sea blockade or by those means plus a surface invasion. On the first premise, the Committee recommended a general air campaign against shipping including extensive aerial mining operations, an attack against the aircraft industry, and saturation bombing of six urban industrial areas. In the event of a surface invasion, the Committee recommended priority attacks against the aircraft industry, with effort also against industrial targets and intensification of the antishipping campaign. In the European theater, AAF commanders had not favored the area bombing attacks that were flown against cities by the RAF Bomber Command. In its earliest analyses of Japan, however, the Committee of Operations Analysts had brought out the fact that Japan's cities were highly flammable and that a substantial part of Japan's war production was done in small factories dispersed throughout urban areas. On 24 April 1944, General Kuter had called the Twentieth Air Force's attention to incendiary tests against simulated Japanese city targets which were being conducted at Eglin Field, and the AAF Board soon completed two reports recommending the proper admixture of incendiaries and fragmentation bombs and the tactics and techniques of B-29 incendiary missions which might prove most effective against Japan's cities.[112]

Although the Joint Target Group of the Joint Chiefs of Staff accepted the report of the Committee of Operations Analysts, it discounted the possibility that the Japanese war might be ended by any means short of surface invasion and recommended that an emphatic priority be given to the destruction of Japan's air power and that urban attacks and mining operations be delayed. Acting for the Joint Chiefs, the Twentieth Air Force accordingly directed the XXI Bomber Command to attack Japan's major aircraft plants. Following delays caused by weather, the XXI Bomber Command sent its first bombing mission on a high-level attack against Tokyo's Nakajima aircraft plant on 24 November 1944. Against the high-flying B-29's Japanese fighter interceptors had little real effect, but in the months which followed the precision bombing effort appeared rather unsuccessful. Adverse winter weather scattered bomber formations, obscured targets, and reduced bombing accuracy. The long flights to Japan and the need to lift heavy bomb loads to more than 25,000-foot bombing altitudes strained engines and brought about substantial losses of aircraft at sea. Impatient with the performance of the XXI Bomber Command, General Arnold moved General LeMay to its command on 20 January 1945, but neither the new commander nor the commitment of another bomb wing to combat from North Field on Tinian on 4 February appeared to give better results. Actually the B-29 attacks against the Japanese aircraft factories proved to be more effective than was

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realized. The U.S. Strategic Bombing Survey would discover that the damages caused by the B-29's were enough to convince the Japanese of a need to disperse their aircraft plants. The destruction inflicted, plus the confusion resulting from frantic dispersal efforts, reduced the pre-attack capacity of aircraft engine plants by 75 percent, of airframe plants by 60 percent, and of electronics and communications equipment plants by 70 percent.[113]

Apprehensive concerning reports that the Japanese were building a new and heavily armed fighter interceptor that might inflict heavy losses upon the B-29's and mindful of the need for fighter escort in the European theater, General Arnold had sent a memorandum to the Joint Plans Section in July 1944 recommending the seizure of the island of Iwo Jima midway between the Marinanas and Japan to serve as a base for long-range escort fighters. That same month Arnold committed some five long-range P-47N and P-51 fighter groups to the XXI Bomber Command. As it happened, Japanese air defenses would never be a serious threat to the B-29's, but in November 1944 the Japanese began to stage a few heckling attacks through Iwo Jima against the airfields in the Marianas, and in the early months of B-29 operations against aircraft factories the Japanese were able to concentrate their fighters on occasion and to shoot down a few B-29's. Actually, Japan's air defenses were rapidly losing their effect and the heckling attacks had ceased before Nimitz' forces invaded Iwo Jima on 19 February 1945. After very severe ground fighting had cleared the island, the VII Fighter Command deployed three fighter groups to Iwo Jima in March. Long-range Mustangs escorted B-29's to Tokyo on 7 April, but they would not often be called upon for such support. The XXI Bomber Command had begun to operate mostly at night, and, after 5 June 1945, the Japanese made their last effective air opposition against day-flying B-29's. Yielding complete air supremacy, the Japanese elected to hoard their remaining aircraft for suicide attacks against an expected surface invasion.[114]

Up until 6 March 1945, General LeMay considered that the XXI Bomber Command had not "really accomplished a hell of a lot in bombing results." The command, however, was gaining strength, for a third bombardment wing began operations from North Field on Guam on 25 February. With the impending arrival of this third B-29 wing, Arnold issued a new target directive on 19 February which continued to give first priority to precision attacks against aircraft engine factories but moved incendiary attacks against urban industrial concentrations in Tokyo, Nagoya, Osaka, and Kawasaki into a strong second priority. While the fire raids were thus desired by Washington, General LeMay kept his own counsel on the tactics that he would employ on the great Tokyo fire raid which would be mounted on the night of 9/10 March 1945. He called for a stream of bombers from the three wings to come in low (4,900 to 9,200 feet) and to drop their incendiaries on fires started by pathfinder crews. Since gunners who would be unused to night attack

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might shoot at each other's planes in the dark, LeMay ordered both guns and gunners removed from the B-29's. The weight saved by the removal of armament and the low attack altitude would permit the B-29's to carry very heavy loads of fire bombs. Many aircrewmen were confident that LeMay's radical tactics could do nothing but get them killed, but, over the target in a steady stream in the early morning hours of 10 March, the B-29's sustained only moderate losses as they kindled fires which destroyed about one-fourth of metropolitan Tokyo. LeMay had staked his professional career on the decision to operate the bombers at low level. "This decision, combining technical acumen with boldness of execution," General Hansell said later, "was one of the classic air decisions of the war."[115]

With 385 B-29's available in his combat wings, General LeMay was able to order combat missions every fourth to sixth day, depending on the weather, which would be the most serious obstacle affecting operations. Daylight precision-bombing attacks against industrial targets would be conducted from medium levels, and fire raids would continue against Tokyo, Kobe, Osaka, and Yokohama. At the end of March, however, the XXI Bomber Command found itself diverted from strategic air warfare to support the American invasion of Okinawa. Preparatory to this campaign, the XXI Bomber Command began to mine Japan's shipping channels and harbors on 27 March. On the same day, other B-29's struck Japanese airfields of Kyushu, and, as he was authorized to do in an emergency, Nimitz required approximately 75 percent of the XXI Bomber Command's combat effort to be flown against airfields on Kyushu and Shikoku in the period between 17 April and 11 May. Recognizing the gravity of the situation caused by Japanese suicide air attacks against the American forces at Okinawa, LeMay did not strongly resist this commitment of his forces even though he suggested that bomber attacks could not completely neutralize the hostile airfields. The Iwo-based long-range fighters of the VII Fighter Command also made sweeps over Japanese airfields on Honshu and Kyushu, without scoring very good results. Hostile planes were widely dispersed, and the enemy pilots would not come up and fight.[116]

Believing that all-out air attack could force Japan to surrender prior to a surface invasion, LeMay was willing to commit his command to maximum operations, even at the risk of exhausting all available crews. In the waning weeks of May and the early days of June, the XXI Bomber Command returned to strategic air attacks and completed the conflagration of Japan's five principal urban industrial areas. Arriving from India, the 58th Bombardment Wing began missions from Tinian on 5 May, and another B-29 wing which had been especially equipped to make radar attacks against oil storage facilities rounded out the XXI Bomber Command's strength when it arrived on 26 June. By the late spring of 1945, Brigadier General Emmett O'Donnell, Jr., commander of the 73d Bombardment Wing, which had been first into action from the Marianas, noted a general conviction throughout the bomber command that the Japanese could not stand up under the

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terrific amount of damage that the B-29's were placing upon them. "I thought personally," recalled O'Donnell, "in a couple of weeks it would be all over." When Arnold visited Guam early in June, LeMay told him that 30 to 60 of Japan's cities and every industrial target in the home islands would be destroyed by 1 October. In the air, the B-29's were virtually unopposed. "The record will show," LeMay later commented, "that in the last two months of the war it was safer to fly a combat mission over Japan than it was to fly a B-29 training mission back in the United States."[117]

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As early as March 1945 the Japanese government began to give serious consideration to ending the war, and on 20 June Emperor Hirohito told his council that it would be necessary to have a plan to close the war at once. Early in July the Japanese government requested the Soviet Union to intercede with the United States to stop the war, but the Soviets refused to relay the proposal, and, in any event, Japan's militarists continued to play for time. These men believed that if Japan could somehow survive the air attacks she might be able to inflict such a high rate of casualties on American surface invaders as to be able to get a negotiated peace. The reiteration of the unconditional surrender formula in the Potsdam Declaration on 26 July 1945 gave new strength to the Japanese militarists.[118]

In Washington top-level American officials knew of Japan's desire to end hostilities, but in September 1944 the Combined Chiefs of Staff had committed the United States and Great Britain to the seizure of "objectives in the industrial heart of Japan." This surface strategy was reaffirmed at Yalta in February 1945, and the Soviet Union obtained territorial concessions in East Asia in return for promises to join the war against Japan when hostilities were concluded in Europe. In the spring of 1945, the question was not so much whether Japan would be invaded, but how the effort would be ordered and commanded. Arnold thought that a supreme commander should be appointed, with coequal status for ground, naval, and air force subordinates--an arrangement which would permit all AAF units in the Pacific to serve under one top air commander. Not willing to accept this proposal, the Joint Chiefs on 3 April 1945 instead approved a directive which designated General MacArthur as Commander-in-Chief, Army Forces in the Pacific, and named Admiral Nimitz as Commander-in-Chief Pacific, with command over all naval forces. While MacArthur would command all theater air forces in the Pacific, the Joint Chiefs agreed on 2 July to authorize the establishment of the United States Army Strategic Air Forces (USASTAF), under the command of General Carl Spaatz, with a headquarters on Guam. Under this plan, the XXI Bomber Command was redesignated as the Twentieth Air Force, and the Eighth Air Force was to be redeployed from Europe to command new B-29 wings based on Okinawa. The Joint Chiefs of Staff would direct USASTAF operations, and Arnold would act as their executive agent for USASTAF.[119]

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Under the new command organization, the Twentieth Air Force was established in the Marianas on 16 July, with the five wings and 21 B-29 groups plus the Iwo-based fighters that had previously been assigned to the currently inactivated XXI Bomber Command. Employing 923 B-29's the Twentieth operated virtually at will over Japan during July, and after 4 July General Kenney's Far East Air Forces began to strike targets on Kyushu from bases on Okinawa. During the Okinawa crisis, General LeMay had supported naval operations without demur, but he had other thoughts when Admiral William F. Halsey requested on 14 July that the B-29's would fly maximum effort strikes against airfields in the Tokyo area on 24-25 July and again on 1-2 August to support Third Fleet carrier air strikes into the Tokyo-Nagoya areas. LeMay protested that it was foolish to expend 6,500 tons of B-29 bombs in order to protect the carriers while their aircraft would be dropping 500 tons of bombs; he agreed, however, to use Iwo-based fighters in support of the Third Fleet strikes. Thinking differently, the Joint Chiefs ordered LeMay to employ the B-29's as Halsey requested. On 24 and 25 July, Iwo-based P-51's were sent out against airfields in the Tokyo area, but bad target weather somehow prevented B-29 attacks, which were diverted to their original strategic targets.[120]

Arriving on Guam on 29 July, General Spaatz commenced work on the organization of the United States Army Strategic Air Forces (which would not be completed before the war's end). If the organization had been fully accomplished, the Eighth and Twentieth Air Forces would have controlled a total of 49 B-29 groups. As it was, Lieutenant General Doolittle established the Eighth Air Force on Okinawa on 19 July, but its first B-29 wing was in process of getting into place when Japan surrendered. Before reaching the theater, Spaatz had been briefed on the terrible secret of the atomic bomb, which the 509th Composite Group on Tinian would be prepared to drop on a target designated by Washington as soon as it could be delivered from laboratory production. Escorted only by photo planes, a 509th Group B-29 dropped the first atomic bomb against Hiroshima. Three days later, another of the group's planes dropped the second atomic weapon over Nagasaki. Apparently now in some haste, the Soviet Union declared war on Japan. On 10 August, the Japanese government officially announced its decision to accept the Potsdam surrender terms, provided the surrender would not alter the institution of the emperor. Although Japan thus did not surrender unconditionally, the United States and its Allies accepted Japan's offer and terminated active hostilities on 12 August 1945.[121]

The revolutionary employment of nuclear air weapons and the entry of the Soviet Union into the war tended to obscure the contributions of the sustained conventional strategic air offensive to the defeat of Japan. Looking backward, Spaatz could not see how the entry of Russia into the war had any effect on Japan's decision to surrender. He also believed that conventional bombing could have ended the war, but he thought that the employment of the atomic

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bomb had been justified as a means of insuring without doubt that many Americans would not have to lose their lives in a tremendously costly surface invasion.[122] "Without attempting to minimize the appalling and far-reaching results of the atomic bombs," Arnold observed, "we have good reason to believe that its actual use provided a way out for the Japanese government. The fact is that the Japanese could not have held out long, because they lost control of their air. They could not offer effective opposition to our bombardment, and so could not prevent the destruction of their cities and industries."[123] Based upon a thorough investigation, the U.S. Strategic Bombing Survey stated its opinion that "certainly prior to 31 December 1945, and in all probability prior to 1 November 1945, Japan would have surrendered even if the atomic bombs had not been dropped, even if Russia had not entered the war, and even if no invasion had been planned or contemplated."[124]

3. Thoughts on Air Power and Air Force

"The air power of a nation," the Air Corps Tactical School had taught as early as 1935, "is its capacity to conduct air operations; specifically, the power which a nation is capable of exerting by means of its air forces. Air power is actual and not potential. Air power is measured by the immediate ability of a nation to engage effectively in air warfare."[125] In the view of the Air Corps Tactical School, air power was synonymous with the military air striking force in being, but to many observers the experience of World War II indicated that this definition was much too restrictive.[126]

When he published his widely-read Victory Through Air Power in 1942, Alexander de Seversky drew upon his experience as a Tsarist military pilot and as an inventor, airplane designer, and aircraft producer in the United States and boldly predicted that aircraft would be developed with global ranges, thus ending the isolation of the Western Hemisphere. "Range deficiency," Seversky wrote, "has been the curse on Hitler's aviation." The United States would soon be open to air attack from every point of the compass. "It is sheer waste," he concluded, "to maintain advance bases instead of hurling the full aerial potential directly against the adversary. The entire logic of aerial warfare makes it certain that ultimately war in the skies will be conducted from the home grounds, with everything in between turned into a no-man's land." Seversky's concept of global air warfare paralleled the naval warfare ideas which he had obtained from study of Mahan. He also followed Mahan, as he later admitted, in offering a wide conception of the nature of air power, which included a striking air force, a defense air force, cooperation air forces, as well as the industries, the personnel, the materials, or, in short, everything that produced the power to navigate in the air.[127]

When General Arnold made his official report to the Secretary of War on 12 November 1945, he accepted the same extrapolation of Mahan's classic definition of naval power. "Air power," Arnold stated,

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"includes a nation's ability to deliver cargo, people, destructive missiles and war-making potential through the air to a desired destination to accomplish a desired purpose. Air power is not composed alone of the war-making components of aviation. It is the total aviation activity--civilian and military, commercial and private, potential as well as existing."[128] This definition was accepted by General Spaatz, when he had become chief of staff of the U.S. Air Force in 1947,[129] and the Congressional Aviation Policy Board stated in 1948 that: "Air power is the total ability of a nation to capitalize on the medium of flight. . . . National air power is an entity not fundamentally divisible as a weapon, or as a carrier. Materials, organization, and craftsmanship which go to make a great aviation industry are as readily turned to the combat plane as to the transport."[130]

Prior to World War II, Air Corps thinkers had visualized the air force as a striking arm quite separate and distinct from the auxiliary aviation which supported surface action, although the separate air striking arm could be used as necessary to support ground action. By 1945, however, General Arnold equated the "air force" with "military air power," and a few years later Spaatz emphasized that Congress had assigned the nation's "primary air power role to the Air Force."[131] Again in 1945, Arnold described the air force as comprising a global striking force employed from strategically located bases which would be able to meet and overpower an aggressor's air threat as near as possible to its source, a tactical air force which would work closely with the army, air transport and troop carrier aviation, and an up-to-date training establishment fully supplied with the latest aircraft and equipment.[132]

Addressing the first class in the new Air Command and Staff School in September 1946, an Army Air Forces instructor stated: "Air power is a force in itself capable of being used alone or in cooperation with other forces. The early prophets of air power, careless of their terminology, claimed that air power rendered obsolete all other weapons and armed forces. Though these men were led to false prophecy, their vociferous claims no doubt helped to hasten the development of air power."[133] Although this lecture was not authoritative, it manifest an apparently prevalent opinion springing from the highest levels of authority that World War II had been a composite victory of cooperative air, ground, and naval forces. "The elementary lessons which we have learned from the hard experience of World War II," stated Secretary of War Robert P. Patterson in October 1945, "is that there must be a single direction of the Nation's land, sea, and air forces . . . these arms must operate as a single team under single direction, which has final responsibility and final power of decision over all."[134] "Air power tipped the scales for victory in the war," Patterson wrote in January 1947, but in November 1947 he stated: "World War II was not won in the air alone. It was won by the combined effort of ground forces, sea forces and air forces, working as members of a single team."[135]

The "team" concept of Allied victory in World War II was strongly supported by high-ranking Army officers. "The national security is

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measured by the sum, or rather the combination of the three great arms, the land, air, and naval forces," General Marshall stated in October 1945.[136] "In my opinion," said General Omar Bradley in November 1945, "no one service won this war or is going to win any future war of any magnitude. It takes all our services together, plus the industrial effort of our Nation to win any major war." Illustrating his point, Bradley granted that air attacks cut down the employment of German V-2 rockets against England, but he invited attention to the fact "that not until the Navy and the Army forces got together and went over and captured the launching sites did the V-2 attacks completely come to a stop."[137] As Chief of the War Department Plans and Policy Group in February 1947, Brigadier General George A. Lincoln argued that World War II had demonstrated that air power was "a dominant factor" in war and peace but that it had also taught that a tremendous hidden Army and Navy effort was required "to make air power effective over the target." This included air-ground battles required to seize and hold air bases needed to put air power over its target.[138] "The war also illustrated," stated Secretary of the Army Kenneth C. Royall in December 1947, "that final victory had to be won by tanks, guns and men, on the ground." Allied forces, Royall continued, "never stopped the launching of the V-bombs, and never engaged in any material damage to them or to the submarine pens, until the infantry did so from the ground, despite the enormous bombing and almost unopposed bombing of Europe for a considerable period of time, and in great volume."[139] "Although I am personally convinced that Air Power will again be the dominant factor," said General J. Lawton Collins in October 1948, "I'm equally convinced that Air Power alone cannot win the war. . . . It took, and it will again take, in my opinion, the combined operations of land, sea and air forces to reach a conclusion."[140]

Although the Navy appeared somewhat less enthusiastic about the "team" concept than did the Army, the theater commanders of the Pacific war--General MacArthur and Admiral Nimitz--saw the defeat of Japan as a victory of combined forces. "The victory was a triumph for the concept of the three dimensions of war--ground, sea and air," MacArthur stated in October 1945. "By a thorough use of each arm in conjunction with the corresponding utilization of the other two, the enemy was reduced to a condition of helplessness. By largely avoiding methods involving the separate use of the services and by avoiding methods of frontal assault as far as possible, our combined power forced the surrender."[141] Admiral Nimitz thought in 1945 that without the atomic bombs the surrender of Japan "would have taken a longer time," but he thought that the victory resulted from "the strangulation of her industry, her being cut off from all supplies, her lack of gasoline, her inability to get raw materials from China. . . . Such gasoline as they had was stored in places from which it could not be distributed, because the transportation systems had been destroyed by the air attacks; the very efficient

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destruction carried on by the B-29's. It was just a question of time before the Japanese would have been forced to this same surrender. The atomic bomb undoubtedly hastened that surrender."[142]

Army Air Forces leaders also accepted the point of view that World War II had been won by combined arms. Thus in April 1944, Major General Follett Bradley could urge that the "true expositor of military things to come must . . . evaluate correctly the effect of air power in combination with land and sea power on a battle, a campaign and a war, and he must know something of the technique by which that effect is produced."[143] In October 1945, Arnold hailed the command decisions of February 1943 by which "the air had been consolidated under an air command, coordinate with similarly concentrated land and naval forces. . . . With this change it became possible to exploit fully the versatility and weight of air power and to exert fully the over-all commander's strategic will in the air."[144] In November 1945, he wrote that the doctrine of the Air Force comprehended the fact "that it is the team of the Army, Navy and Air Forces working in close cooperation that gives strength to our armed services in peace or war."[145] Speaking of the termination of hostilities in the Pacific, Lieutenant General Doolittle said in November 1945: "The Navy had the transport to make the invasion of Japan possible; the Ground Forces had the power to make it successful; and the B-29 made it unnecessary." In its broad aspects, however, he pointed out that "the recent war was won by teamwork. . . . No single service won the war. The Navy fought magnificantly as did the Ground Army and the Air Army. . . . The smooth functioning of the team was the direct result of having unity of command--one supreme commander in each theater of war."[146]

The emphasis upon combined forces was accompanied by a subtle downgrading of the significance of the role of strategic bombardment in World War II. "The hammering that German industry and transportation took from the American and British air forces so seriously crippled the mobility of the German army that it was unable to withstand the combined assaults from the East and from the West," summarized Robert P. Patterson.[147] Speaking of strategic bombing, General Jacob L. Devers, commander of the Army Ground Forces, said that "the Ground Forces recognize this strategic battle role of the air which must be successfully conducted before the Infantry and Artillery can close with the enemy."[148] General Bradley concluded that strategic bombing in Europe "was ultimately an effective deterrent to the success of the enemy on the battlefield. . . . It had a decisive effect on the ultimate ability of the Allies to defeat Germany in a shorter time, saving many, many lives and dollars."[149]

In the immediate aftermath of World War II, Air Force officers were inclined to agree that a "second phase" of ground conflict would characterize a future war. "Japan," General Spaatz said in March 1947, "was a peculiar situation, being an island empire. . . . But when you are up against a continental empire you have the problem of winning against great masses of people with great internal

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resources. . . . We had established almost complete air superiority over Germany at the time of the invasion, but it took a considerable amount of fighting to subdue Germany after air superiority had been established." Speaking in August 1949 after he had become chief of staff of the Air Force, General Hoyt S. Vandenberg announced: "My opinion of the effectiveness of strategic bombing in both Europe and in the Pacific was that it contributed in large measure to the success in the conclusion of the war and saved a great many lives that otherwise would have been lost."[150] "We of the Air Force," Vandenberg stated in a speech in August 1952, "have never claimed that air power, in alliance with mass destruction weapons, could decide a war alone."[151]

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In the 1930's, the Air Corps had regarded the establishment of control of the air to be essential only in support of surface operations. Based upon his observations of the Battle of Britain and other early World War II operations, however, Seversky boldly asserted, using italics for emphasis: "We cannot and must not dream of conquering the enemy without first capturing dominance in the air--but once we have clear-cut dominance in the air, all else becomes a secondary subordinate, auxiliary operation." And he stated the further rule: "Only air power can defeat air power."[152] In view of the experience of the Eighth Air Force over Germany, the Army Air Forces found it easy to abandon Douhet and to adopt a doctrine of "air superiority" or "control of the air," which--like the definition given to air power--was an extrapolation from Mahan. "The significance of full domination of the air over the enemy--both over its armed forces and over its sustaining economy--must be emphasized," stated the U.S. Strategic Bombing Survey's summary report of the European war. "That domination of the air was essential. Without it, attacks on the basic economy of the enemy could not have been delivered in sufficient force and with sufficient freedom to bring effective and lasting results."[153] Looking backward at World War II in October 1945, Arnold stated: "The Air Force's primary mission the world over was to knock out enemy air power--to win the air war. . . . All types of aircraft shared in this task in many different roles."[154] Doolittle pointed out that the United States had to have control of the air over Japan before it could deliver the atomic bomb. "The first lesson," he said, "is that you can't lose a war if you have command of the air, and you can't win a war if you haven't."[155] "You know, at first hand," Spaatz told a convention of air veterans in November 1947, "the penalty paid by Germany and Japan for their failure to control the air over their own territories. You know the inevitable outcome of any failure to control the air over our own country."[156] Writing in 1950, Colonel Dale O. Smith and Major General John DeF. Barker, noted: "It has long been held as Air Force doctrine that air superiority should be the primary mission of air power."[157]

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The Air Force doctrine of air superiority or control of the air was quite acceptable to War Department and Army spokesmen. Robert P. Patterson stated: "World War II drove home the lesson that a nation lacking in air power has no chance of winning a war. . . . In every campaign fought out on the surface, success went to the side that had local command of the air. . . . Without command of the air, the launching of a military operation on land or sea was virtually unthinkable."[158] "There is no question in a soldier's mind," said Lieutenant General Manton S. Eddy in March 1949, "that air power is as indispensable to the national security as bread and water are to life. Land forces cannot fight decisively unless the air is controlled by its sister services."[159] "In spite of the fact that air power can never be decisive in total war," General Bradley told an audience in November 1951, "the air battle must be won if a war is to be won."[160]

While the doctrine of control of the air was firmly implanted in Air Force thinking as a result of conventional air operations in Europe, some second thoughts about the influence of nuclear bombing capabilities indicated a trend back toward Douhet. Largely written by Major General Orvil Anderson and published in 1947 as the concluding report of the U.S. Strategic Bombing Survey, Air Campaigns of the Pacific War offered the observation: "Air superiority is not an end in itself. Air superiority was necessary in the past war in order that surface operations could be successfully undertaken and in order that decisive bombing of the enemy's vital components could be accomplished. If science and technology produce an air weapon which can, unaided, penetrate enemy defenses and accurately deposit its bombs, it may not be necessary to fight the conventional air battle and obtain conventional air superiority before the decisive attacks on an enemy's economy are mounted. Any force, having successfully made such attacks, however, probably would quickly inherit air domination for the exploitation phase of the war."[161] In a lecture in June 1949, Anderson warned that conventional ideas of air superiority would not always hold good: "You will reach the point in the distant future when you won't even think of opposing air in the air. It will be moving too fast. . . . You'll fight them at the launching site or you won't fight them."[162] "Future defense and future security," Colonel David A. Burchinal pointed out in the autumn of 1949, "would seem to stem from the basic premise that successful air defense must be capable of destroying an attacking force or an aggression potential before the attack can be launched or the potential realized."[163]

In his book Air Power: Key to Survival published in 1950, Seversky continued to attach great importance to air dominance. "We can undertake nothing through military force," Seversky also told an Army War College audience in March 1952, "unless first we have secured command of the air. To gain command of the air, we must win the air battle. . . . The idea that we can send a lot of bombers, either from bases abroad, or from bases at home or from

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aircraft carriers, and destroy everything in Russia without first winning command of the air is, in my estimation, sheer bunk. . . . Therefore, the battle for command of the air is just as much in the cards today as it was in the last war. . . . Just the same as it would have been impractical in the last century to control a part of the ocean--just a patch of the ocean. . . . So the air battle will be widespread, and will be fought for the command of the entire air space, clear around the globe."[164]

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In a talk with one of his assistants on 22 August 1945, Major General Lauris Norstad, who was then the chief of Army Air Forces Plans, stated that the conception of the tactical air force was "one of the greatest developments" of World War II, but he immediately added that the atomic bomb might have made a tactical air force "as old-fashioned as the Maginot line."[165] The Air Force would continue to debate the effect of nuclear weapons on air power at the same time that it was recording the doctrinal lessons of World War II applicable to tactical air power.

The experience of World War II left no doubt as to the impact of air power on land battles. "The Normandy invasion," General Dwight D. Eisenhower explained on 16 November 1945, "was based on a deep-seated faith in the power of the air forces, in overwhelming numbers, to intervene in the land battle. That is, a faith that the air forces, by their action could have the effect on the ground of making it possible for a small force of land troops to invade a continent, a country strongly defended, in which there were 61 enemy divisions and where we could not possibly on the first day of the assault land more than 7 divisions. . . . Without that air force, without the aid of its power, entirely aside from its anticipated ability to sweep the enemy air forces out of the sky, without its power to intervene in the land battle, that invasion would have been fantastic. . . . Unless we had that faith in the air power to intervene and to make safe that landing, it would have been more than fantastic, it would have been criminal."[166]

One of the major ironies of World War II was that, when operating against a first-class adversary on a continental land mass, air units assigned or attached to ground forces proved incapable of providing effective support to the ground forces. As has been seen, such "penny packets" of air power were unable to accomplish missions of importance to the ground forces, which the Allied experience in North Africa demonstrated to be the attainment of air superiority, the interdiction of the movement of hostile troops and equipment to or within the battle area, and the close support of friendly ground troops by aerial attack of battlefield objectives which could not be handled by friendly artillery. While War Department Field Manual 100-20, Command and Employment of Air Power, prescribed the tasks of a tactical air force as being air superiority,

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interdiction, and close support, it did not attempt to describe the exact organization to be used in combat theaters. In Italy the Fifth Army and the XII Tactical Air Command attained unity of purpose by maintaining adjacent headquarters and holding nightly planning conferences. Call-type requests for close air support went back from front-line units to the army air section. They were monitored by corps air section, and if the corps remained silent it was assumed that the mission could not be handled by corps artillery or other means. The request was reported at once by the army air section to ground liaison officers at the airdromes, while G-3 and tactical air command officers determined whether the mission should be flown. About 50 percent of call-type missions were refused, and about 75 percent of the refused missions were disapproved by G-3 as not in conformity with army plans and the remainder by the tactical air command on technical grounds. At the front-lines, experienced pilots served tours of duty as forward air controllers to direct support aircraft to their targets. When necessary, especially in the mountainous terrain of Italy, a "Rover Joe" or "Horsefly" airborne tactical air controller flying a liaison plane would lead support aircraft to their targets.[167]

The organization for tactical air control adopted in the European theater was an expansion of the system employed in Italy. In the battles of France and Germany, the Ninth Air Force cooperated with the 12th Army Group while its subordinate commands developed very close relationships with various armies: the IX Tactical Air Command with the First Army, the XIX Tactical Air Command with the Third Army, the XXIX Tactical Air Command with the Ninth Army. Each of these tactical air commands possessed microwave ground control interception radars, and their fighter-bomber groups were employed alternatively as required either for air defense or for air support. With the demise of the dive bomber concept, the P-47 fighter, although originally designed as a high altitude interceptor, proved to be a superb fighter-bomber. The radial air-cooled engine on this plane made it less vulnerable to hostile ground fire than was the P-51, which had an in-line liquid-cooled engine. In order to permit flexibility, medium bombers and tactical reconnaissance aircraft were retained under the direct command of the Ninth Air Force. The reconnaissance aircraft flew missions requested by army and air force units: they also proved invaluable in leading fighter-bombers directly to targets of opportunity. While many Army officers questioned the inherent wisdom of such a centralization of reconnaissance capabilities, Lieutenant Generals Courtney H. Hodges, George S. Patton, Jr., and W. H. Simpson, the commanders of the First, Third, and Ninth U.S. Armies expressed their individual approval of the tactical air reconnaissance system.[168] By March 1945, Lieutenant General Walter Bedell Smith, the chief of staff to General Eisenhower, noted that "the tactical coordination of air and ground forces has become an instrument of precision timing."[169]

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In Europe all air force capabilities were available for the support of the surface campaign. While heavy bombardment was employed on occasion to augment tactical bomber forces (most notably on 25 July 1944 when 1,508 heavy bombers softened the German lines at St. Lo preparatory to the First Army's breakthrough out of Normandy) the outstanding contribution of the heavy bombers to the over-all ground campaign was the elimination of the Luftwaffe as an effective fighting force. Although the Ninth Air Force stood ready to maintain friendly air superiority, it was routinely committed to interdiction and close support operations. In these endeavors, roughly 15 percent of the tactical air effort was routinely committed to close air support, but in static periods such as existed prior to the St. Lo breakthrough and while the armies were building up before the Siegfried Line the proportion of air effort allotted to targets along the front-lines did not exceed 10 percent of the tactical air forces capability. The remaining tactical air effort was committed to armed reconnaissance and to attacks against interdiction targets behind the enemy lines.[170] A flexible employment of tactical air groups on varied missions ensured that no one unit suffered debilitating losses. Fighter-bombers, for example, suffered their highest rate of loss to flak on the dive-bombing missions commonly required for bridge attacks and close air support: armed reconnaissance, area support, and fighter-sweep missions were only about two-thirds as dangerous as dive-bombing missions.[171] What could happen when a group was solely committed to the most hazardous type mission was illustrated during the Ardennes offensive. Because it was based closest to the area, the 406th Fighter-Bomber Group provided the burden of the close air support to the 101st Airborne Division, which was besieged at Bastogne. Between 23-28 December, the group flew 529 close-support sorties into this area; out of 60 operational P-47's at the beginning of the period, it lost 17 shot down and had more than 40 damaged by flak.[172] While the evidence was not conclusive, such experience indicated that an air unit committed solely to close air support in the European theater would have encountered disproportionately high casualty rates that would have adversely effected its continuation in operations.

In the Pacific theaters of World War II, American forces accepted the same tasks of tactical air power as were recognized in Europe, but organizational patterns were different. In General MacArthur's Southwest Pacific Theater, the entire Fifth Air Force cooperated intimately with the Sixth Army, and, after June 1944, the Thirteenth Air Force usually worked with the Eighth Army. While General Kenney began to organize tactical air commands for employment in the planned invasion of Japan, he elected to use standard bombardment and fighter wings to provide cooperation with individual ground task forces during the war.[173] In the early days in the Pacific Ocean Areas theater, Marine and Thirteenth Air Force aircraft were organized in the same naval task group to support ground fighting on Guadalcanal. As a matter of fact, Marine F7F Wildcats usually

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flew air patrols overhead while Air Force P-39 squadrons (which lacked ability to intercept high-flying enemy aircraft) performed close-support missions. In the island invasions of the Central Pacific, Navy and Marine carrier-based air units provided air superiority, interdiction, and air support as necessary. Some years later, after he had become Commandant of the Marine Corps, General David M. Shoup would recall that "the finest close air support for ground troops that I experienced in World War II came from Navy squadrons at Saipan." Working from fast aircraft carriers, however, Marine airmen were virtually losing their service identity, and a serious defect in fast carrier support for ground operations came to light on 17 June 1944 when the Fifth Fleet suddenly had to withdraw from Saipan to fight the naval battle of the Philippine Sea. Lightly-gunned Marine infantry was left ashore without close air support. Rather than allow this to happen again, Lieutenant General Holland M. Smith, the Marine officer in command of Expeditionary Troops, recommended and the Navy accepted the proposition that Marine air groups would be designated as air support specialists and would be assigned to escort carriers, which would not be withdrawn from an invasion objective for a fleet engagement. According to the organization worked out and employed by the Marines at Peleliu and Okinawa, a Marine air wing became an integral part of a Marine division. Since Marine ground commanders could normally expect only flat trajectory fire of naval guns during critical phases of ship-to-shore amphibious operations and since they would usually go ashore with limited amounts of organic artillery, Marine air wings would be organized, trained, and employed as a substitute for Marine artillery.[174]

In the winter of 1945-46, when the War Department began to refine the air-ground lessons of World War II for the purpose of determining future organization, Army officers generally preferred the system which had been employed in the European theater of operations to that which had been devised by the Marines in the Pacific. General Eisenhower, who became Army Chief of Staff on 19 November 1945, would subsequently explain the reasons why he believed that the Army should not attempt to develop its own organic air support in these words:[175]

> The Army concept of the land, sea and air principle of organization of the armed forces is well-known; this Service accepts without reservation the concept of complementary roles--air, ground and sea--and consequent mutual dependence of the three components of the armed services. Under this three service concept it is axiomatic that no single service should acquire forces or equipment necessary to accomplish joint missions single-handed, if such forces or equipment unnecessarily duplicate those characteristic of and fundamental to either of the other two services. The experiences of this war have indicated that in many operations, if not

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in the majority, the task was of necessity accomplished by contributions from two or three services acting under the principle of unified command. Furthermore, the welding of the forces resulted in the greatest possible concentration of combat power at the decisive point while at the same time permitting the greatest economy of force on lesser tasks.

Employment of tactical air in World War II is an outstanding illustration of the application of this concept to a specific problem. Battle experience proved that control of the air, the prerequisite to the conduct of ground operations in any given area, was gained most economically by the employment of air forces operating under a single command. This assured a maximum of flexibility, providing a command structure under which all forms of available air power could be concentrated on tactical support missions or on strategic missions, as the situation demanded--in other words, it permitted the maximum concentration of combat air power at the decisive point at the decisive time. Throughout the war, the Army depended on the necessary tactical air support from a practically autonomous Air Force. This type of close, accurate, and effective support of the front-line fighting units was provided and proved an essential element in the achievement of the Army objectives.

The case for the concept that tactical air units belong under the Air Force rather than under the Army is supported by the abundant evidence of World War II, but does not rest on this evidence alone. Basically, the Army does not belong in the air--it belongs on the ground. Planes are but a facet of the over-all problem, which is basically much broader and includes responsibilities now involving approximately one-third of the Air Force. Control of the tactical Air Force means responsibility, not merely for the fighters and medium bombers themselves, but, as well, for the entire operating establishment required to support these planes. This includes the requisite basic air research and development program necessary to maintain a vital arm and the additional specialized service forces to support the arm; for example: air maintenance units, aircraft warning units (radar, DF stations), tactical air communications nets, etc. In short, assumption of this task by the Army would duplicate in great measure the primary and continuing responsibilities of the Air Force and, in effect, would result in the creation of another air establishment.

Some other factors also evidently bore on the Army's rejection of the Marine air support system. The Marine Corps was designed, equipped, manned, and trained to engage in "shock" type action which would be limited in time, magnitude, and scope. Army

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divisions, on the other hand, were intended to operate in sustained ground campaigns on broad theater fronts. While Marine commanders would have to depend upon air support as a substitute for artillery firepower, Army commanders preferred to rely upon the supporting fire of their own organic artillery within the first thousand yards beyond the front-lines.[176]

As has been seen, Army and Army Air Forces officers were so generally satisfied with the tactical air system employed in Europe that it was in effect engrossed into War Department Field Manual 31-35, Air-Ground Operations, with little difficulty in August 1946. There were, however, evidences that at least some influential Army officers did not like the cooperative air support system. Writing in 1949 about his experiences as commander of the U.S. Fifth Army in Italy, General Mark Wayne Clark was willing to admit that his forces had received "splendid air support of all kinds by both British and American planes." "Nevertheless," he continued, "the command setup was never satisfactory from my point of view and it still is not satisfactory. . . . I believed then, and my experiences in Italy did not change my view, that ground troops cannot be successful in battle unless adequately supported by combat aviation, and that such planes as are used for this purpose are necessarily auxiliary weapons, as is the artillery, and that they should come under the direct orders of the ground commander."[177] The Army's chief historian found that satisfaction with air-ground cooperation was greatest at the higher command levels and less pronounced at the lower levels. "The air and ground forces of the Army. . .," he wrote, "did not develop an effective air-ground battle team in World War II. The Marines did, in cooperation with naval aviation and their own."[178]

At the same time that some Army officers wished a closer command subordination of tactical air units to ground control, some Army Air Forces commanders visualized a much more decisive role for tactical air power. Major General Elwood R. ("Pete") Quesada, commander of the IX Tactical Air Command paired with the U.S. First Army in Europe, drew high praise from General Bradley. According to Bradley, Quesada "had come into the war as a young and imaginative man. . . . To Quesada the fighter was a little-known weapon with vast unexplored possibilities in the support of ground troops."[179] Late in 1944, Quesada made a suggestion that got back to Washington in a round-about manner that a concentration of available Allied fighter strength in Europe in low-level attacks against Germany could win the war during the winter of 1944-45. After World War II, when he had been promoted to lieutenant general and given command of the Tactical Air Command, Quesada was willing to accept the relationships of the air-surface force team as it existed at the cessation of hostilities only as a point of departure for future doctrine. Writing in 1948, he thought it axiomatic that the first prerequisite for a successful major campaign would be air supremacy or control

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of the air. He suggested, however, that World War II had only superficially indicated the "inherent ability of Tactical Air Power to be a decisive force in a strangulation campaign." In World War II air doctrine had envisaged the isolation of a hostile force from its means of support but it had not looked toward preventing an enemy force from engaging in battle. By a vigorous interdiction campaign Quesada thought that tactical air power could "paralyze the enemy's means of communication" and "sources of industrial support" and "prevent opposing armies from coming into contact." If such a concept of the employment of tactical air power was effectively pursued in a future conflict, direct support of ground troops in a zone of contact might well constitute only a small portion of the total tactical air effort. Only if tactical air power did not perform its primary functions in a convincing manner would friendly ground troops evidence a requirement for close air support.[180]

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"I would say," stated Major General Robert M. Webster, who had headed both tactical and transport commands in Europe in World War II, "that we went into the last war with only two basic types of military aircraft, the bomber and the fighter. I feel that we have come out of that war with an additional type, the transport plane, and that we should think in terms of bomber-fighter-transport--since they are all equally important--and they must be properly balanced to each other if we are to be prepared to conduct successful war operations."[181] Back in the 1930's the Air Corps, prodded relentlessly by Major Hugh J. Knerr who insisted that air striking forces could not depend upon ground lines of communications for logistical support, established a requirement that both the GHQ Air Force and the Air Corps Materiel Division ought to possess transport aircraft. Both because of shortages of procurement funds and because of the Baker Board's recommendation that civilian airliners could be requisitioned for a war emergency, the Army Air Forces had possessed only six air transport groups with 124 aircraft on hand in December 1941. Lacking any firm basis of experience with the air transport, the officers who drew up AWPD-1 estimated that the ascendant air force would require only 19 troop carrier groups with 1,520 planes for airborne troop employment and only 13 transport groups with 1,040 planes for air logistical support. Early in 1942, the Army Air Forces established the Air Transport Command and the I Troop Carrier Command, the former to provide worldwide air transport services and the latter to train troop carrier organizations for service in oversea theaters. At its maximum strength in February 1945, the Army Air Forces possessed 32 troop carrier groups and nine air transport divisions with a total of 10,138 aircraft.[182]

As it developed, the Air Transport Command became responsible for the transportation by air of personnel, materiel, mail, strategic materials, and other cargoes for all War Department agencies (and

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other authorized government agencies) except those served by troop carrier units.[183] The primary mission of troop carrier units was found to be: "To carry troops and auxiliary equipment to effective locations in combat zones from which to begin active combat operations." The control and employment of troop carrier organizations was hardly the same in any two theaters. In each theater, however, logistical services found continuing demands for the employment of troop carrier planes for intratheater movement of essential personnel and freight, but the combat employment of troop carrier planes and gliders for airborne operations always was given a higher priority. Resolution of the competing demands of the logisticians and the airborne commanders was never completely accomplished.[183]

Since there were never enough transport planes to permit them to be parceled out among using organizations, the Anglo-American organization of theater airlift forces accordingly placed central control of most such units under some form of theater troop carrier headquarters, which could employ the transport planes interchangeably for airlift or air-assault operations. The organization in the European theater included the establishment of a Combined Air Transport Operations Room (CATOR) in the Air Staff, Supreme Headquarters Allied Expeditionary Forces, the assignment of the IX Troop Carrier Command to the First Allied Airborne Army, and the activation of the 302d Transport Wing under the Air Service Command, USSTAF. Lieutenant General Lewis H. Brereton, commander of the First Allied Airborne Army subsequently complained that CATOR emphasized the logistical employment of his troop carrier crews to the detriment of their preparations for airborne operations. Other commanders, however, stated that the removal of aircraft from airlift operations for intensive air-assault training and for the execution of airborne missions adversely deprived them of badly needed air-transported logistical support."[184]

"We have learned and must not forget," Arnold informed Secretary Stimson on 27 February 1945, "that from now on air transport is an essential of air power, in fact, of all national power. . . . We must have an air transport organization in being, capable of tremendous expansion."[185] In spite of this positive statement, the Army Air Forces was not too certain about the manner in which troop carrier and air transport aviation ought to be organized, and there was a considerable sentiment that the two functions ought to be combined. At this time, Brigadier General William D. Old, commander of the I Troop Carrier Command, vigorously dissented from the proposals for combination and instead suggested that Army Airborne Forces should be established under the War Department on a parity with the Army Air Forces, Army Ground Forces, and Army Service Forces. Based in part upon studies conducted in OC&R and at the AAF Board, Arnold decided on 5 December 1945 that the Army Air Forces would retain the Air Transport Command to support the strategic air forces and would keep troop carrier aviation as a part of the tactical air forces.[186]

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In his final report to the Secretary of War on 12 November 1945, General Arnold recalled the course of the successful air war that had been waged against the Axis. While he expressed satisfaction, he warned against complacency. "National safety," Arnold emphasized, "would be endangered by an Air Force whose doctrines and techniques are tied solely to the equipment and processes of the moment. Present equipment is but a step in progress, and any Air Force which does not keep its doctrines ahead of its equipment, and its vision far into the future, can only delude the nation into a false sense of security. . . . The basic planning, development, organization and training of the Air Force must be well rounded, covering every modern means of waging air war, and the techniques of employing such means must be continuously developed and kept up to date. The Air Force doctrines likewise must be flexible at all times and entirely uninhibited by tradition."[187]

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CHAPTER 5

THE AIR FORCE IN NATIONAL DEFENSE: ORGANIZATION AND STRATEGY, 1944-1949

1. Armed Service Unification and the Air Force

"Those of us who have seen this war fought. . . realize that there is no place in modern war for a separate air force, for a separate army, or for a separate navy," Brigadier General Haywood S. Hansell told the House Select Committee on Post-War Military Policy in March 1944. "The Army Air Forces advocate, and strongly recommend," he continued, "the integration of the nation's fighting forces into a single unified organization. Hence, our conviction demands unity rather than separation."[1] The Army's air arm had traditionally sought a separate air force, but the experience of World War II had caused its leaders to believe that the nation needed integrated rather than separate armed services. The War Department, traditional opponent of a separate air force, would now be the main driving force for armed service unification. Only the Navy, whose top-ranking officers proposed to General Arnold that AAF strategic bombardment ought to be joined with naval air forces to provide a national striking force,[2] was going to oppose a close unification of the armed services.

As a background policy for the beginning of postwar planning, General Arnold approved a statement on 25 February 1944 which advocated the establishment of a single Secretary of War with four undersecretaries heading the ground forces, the air forces, the naval forces, and a combined bureau of war resources. The plan visualized that a single chief of staff to the President, with a compact general staff, would preside over a supreme war council consisting of the military commanders of the four major services. It assumed that the air force would be coequal with the other services and would possess its own air commander and air general staff. The air force would include "all military aviation except shipborne units operating with the Navy, and those artillery-control and 'liaison' units operating with the Army."[3] In regard to the assignment of organic aviation to the Army, the Army Air Forces policy announced on 10 October 1944 was to favor such assignment only if the aircraft would be put to sustained use, if the separation of such aircraft from the mass of air power would not seriously reduce that power, if the function to be performed would not duplicate functions already being performed by AAF units, and if no need would arise for separate and extensive airdrome, maintenance, or training facilities.[4] On 1 October 1945, General Arnold officially informed his subordinate commanders that he favored the establishment of a Department of Armed Forces under a military commander "who will command the Army,

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the Navy, and the Air Force and any combined task forces in existence."[5]

"The greatest lesson of this war," Arnold stated in his last report to the Secretary of War on 12 November 1945, "has been the extent to which air, land and sea operations can and must be coordinated by joint planning and unified command." Therefore, Arnold called for the establishment of "one integrated, balanced United States military organization that will establish, develop, maintain and direct at the minimum expense the forces. . . required for peace enforcement and for national security with the capability for the rapid expansion in case of all-out war." Arnold wished to retain the Joint Chiefs of Staff, with a Chief of Staff to the President. He also emphasized that a permanent national intelligence organization would be essential to the future conduct of strategic air warfare.[6] General Carl Spaatz, who would assume command of the Army Air Forces on 1 March 1946, told the Senate Committee on Military Affairs that "unity of direction" and "equality for the Air Force which will insure unification of our air potential" were "absolute imperatives which stem from the lessons of this last war."[7] On 24 October 1946, Spaatz informed his subordinate commanders that the Army Air Forces "supports without reservation" the War Department position on unification which comprehended a single secretary heading a single department of national defense with three branches of equal standing--Army, Navy, and Air.[8]

In the three years that defense unification was being studied and debated, the Navy posed different objections to plans that were offered and submitted counterproposals. As a matter of continuing policy, the Navy objected to the high degree of consolidation inherent in the War Department plan for a single chief of staff for the armed services. The Navy also desired guarantees that would preserve naval aviation and the Marine Corps, together with its integral aviation. On a visit to the Pacific in the winter of 1944-45, a Joint Chiefs of Staff study committee headed by Admiral J. O. Richardson found senior naval officers not averse to unification. Rear Admiral Forrest P. Sherman, who was Admiral Nimitz' chief planner, later explained, however, that a general change in feeling toward unification occurred in the pring of 1945. Admiral Sherman said that the establishment of the independent Twentieth Air Force and the decision to divide the command of American army and navy forces between MacArthur and Nimitz "disrupted unified command in the Pacific and disillusioned naval officers who had given support to theories of a single department." Sherman also recalled that General Marshall had told him in September 1944 that he would not tolerate further command of Army troops by Marine officers.[9]

In its report on 11 April 1945 Admiral Richardson's special committee proposed the organization of a department of armed forces, a single commander of the armed forces, and a joint staff, all to be supraimposed on coordinate army, navy, and air branches. It also proposed that the secretary of the armed forces was to serve as a

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member of the Joint Chiefs of Staff, and that both the Army and Navy would retain their special aviation components. Rather than merely to oppose unification, Secretary of the Navy James V. Forrestal asked Mr. Ferdinand Eberstadt in June 1945 to head a study on national defense organization. When completed in September 1945, the Eberstadt report recommended that three coequal departments of war, navy, and air be recognized and that coordination between them would be achieved by the statutory establishment of the Joint Chiefs of Staff, of a National Security Resources Board, and of a Military Munitions Board. It recommended the establishment of a National Security Council, which would be able to correlate the military and foreign policies of the United States.[10]

First presented to the public in October by Lieutenant General J. Lawton Collins, the War Department's reorganization plan provided for the estabiishment of a department of armed forces, a chief of staff of the armed forces (who would provide guidance to coequal army, navy, and air force chiefs), and a director of common supply and hospitalization. The chief of staff of the armed forces and a chief of staff to the President, together with the three chiefs would comprise the Joint Chiefs of Staff. On 19 December 1945, President Harry S. Truman submitted a proposal for defense reorganization to Congress which made some concessions to the Eberstadt report but drew most heavily upon the proposals made by Admiral Richardson's special committee and the War Department's plan. Under the President's proposal, the Navy would retain its carrier-and-water-based air and the Marine Corps. While Congress prepared for hearings, Truman established the National Intelligence Authority by executive order on 22 January 1946. In his judgment all of the services had agreed that there was a need for the coordination of foreign intelligence activities.[11]

During 1946 lengthy hearings before Congressional committees and numerous Army-Navy conferences enabled the services to develop their respective positions and also allowed them to know what Congress was likely to approve in the way of armed service reorganization. Speaking with candor, Admiral Richmond K. Turner stated the Navy's opposition to unification: "Because the Navy has had and should retain in the future its position as the first line of military security for the United States," he said, "I believe the Navy will never willingly agree to a consolidation of national military forces in any manner that will silence the Navy's voice in military affairs or materially restrict its present responsibilities." General Alexander A. Vandegrift, Commandant of the Marine Corps, feared that "the single Sectetary for Common Defense and the all-powerful National Chief of Staff are entirely free either to abolish the Marine Corps outright or to divest it of all its vital functions." Admiral John H. Towers bluntly charged that the new air force meant to take over naval aviation, saying in part: "I fear--and I have good reason to fear--that the Army Air Force advocates of a separate air force have well established in mind the

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plan, upon realization of a separate service, to absorb naval aviation. . . . Approximately 40 percent of our postwar Navy is aviation. Its loss would be completely disastrous to the Navy." On 15 May 1946, Senator David I. Walsh and Congressman Carl Vinson informed Secretary Forrestal that Congress was not likely to approve the creation of one department of defense under the administration of a single secretary, the appointment of a single supreme commander of the armed forces, a curtailment of the Marine Corps, a transfer of vital naval aviation functions to a separate air force, or the elimination of the responsibilities of the Secretaries of War and Navy to initiate and support their budgets before Congress.[12]

Held during May 1946 a series of conferences between Secretary Forrestal and Secretary of War Robert P. Patterson developed fundamental points of disagreement between the Navy and Army. The War Department position of aviation had been suggested by Arnold's testimony before the Senate Committee on Military Affairs in October 1945. Arnold had said: "I think there is a definite place for the air arm of the fleet, to work in conjunction with the fleet. . . . I do not think that the flat-top planes have the power to deliver the blows that are necessary for our primary air force." In May 1946, the War Department thought that the separate air force should develop and operate all military air resources except for carrier-and-water-based aircraft deemed essential for Navy and Marine Corps operations and for such land-type aircraft as were necessary for the internal administration of naval affairs, for training, or for air transportation over routes of sole interest to naval forces where such requirements could not be met by normal air transport facilities. The Army Air Forces was already performing long-range reconnaissance, and the War Department proposed that it could provide such reconnaissance to the Navy and also meet surveillance requirements for antisubmarine warfare. As for the Marine Corps, the War Department agreed upon the requirement for a "balanced fleet marine force including its supporting air component," but it wished to limit the Marines to service with the fleet in connection with the seizure of enemy positions not involving sustained land fighting and with phases of amphibious warfare relating to waterborne aspects of landing operations. In rebuttal to these positions, the Navy insisted that its aviation needs included a certain number of land planes, completely under naval control and manned by naval personnel trained in naval warfare, in order to perform fleet reconnaissance, antisubmarine warfare, and the protection of ocean shipping. The Navy insisted that the fleet marine force should participate with the fleet without limitations in the seizure or defense of advanced naval bases, in the conduct of limited land operations, and in amphibious warfare.[13]

In a letter to Patterson and Forrestal on 15 June 1946, President Truman agreed to the elimination of the single armed service chief of staff, but he insisted that there would be a single Department of Defense, with coequal Army, Navy, and Air Force branches. The President stated that naval aviation should be given

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every "opportunity to develop its maximum usefulness." He believed, however, that land-based planes for long-range reconnaissance, anti-submarine warfare, and protection of shipping should be manned by air force personnel. Truman approved Forrestal's plan for the continued functioning of the Marine Corps. Finally, he expressed a hope that unification legislation might be speedily enacted on the basis of the Army-Navy agreements as supplemented by his decisions on the controversial matters. Congress, however, refused to be prodded and took no substantial action on the desired unification legislation during the remainder of 1946.[14] Acting again by executive order, Truman vested in the chairman of the Army and Navy Munitions Board the final authority over military procurement, and on 17 October he established the President's Scientific Research Board to insure a supervision over military research and development activities.[15]

At an informal conference in his home early in November 1946, Secretary Forrestal urged that the Army and Navy must make some new efforts to arrive at a mutually acceptable unification plan. According to agreement, Major General Lauris Norstad, who was serving as the Director of Plans and Operations on the War Department General Staff, and Vice Admiral Forrest P. Sherman, now the Deputy Chief of Naval Operations, would work together to secure agreements. As a first effort, Norstad and Sherman sought to draft a directive which would provide uniform instructions to unified theater commanders who would be charged with operations of land, naval, and air forces. In 1941 and 1942, Army and Navy planners had debated procedures for the command of joint operations without reaching final conclusions. One idea was that a theater commander should depend upon his subordinate air, ground, and naval commanders for advice and could have a staff comprising men from his own service. The other was that a theater commander ought to have a joint staff of officers from all services, who, after collaboration with subordinate service commanders, would draw up agreed plans which would secure unity of action while leaving a good degree of freedom to the subordinate commanders. Of all the theater commanders of World War II, only Admiral Nimitz organized and used a joint staff. General MacArthur's staff was entirely composed of Army officers. In Europe, General Eisenhower's staff had officers from the several services, but it was nevertheless dominated by Army and AAF officers. While Eisenhower organized theater air and naval commands, he chose personally to command the theater ground forces and did not establish a theater ground command. While Norstad and Sherman recognized that they could not make rigid rules for the exercise of unified command in the theaters, they recommended that each theater commander employ a joint staff. The Joint Chiefs of Staff accepted this proposal and issued a directive on 14 December 1946, which required unified commanders to establish "a joint staff with appropriate members from the various components of the services under this command in key positions of responsibility."[16]

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Following the agreement on unified theater command staffs, Norstad and Sherman resumed consideration of the higher-level problems of armed service unification. They announed their agreements on these subjects to President Truman on 16 January 1947, and they continued to work in the President's office where a draft of a proposed national security act was drawn up and submitted to Congress on 27 February. In the late spring, Senate and House committees held hearings and made amendments to the bill, many of them designed to guarantee against any change in the status of the Marine Corps or of naval aviation. Following passage of the act, President Truman signed the National Security Act of 1947 on 26 July.[17]

As enacted, the National Security Act of 1947 made substantial changes in the nation's defense organization to include a separate Air Force, but it represented federalization rather than unification of the armed services. In order to coordinate national security efforts, the act established the National Security Council which would advise the President on the integration of domestic, foreign, and military policies. The Central Intelligence Agency (which superseded the National Intelligence Authority) would coordinate all governmental intelligence activities and report to the National Security Council. The National Securities Resources Board was established to advise the President concerning the coordination of military, industrial, and civilian mobilization problems. Within the National Military Establishment, the Secretary of Defense was authorized to establish general policies and programs, exercise general direction, take steps to eliminate duplication, and to supervise and coordinate the budget estimates of the Departments of Army, Navy, and Air Force. Each Service Secretary, however, was accorded direct access to the President and to the Director of the Budget, and the law provided that each department should be administered as an individual executive department. With its membership to comprise the Chiefs of Staff of the Army and the Air Force, the Chief of Naval Operations, and the Chief of Staff to the President, the Joint Chiefs of Staff was provided a joint staff of not more than 100 officers and was principally charged "to prepare strategic plans and to provide for the strategic direction of the military forces." The act also provided for the organization of a Munitions Board and a Research and Development Board within the National Defense Establishment.[18]

On the same day that he signed the National Security Act of 1947, President Truman nominated James Forrestal as the First Secretary of Defense and issued an executive order prescribing the functions of the several armed forces. Guarantees for the unchanged status of the Marine Corps and for land-based naval aviation had already been added to the basic law, but Truman's executive order charged the United States Air Force to organize, train, and equip air forces for air operations including joint operations; gaining and maintaining general air superiority; establishing local air superiority where and as required; strategic air force and strategic

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air reconnaissance operations; airlift and support for airborne operations; air support to land and naval forces including support of occupation forces; and air transport for the armed forces except as provided by the Navy for its own use.[19]

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Speaking of 26 July 1947, retired Lieutenant General James H. Doolittle exclaimed: "This is the day Billy Mitchell dreamed of." Toward the end of a transition period provided in the law, James S. Forrestal assumed the duties of Secretary of Defense on 17 September 1947, and on 18 September 1947 W. Stuart Symington took the oath of office as the first Secretary of the Department of the Air Force. While it also hailed the National Security Act of 1947 as a substantial achievement, Air Force magazine, voicing the sentiments of the new Air Force Association, pointed out that important matters still remained to be decided: "Still to be decided is the irritating question of where naval air authority ends and Air Force responsibility begins. . . . Still to come are the increased economies which can only be achieved through the avoidance of duplication, multiple use of equipment, and a combined training program--and the even greater economies which will be realized only when it is possible to draw on one air force for the requirements of all other services."[20]

It is difficult to determine from available records exactly what opinions Air Force leaders held on the matter of integrating all military aviation into the United States Air Force. While his opinion was not official, Seversky had suggested in Victory Through Air Power that naval aircraft carriers would become unnecessary in view of the fact that "ultimately war in the skies will be conducted from the home grounds, with everything in between turned into a no-man's land." He had also argued that for purely aerodynamic and engineering reasons, naval carrier-based aircraft--which had to be designed to operate from the restricted areas of carrier flight decks--would always be inferior in performance to land-based aircraft of similar types.[21] On the basis of wartime lessons that carrier aircraft should be jet powered and able to carry heavier bombs, the Navy had initiated design of a 65,000-ton aircraft carrier in 1945, and construction of the supercarrier to be known as the CVA-58, or the U.S.S. United States, was begun prior to unification. The Navy conceived that the prototype flush-deck CVA-58 would be employed in a task group, along with a Midway (CVB) carrier, two Essex class (CV's) carriers, and supporting and screening ships. Launching while the task group was still some 500 to 600 miles at sea, the CVA-58's long-range aircraft would neutralize hostile air bases ashore, permitting the task group to run within 200 miles of an enemy coast and launch its strike aircraft to accomplish naval missions.[22]

Shortly after he took office as Secretary of Defense, Forrestal

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remarked that the Navy believed that the Air Force wanted to get control of all military aviation, while the Air Force believed that the Navy was trying to encroach upon the strategic air prerogatives of the Air Force.[23] On 1 March 1948, the Congressional Aviation Policy Board reported that there were basic differences of opinion between the Air Force and the Navy as to the mission of naval aviation set forth in Truman's executive order and in the provisions of the National Security Act of 1947. "As an example,"the Aviation Policy Board reported, "the Navy interprets the law to permit it to develop any type of weapon and to base its plans and requirements on the utilization of any weapon. The Navy contends that it is complying with the law in disregarding the executive order on this point because the law and executive order are in conflict."[24]

Secretary Forrestal told General Omar N. Bradley, shortly after the latter became Army Chief of Staff in February 1948, that the large aircraft carrier had already been approved and would be built.[25] Forrestal nevertheless concluded that the time had come to decide "who will do what with what," and he assembled the Joint Chiefs of Staff at Key West, Florida, on 11 March 1948 to thrash out roles and missions. As basic guidance, Forrestal demanded that the three services each recognize the need for mutual support to each other's legal missions. According to Forrestal, the Joint Chiefs reached basic agreement that the Navy would proceed with the developments of weapons that it considered essential to its functions (including the 65,000-ton aircraft carrier and nuclear bombs which could be transported on naval aircraft), provided that the Navy would not develop a separate strategic air force. The Air Force recognized the right and need for the Navy to participate in an all-out air campaign and to attack inland enemy targets; for example, airfields from which hostile aircraft might be launched to attack a fleet. The formal agreements of the Joint Chiefs of Staff were subsequently approved by President Truman on 21 April 1948 and issued under the title of "Functions of the Armed Forces and the Joint Chiefs of Staff."[26]

Following historical patterns, the Key West agreement specified that the Army had primary interest in operations on land, the Navy in operations at sea, and the Air Force in operations in the air. Forces developed to meet the requirements of primary functions were to be employable in collateral functions which supported and supplemented the other services in carrying out their primary functions. The primary functions of the United States Air Force were: to be responsible for the defense of the United States against air attack, to gain and maintain general air supremacy, to defeat enemy air forces, to control vital air areas, to establish local air superiority, to be responsible for strategic air warfare, to organize and equip air forces for joint amphibious and airborne operations, to furnish close combat and logistical air support to the Army, and to provide (with exceptions) air transport for the

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Armed Forces. In coordination with the other services, the Air Force was charged to develop doctrines and procedures for the defense of the United States from air attack, for joint amphibious and airborne operations, and for air defense from land areas. Specific collateral functions of the Air Force included a responsibility to interdict enemy sea power through air operations, to conduct antisubmarine warfare and protect shipping, and to conduct aerial minelaying operations. Among its primary functions, the Navy was authorized to conduct air operations as necessary in a naval campaign, to establish local air superiority in an area of naval operations, and to be responsible for naval reconnaissance, antisubmarine warfare, protection of shipping, and mine laying, including the air aspects of such tasks. The Navy's collateral functions required it to interdict enemy land, air power, and communications through operations at sea, to provide close air support for land operations, to furnish aerial photography for cartographic purposes, and to be prepared to participate in the over-all air effort as directed by the Joint Chiefs of Staff.[27]

Speaking for the Navy, Vice Admiral Arthur W. Radford would subsequently describe the Key West agreements as "one of the most remarkable documents that has ever been produced along those lines."[28] In a conversation with Forrestal on 16 March 1948, however, General Spaatz objected to a proposed press release to the effect that agreements in all major areas had been reached at Key West. Spaatz said that the question of whether there were to be two air forces or one air force had not been resolved.[29] General Hoyt S. Vandenberg, who succeeded Spaatz as Air Force Chief of Staff on 30 April 1948, assured Forrestal on 28 July that the Air Force was not trying to get control of all aviation but suggested that the nation could not continue to spend scarce funds on two duplicating programs--long-range bombers and supercarriers. "I said," Forrestal recorded in his diary in regard to the conversation with Vandenberg, "I was against the development of a new fleet of supercarriers by the Navy but I felt it was most important that one such ship, capable of carrying the weight of a long-range bombing plane, go forward."[30] In an article appearing in Life magazine on 16 August, Spaatz charged that the Navy's 65,000-ton carrier represented an attempt to create a second air force for industrial bombing, when much still needed to be done to provide a truly balanced structure around the core of one air force.[31]

Noting on 9 August that the Key West agreements apparently had not provided a solution of disputes in the field of strategic air warfare, Forrestal asked General Spaatz and Vice Admiral Towers to return from retirement for a few days and to set down their concepts of strategic air warfare as it might have to be waged in defense of the United States. In a memorandum on 18 August, Spaatz and Towers were said to have agreed that the Key West decisions were sound but in need of interpretation, that "no sharp line can be drawn between strategic bombing and tactical bombing," and that the Navy's

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ability to perform its primary missions would require it "to provide for the delivery of atomic bombs."[32] In an effort further to clarify the Key West agreements, Forrestal assembled the Joint Chiefs of Staff at the Naval War College in Newport, Rhode Island, on 20 August 1948. Here it was agreed that each service, in the fields of its primary missions, must have exclusive responsibility for programming and planning, and the necessary authority," but that "in the execution of any mission of the armed services, all available resources must be used to the maximum over-all effectiveness."[33] At a meeting of senior officers in the Pentagon on 24 August, Forrestal expressed optimism that problems of roles and missions had finally been resolved. "I am convinced that at the top command levels," he said, "there is a clear understanding of the exclusive role of the Air Force in the field of strategic air warfare and. . . the intent of the Air Force not merely to permit but to seek all the help it can get from Naval Air in the use of air power, either strategically or tactically. Likewise, the Navy is assigned the exclusive role in the field of anti-submarine warfare; and. . . the intent of the Navy is also to invite all the help it can get from the Air Force in carrying out this mission."[34]

Although progress was being made in the determination of armed forces roles and missions, at least two retired Air Force officers continued to believe that all military aviation should be consolidated. In December 1948, Lieutenant Doolittle criticized the National Security Act of 1947 as "an unfortunate compromise" which had failed to accept Army and Air Force recommendations that there be one separate autonomous Air Force, complete coordination of the three Armed Forces, a head to the Joint Chiefs of Staff, and roles and missions designated by executive order rather than by legislation. Doolittle wishes to concentrate all military aviation in the U.S. Air Force: "one specialized branch of the Air Force," he said, "would operate with the Navy just as a specialized branch, the Tactical Air Force, now cooperates with the Army."[35] In October 1949, General Spaatz wrote: "The Navy now spends more than half its total appropriation in support of naval aviation. The result is that the Nation is dissipating its wealth and wasting aviation talent in supporting two air forces." Specifically queried about the Spaatz article, Secretary Symington emphasized that the view that there should be one air force was not an official Air Force position. "I know of no officer in the Air Force," he said, "who agrees with the position that there should be one Air Force for the country."[36]

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While roles and missions remained in dispute, the Secretary of Defense and the Joint Chiefs of Staff successfully provided command and control arrangements for unified and specified commands. When the unified theater commands were offically formed in December 1946

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the Joint Chiefs of Staff continued to exercise command over them, with an individual chief of staff being designated as the "executive agent" for a particular unified command. When the strategic Air Command was established there was a general understanding that it would be centrally controlled and directed by orders of the Joint Chiefs of Staff, but Air Force mission statements nevertheless provided that the Strategic Air Command would operate in accordance with directives and policies received from the Commanding General, Army Air Forces, and later the Chief of Staff of the Air Force. The Strategic Air Command could not be handled as a unified command (which included Army, Navy, and Air Force forces) since it was composed only of Air Force forces. Making a solution to this problem, the Key West agreements authorized the Joint Chiefs of Staff to designate one of their members as their executive agent for unified commands and also for "certain operations, and specified commands." A "specified command" thus came to be a single-service command under the Joint Chiefs. While the Joint Chiefs would ultimately state that the Strategic Air Command had been responsible to them since 14 December 1946, they did not officially assign the mission of conducting strategic air warfare operations to the Strategic Air Command until 13 April 1949. At this time they provided that the Strategic Air Command--functioning under the Joint Chiefs of Staff with the Air Force Chief of Staff serving as their executive agent--was authorized to direct the strategic air offensive; to assign targets, weight of effort, and timing of air operations; and to coordinate the strategic strikes with theater air activities to prevent interference between forces and secure maximum tactical advantages.[37] As the first fruits of tangible unification, Secretary Forrestal issued on 3 May 1948 a final directive uniting the Air Transport Command and the Naval Air Transport Service in a new command to be known as the Military Air Transport Service. Made effective on 1 June 1948, the Military Air Transport Service was charged to provide air transport for the National Military Establishment, under the command and direction of the Air Force Chief of Staff.[38]

2. Building the Air Force's Internal Structure

Definitive planning for the organization of the air force in the postwar structure of the Armed Forces began within the War Department in the autumn of 1943. The establishment of a structure of a separate postwar air force necessarily involved assumptions as to the fundamental purposes of military forces, the basic missions of the air force in national defense, and the probable nature of future hostilities. Closely related to each of these matters was the question about the amount of financial support that could be expected for military preparedness in the years of peace which were expected to follow the ending of World War II.

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"The primary function of the armed forces is, when called upon to do so, to support and, within the sphere of military effort, to enforce the national policy of the nation," stated Major General Thomas T. Handy's War Department Operations Division planning paper which went forward to General Marshall on 28 October 1943. "There must," Handy continued, "be a complete correlation of national policy with military policy; of the political ends to be sought with the military means to achieve them. Such correlation must be flexible; adaptable to changing conditions and changing needs."[39] Although the expressed idea that military force should support national policy was relatively new in the United States, Marshall readily approved Handy's basic statement. In his final war report, Marshall would additionally define his own conception of the relationship of force to diplomacy. "Our diplomacy must be wise and it must be strong," he warned. "If our diplomacy is not backed by a sound security policy, it is, in my opinion, forecast to failure."[40]

Since the purpose of military force was to support national policy, Handy proposed that a force in being, not a potential one, was required "for prompt attack in any part of the world in order to crush the very beginnings of lawless aggression, in cooperation with other peace-loving nations."[41] General Marshall, however, would not approve the concept of a large standing Army because its cost would be prohibitive, the men needed to fill its ranks would not be obtained by recruitment in time of peace, and because it would be repugnant to the American people. Marshall wanted to develop a system and an organization that would endure for years rather than be organized against the expectation that war might begin at some arbitrary date. "We were trying to avoid war," he would explain, "but at the same time we carefully had to avoid a financial effect on our economy which would be as disastrous as a war might well be." With these basic beliefs, Marshall placed his faith in combat-ready air power rather than a large ground army. He endorsed Handy's paper with a marginal notation: "I think maintenance of sizeable ground expeditionary force probably impracticable except on a basis of allotment of fillers after six months. Having air power will be the quickest remedy."[42]

When Major General Barney M. Giles, Chief of Air Staff of the Army Air Forces, laid the basic ground rules for planning the postwar air force on 11 December 1943, he specified that the air force would be autonomous and would maintain "an 'M' day force, instantly ready to repel attack or to quash any incipient threat to world peace." Giles assumed that the air force would consist of a GHQ, six air forces, and air units stationed on a chain of permanent bases from the Philippines eastward to the west coast of Africa.[43] Brigadier General H. A. Craig, Chief of OC&R, immediately protested the plan because it appeared to parcel out the air striking force between six commands. "Forty very heavy bomber groups," Craig argued, "could be moved from Kansas to prepared bases anywhere in the world in a matter of hours. This precious striking force should be

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retained centrally available for concentration against the enemy, safe from sabotage, treachery, or the dangers native to piecemeal distribution."[44] Major General Westside T. Larson, commander of the Third Air Force, agreed with Craig: "The powerful very heavy air arm. . ., like a fleet 'in being,' must not be strategically disposed of in the Pacific or Atlantic areas on fixed or permanent location but on the contrary should remain a compact force, free to move and be temporarily based in any of the numerous strategic areas--strategy being a continuing element dependent upon the vacillating policy of foreign countries." Larson also urged that the postwar plan "should incorporate the operation of the Air Force directly under the Commander U.S. Air Forces and not as a part of any task force organization that may be set up in the various strategic theaters."[45]

While the establishment of the Twentieth Air Force on 4 April 1944 established the precedent for the unified command and employment of strategic air striking forces, the postwar status of tactical air forces continued to be a problem. In December 1944, Brigadier General F. H. Smith, Jr., Deputy Chief of the Air Staff, stated that a proposal to establish a postwar tactical air force to handle air-ground training was "fallacious in principle and dangerous in implication." Smith argued that only two oversea theaters had established tactical air forces, and he urged: "Strategic Air Forces must when the situation demands be employed in tactical operations and vice versa."[46] As has been seen, Major General Norstad was initially sympathetic to the tactical air force, but nuclear weapons caused him to change his mind. Since tactical air units obviously could not be employed until the strategic air offensive had been completed, Norstad favored the maintenance of a nucleus for a tactical air force which could be expanded after M-day.[47]

In view of the impending Allied victory in World War II, the air defense of the United States was apparently not considered to be of pressing importance. In a study prepared on 30 May 1945, however, Major General H. R. Oldfield, the AAF Special Assistant for Antiaircraft, pointed out that fighter interceptors, signal aircraft warning services, and antiaircraft artillery units were complementary members of an air defense team. "To divorce the antiaircraft artillery from this team and to place it on a cooperative basis," Oldfield thought, "not only violates the principle of unity of effort and of economy of force but endangers the success of the air defense mission."[48] Major General Donald Wilson, who had become Chief of OC&R, proposed on 6 June 1945 that air defense commands ought to be organized in the United States and charged to give their full attention to defense work. Wilson was critical of the wartime arrangement wherein three continental air forces had been charged with air defense at the same time that they were principally concerned with training of air force units.[49] After studying air

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defense requirements, Arnold forwarded a study to the War Department Operations Division on 4 August 1945 which both outlined the unitary problem of air defense and recommended that antiaircraft artillery should be transferred from the Army to the postwar air force.[50]

Few of the postwar organizational problems were as perplexing as the future of air transport and troop carrier aviation. The Air Transport Command wished to continue into the postwar period at a strength of approximately six squadrons, each with 10 four-engine transports. Both Brigadier General Old and Lieutenant General Brereton advocated the establishment of a postwar airborne army, which would combine both airborne troops and troop carrier aircraft.[51] According to report, the War Department General Staff bounced the airborne army proposal from office to office, with no one liking it but everyone hesitating to disapprove it. In the end, the War Department G-3 indicated that it would prefer that the headquarters of a troop carrier command and of the airborne force would be separately maintained but located in close proximity in order to permit intimate coordination without consolidation.[52] In assessing the potential impact of nuclear weapons on air force organization, however, Norstad offered the opinion that troop carrier aviation ought to be integrated into the Air Transport Command and that the air force ought to procure large transport planes which could either provide mobility to a strategic bombing force or be prepared to lift large numbers of ground troops.[53]

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When the Air Staff began to make plans for the postwar air force, it based its organizational conception on the War Department's plan to maintain a postwar Army of 1,700,000 men. On this basis, Arnold approved an initial air force objective on 25 February 1944 calling for 105 groups, divided into 40 very heavy bombardment, 2 heavy bombardment, 4 medium and light bombardment, 45 fighter, 3 reconnaissance, and 11 troop carrier groups. The size of this force was devised without consideration of cost, but the force would be capable of "striking quickly and forcibly" on M-day and Major General Kuter defended it as being necessary to keep the peace in a troubled world. When the 1,700,000-man Army was brought to General Marshall's attention of 13 November 1944, however, he rejected it out of hand on the basis that the annual costs of supporting such an Army would be excessive.[54]

In order to justify a more economical postwar plan, the War Department adopted more optimistic assumptions. The new appreciation assumed that an enemy would launch an all-out attack against the United States without a declaration of war and that the United States would have no allies for at least 18 months, but it further assumed that "the United States will have cognizance of the possibility of war for at least one year, and during this year preparatory measures will be inaugurated." Marshall approved these

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assumptions on 13 March 1945.[55] In a few months, the War Department G-4 questioned the realism of the assumption that the United States would have 12 months' warning time, but the Air Force wished to retain it because it would pose a strong requirement for the development of alert national intelligence.[56] Given a year to mobilize, the Army Air Forces matured a plan on 21 May 1945 calling for the retention of 78 groups in the interim air force. Since aircraft could not be stockpiled for a future mobilization emergency, Arnold also asked Congress to retain a substantial portion of the government-owned aircraft plants and machine tools on a standby status.[57]

When the 78-group strength was rejected by the War Department as impracticable financially, Lieutenant General Ira C. Eaker, Deputy Commander of the Army Air Forces, reached a decision on 29 August 1945 that 70 groups with approximately 400,000 personnel would be the bedrock minimum strength required by the postwar air force. This was an absolutely minimum strength because it would provide a force which could be operationally ready on D-day and still be able to provide training for a million and a half men that the air force would mobilize for a planned five-year war, because it was the smallest size force which would keep aircraft production in a sufficiently ready state to meet mobilization requirements, and because it was the size force that would be able to man the essential air bases that would be required in a combat and mobilization emergency. The Air Force planned that the 70-group strength would include 21 very heavy bomber, 5 light bomber, 22 fighter, 3 all-weather fighter, 9 strategic and tactical reconnaissance, and 10 troop carrier groups, plus 22 separate specialized squadrons. This regular strength would be backed up by 27 Air National Guard and 34 Air Reserve groups.[58]

The reduction of the Air Force postwar strength from 105 to 70 groups caused revisions in organizational planning. "In the interest of economy," Lieutenant General Eaker stated on 21 May 1945, "air power which can be applied to the accomplishment of more than one of its missions must not be duplicated."[59] The Headquarters, Continental Air Forces, had already begun to operate at Bolling Field on 1 April 1945, and on 8 September its Chief of Staff, Major General Samuel E. Anderson, proposed that the Continental Air Forces should be charged to provide a global striking force, to provide tactical air force units for cooperative training with Army and Navy forces, to plan the air defense of the continental United States, and to train combat units and crews for oversea service.[60] Seeking a similar organization of air transport resources, the Air Staff prepared a joint staff study on 5 September 1945 that recommended the consolidation of troop carrier and air transport units into a single Air Transport Command, which would serve as the major headquarters over the Troop Carrier Command, a Continental Air Transport Division, and a Foreign Air Transport Division.[61] General Arnold never acted on the proposal to place all combat aviation under the single Continental

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Air Forces, but on 5 December 1945 he directed that the Air Transport Command and troop carrier forces would maintain a separate organizational status.[62]

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At the same time that the Air Staff considered the organization of the postwar air force, Arnold gave an increasing amount of his own thought to postwar research and development. In the war years the Air Materiel Command and its successor Air Technical Service Command had been more concerned with production than with research and development.[63] Research and development responsibilities had been divided between the Air Communications Officer on the Air Staff, the Air Materiel Command, the AAF Board, and the Air Proving Ground Command, and the system had worked only because of the cooperation of the various commanders involved.[64] Convinced that American military research and development had often been inferior to that of its enemies, General Arnold requested Dr. Theodore Von Karman on 7 November 1944 to head and to organize an AAF Scientific Advisory Group which would outline a research and development program to guide the Air Force for ten to twenty years. Arnold informed Von Karman that the "object of total war is to destroy the enemy's will to resist, thereby enabling us to force our will on him," and he asked that the Scientific Advisory Group indicate the potential scientific lines of advance which the Air Force might take to accomplish a predominantly offensive mission.[65] After a year's study, the Von Karman group would complete on 15 December 1945 a monumental report entitled Toward New Horizons.[66]

While the scientific study was progressing, Arnold continued to point out that the Air Force, as he said, "must have enough money and enough people and enough facilities to carry on necessary experimental research and development work to keep the U.S. Army Air Forces and U.S. aviation in the No. 1 position which they now occupy."[67] In a talk to his staff on 12 January 1945, Arnold "drew a picture of the next war as starting without warning with thousands of pilotless 'things' suddenly raining destruction over Washington and other prime targets in the United States. As a defense against this, he visualized other 'things,' not only seeking out the enemy's weapons, but also counteroffensive weapons which would seek out and destroy the enemy's ability to manufacture the articles for waging war."[68] Appearing before a Senate committee on 18 October 1945, Arnold said: "The first essential of air power necessary for peace and security is the preeminence in research. . . . We must remember at all times that the degree of national security rapidly declines when reliance is placed on the quantity of existing equipment instead of its quality. . . . We must count on scientific advances requiring us to replace about one-fifth of existing Air Forces equipment each year and we must be sure that these additions are the most advanced in the whole world. To this end the best scientific talents of the country must be mobilized continuously and

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without delay."[69]

Air officers had a good appreciation of the importance of research and development, but they were much less sure as to how it could be attained by organization. At this juncture, no one apparently suggested that research and development in air materiel should be divided from procurement and production. Based upon a postulate that tactical research and proof testing ought to be separate from the development function, the AAF Board recommended on 29 April 1944 that the wartime relationship of the AAF Board, the AAF Tactical Center, the AAF Proving Ground Command, and the Air Materiel Command ought to continue unchanged in the postwar air force.[70] In September 1945, Brigadier General Eubank recommended that if the AAF Board were made directly responsible to the highest command level and augmented with highly-qualified officers it would be "capable of solving problems of any magnitude related to Air Force development, tactics, and techniques."[71] Other authorities regarded the AAF Board as being only one of several important research and analysis agencies. Colonel Leach, Chief of the Operations Analysis Division, for example, suggested that the AAF Board, the Operations Analysis Division, the AAF evaluation boards, and the Scientific Advisory Group were so closely related in function that they ought to be placed under the unified direction of an Air Staff officer in charge of analysis, evaluation, and research.[72] Apparently without recognizing that he was circumscribing the province of the AAF Board, General Arnold established an All Weather Air Forces Board at Lockbourne Air Base, Ohio, on 16 June 1945, and charged it to evolve and implement a long range research and development program for all-weather air operations. Without guidance from above, the Lockbourne center was soon reported to be more concerned with "gadgeteering" than with orderly investigation.[73] At Orlando, Florida, the AAF Board had enjoyed a close relationship with the educational facilities of the AAF School, but on 29 November 1945 the AAF School was physically transferred to Maxwell Field, Alabama, where the Air University was being established.[74]

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In the period prior to November 1945, the Army Air Forces laboriously planned a postwar organization, but the final approval of all planning would be dependent upon the wishes of General Dwight D. Eisenhower, who became Army Chief of Staff on 19 November 1945, and of General Carl Spaatz, who began to assume the duties of Commanding General, Army Air Forces, when General Arnold requested retirement on 8 November. While Arnold would not complete his terminal leave until 1 March 1946, he thought that his successor should have the responsibility for forming the policies that he would have to carry out. On 29 November, Eisenhower appointed a board of officers under Lieutenant General W. H. Simpson and charged it to prepare a definitive plan for the reorganization of the Army and the Air Force that could be effectuated by executive orders and

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that would permit the separation of the Air Force from the Army. On 15 November, Spaatz had already stated that there had been "a tendency to over-emphasize long-range bombardment, and to ignore the versatile application of air power." In January 1946, Eisenhower and Spaatz laid aside the concept that all combat air power might be concentrated in the Continental Air Forces and agreed between them that the major commands of the Army Air Force should be the Strategic Air Command, the Air Defense Command, the Tactical Air Command, the Air Technical Service Command, the Air Training Command, the Air University, the Air Force Center, and the Air Transport Command.[75] While the organization of the Tactical Air Command appeared to represent a reversal of earlier expressed concepts that combat air power ought to be capable of both strategic and ground support missions, Spaatz later stated that he organized the Tactical Air Command at his own volition, with no pressure from General Eisenhower.[76]

The command reorganization of the Army Air Forces outlined by Eisenhower and Spaatz was keyed to the establishment of the Strategic Air Command, which was visualized as a long-range striking force equipped with atomic-capable B-29's and possibly B-36's. The Strategic Air Command's planes would be based in the United States and would be deployed to forward bases as necessary. Effective on 21 March 1946, Headquarters, Continental Air Forces, was redesignated as Headquarters, Strategic Air Command, and on 21 October 1946 the new headquarters moved from Bolling Field to Andrews Field, Maryland. In its mission statement, the Strategic Air Command was charged to be prepared to conduct long-range operations in any part of the world at any time; to conduct maximum long-range reconnaissance over land or sea; and to be prepared to provide combat units capable of intense and sustained combat operations in any part of the globe, employing the latest and most advanced weapons. The Eighth and Fifteenth Air Forces were assigned to the Strategic Air Command.[77]

"We feel," stated Spaatz, "that the air defense of the United States cannot be left to chance. . . . We must be properly organized so that there cannot possibly be an air surprise such as occurred at Pearl Harbor."[78] AAF leaders continued to urge that the air defense of the United States should be a centralized system which would control fighter aircraft, radar, and antiaircraft artillery, and they believed that antiaircraft artillery should be integrated into the Army Air Forces. According to report, antiaircraft artillery officers in the Army Ground Forces did not want to integrate with the Air Force, and the Simpson Board recommended that antiaircraft artillery should not be transferred to the Army Air Forces but that antiaircraft artillery units should be trained and attached to Air Force units from time to time.[79] The Air Defense Command was activated at Mitchel Field, New York, effective on 27 March 1946, and the First, Second, Fourth, Tenth, Eleventh, and Fourteenth Air Forces were assigned to it. The Air Defense Command

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was charged to provide for the air defense of the United States, but it was obvious very early that providing tactical units to it would be difficult. Despite statements to the contrary, the War Department and the Army Air Forces held a relaxed view that air defense would be a mobilization measure. In the event of a war emergency, the Joint Chiefs of Staff would organize defense commands and make Navy, Strategic Air Command, and Tactical Air Command fighters available to the control of the Air Defense Command. In such event Air National Guard and Air Force Reserve fighter units would be mobilized, and the Air Defense Command was accordingly charged to organize, administer, train, and maintain the Air National Guard and the Air Reserve.[80]

Since the tactical air forces and ground forces had worked closely together in Europe, Spaatz wished to retain a close relationship between the headquarters of the Tactical Air Command and that of the Army Ground Forces. As a result, Headquarters, Tactical Air Command, was activated at Tampa, Florida, on 21 March 1946, but it moved on 27 May to Langley Field, where it was proximate to Headquarters, Army Ground Forces (later Army Field Forces) at Fort Monroe, Virginia. The mission of the Tactical Air Command required it to cooperate with land and sea forces in ground and amphibious operations and to train and equip tactical air units for operations anywhere in the world. It was also charged to promote "progressive development of air-ground coordination techniques and doctrines." Assigned to the Tactical Air Command were the Third and Ninth Air Forces and the IX Troop Carrier Command, but the latter was soon disbanded and replaced by the Third Air Force (Troop Carrier).[81]

In view of earlier decisions to retain them without change, the Air Materiel Command (the former Air Technical Service Command), the Air Transport Command, and the Air Training Command continued in being when the War Department reorganization was announced on 14 May 1946.[82] Still seeking to distinguish between the air transport and the troop carrier mission, the Army Air Forces stated the policy that the Air Transport Command would be responsible for air transport service between the United States and the oversea theaters and between the oversea theaters. The troop carrier units had to be prepared for assault airborne and air landed operations and for the performance of intratheater airlift at the discretion of the theater commanders.[83]

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Unlike the organization of the combat functions which progressed rapidly toward a functional alignment of responsibilities, the establishment of a framework for air research and development was marked by numerous changes in plans. In order to "shake down" for peacetime operations, Headquarters, Army Air Forces, was reorganized on 15 September 1945 with five typical assistant chiefs of air staff: ACAS-1 Personnel, ACAS-2 Intelligence, ACAS-3 Training and

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Operations, ACAS-4 Supply, and ACAS-5 Plans. Research and development functions which had been handled by Organization, Commitments, and Requirements passed to ACAS-3.[84] In the last weeks before he retired, General Arnold spent most of his time thinking about the future development of the Air Force, and, at the advice of Dr. Edward L. Bowles, Arnold directed on 5 December 1945 the establishment of a Deputy Chief of Air Staff, Research and Development. Headed by Major General Curtis E. LeMay, the new Air Staff office was charged to prepare the overall research and development program for the Air Force and to concern itself with policy matters affecting the research and development program. The Air Materiel Command would continue as the field agency responsible for research and development programs.[85]

At the same time that he was centralizing responsibility for future research and development in the Air Staff, Arnold wanted to initiate new research projects before plentiful wartime funds dried up. In September 1945, Arnold took Bowles with him on a trip to the west coast, and, late in the month, they met Donald Douglas and Fr. R. Collbohm in a luncheon conference at Hamilton Field. At this meeting, Arnold proposed to divert $10 million from the Air Force's fiscal year 1946 procurement budget and to commit it to a long-range project wherein the Douglas Aircraft Corporation would assemble a staff of civilian engineers and scientists to study the entire subject of intercontinental warfare and the best means of waging it. The staff would also be prepared to evaluate the military worth of competing systems of warfare, current and future, with the objective of providing air planners with the best possible guides as to the most economical and effective means of achieving the AAF mission. When Douglas agreed to undertake the project, the Air Materiel Command negotiated a $10 million three-year contract beginning in May 1946 for a study of future warfare. This contract was the genesis of the non-profit Research and Development (RAND) Corporation, which would be located at Santa Monica, California, and which would split away from Douglas in a mutually-agreeable action in 1948.[86]

In the summer of 1944 the Air Staff had discussed and dismissed a proposition that an Air Council ought to be created to sit in Washington and provide high-level policy guidance. This proposal was apparently voted down because of the belief that the Air Staff could act as an air council when such was necessary.[87] In spite of the transfer of the AAF School to Maxwell Field, where it would be redesignated as the Air University on 12 March 1946, air planning continued to visualize that the AAF Center would comprise the AAF Board and the AAF Proving Ground Command. In January 1946, however, Spaatz directed that a study be made of the advisability of creating an Air Board similar to the Navy General Board, and, without waiting for the study, he suddenly directed on 12 February that the Air Board would be established, with Major General Hugh J. Knerr as its Secretary-General. As formally established on 5 March, the Air

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Board comprised the Commanding General, the Deputy Commanding General, the Secretary-General, the commanders of major AAF commands, and such other retired officers, civilians, and Air National Guard and Air Reserve officers as the Commanding General of the Army Air Forces might care to appoint. The mission of the Air Board required it to study problems and policies and make recommendations to the AAF Commander.[88]

The establishment of the Air Board necessitated the disbandment of the AAF Board, since, as Lieutenant General Eaker observed, "there should not be two air boards." In his study of the matter, Norstad suggested that the Air Board had already assumed responsibility for advising the AAF commander on all general policies. He suggested that the AAF Board mission of reviewing and evaluating tests of materiel and new developments should be assigned to the AAF Proving Ground Command, thus allowing that command to review and evaluate its own tests. He recommended that the missions of the AAF Board which required it to "determine lessons learned from current combat operations" and to "develop and recommend the doctrines and techniques to be used in the training and employment of the Army Air Forces" should be assigned to the new Air University. Norstad pointed out that at the Air University "hundreds of instructors, spurred on by the sharp analysis and questions of thousands of highly-experienced students," would constantly evaluate combat doctrines. "They," said Norstad, "can probably do a better job, resolve a greater amount of sound air thinking into usable doctrine than any other group of men anywhere. And they will do it whether or not they are charged with it."[89]

The disposition of the AAF Board and the distribution of its missions closely followed Norstad's recommendations. On 8 March 1946 the AAF Center was redesignated as the AAF Proving Ground Command, and the center's personnel--together with that of the AAF Board--moved to Eglin Field, Florida, where the AAF Board was formally inactivated on 1 July 1946.[90] On the same day, the Air University was directed to develop basic doctrines and concepts for the employment of air power; to review, revise, and prepare basic AAF doctrines for publication; to maintain continuing research into the strategic, tactical, and defensive concepts of air power; to review and evaluate new tactics, techniques, and organization and make recommendations regarding them; to collect, analyze, and disseminate information on new methods and techniques of aerial warfare; to plan and supervise the development and testing of new and improved methods and techniques of aerial warfare; and to approve, activate, and designate test agencies and monitor all projects involving tactical unit testing.[91]

The redistribution of the missions and responsibilities of the AAF Board marked the completion of the postwar organization of the Army Air Forces. At Maxwell Field, Major General Muir S. Fairchild immediately began to seek the resources which would permit the new Air University to accomplish its test and development mission. Tentative guidance led him to believe that the Air University would be

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assigned a fighter, a bomber, and a guided missile group, together with other units, which would serve as a Test and Development Force. Hearing of the Air University expectation, however, Major General Quesada, commander of the Tactical Air Command, immediately protested that the organization of a Test and Development Force would be extravagant of scarce tactical units, and he demanded that tactical experimentation and development be entrusted to the operational commands. On 13 May 1946, Spaatz agreed with Quesada and informed Fairchild that tactical groups would not be assigned to the Air University. He enjoined that the Air University would devote itself to individual training and leave equipment and tactical tests and demonstrations to the Air Materiel Command, the Air Proving Ground, and the combat commands. "The doctrines taught at the Air University," Spaatz ordered, "will be those current in the various commands, approved as necessary by this Headquarters."[92]

Despite this curtailment in its mission, the Air University assumed many of the responsibilities of the AAF Board. At a meeting on 6 June, Eubank urged Fairchild to organize a small section or committee directly responsible to the Air University commander to accomplish the missions being transferred. "By keeping a separate group working together on these functions," Eubank explained, "I believe it will assure that the functions do not get lost and I believe it will help avoid the impression of a too academic interest in the problems that will come up."[93] To allay the suspicions of the combat commands, Major General David M. Schlatter, Deputy Commander of the Air University, announced that in the accomplishment of research, evaluation, and doctrinal functions, the Air University would "act in the capacity of a monitoring agency or steering committee utilizing the expert knowledge available in all of the commands of the Air Force."[94] Following Eubank's recommendation, Fairchild established a Research Section within the Air University's Academic Staff Division on 18 June 1946 with spaces for 16 officers, most of whom were transferred from Eglin Field to complete projects on which they were assigned when the AAF Board was discontinued. A reorganization of the Academic Staff on 1 October 1946 resulted in the establishment of a Research Division with several sections and 18 officers. Since the division was evaluating rather than conducting research, the Research Division was redesignated as the Evaluation Division, Academic Staff, on 29 August 1947.[95] Cognizant that it was responsible for stimulating thinking and discussion on air power subjects and for disseminating as well as formulating doctrine, the Air University began to publish the Air University Quarterly Review in May 1947.[96]

In spite of a rapid turnover of experienced officers in its research and evaluation function, the Air University worked off the backlog of projects that it had inherited from the AAF Board and undertook some new projects. Since it had no assigned combat units, the Air University relied on other commands to conduct tests. Especially where the Tactical Air Command was concerned, the split responsibility proved troublesome. In September 1946, for example,

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the Air University protested that the Tactical Air Command was providing very poor support for several test projects--notably the tactical tests of P-80 aircraft at March Field, California. Hearing of the protest, one Tactical Air Command officer retorted that the Air University ought to discontinue its research section and transfer the people to the operating commands where research ought to be performed.[97] The way in which the new system of preparing doctrine would function was gradually worked out. In August 1947, for example, the Assistant Chief of Air Staff for Training and Operations held a meeting in Washington to discuss the preparation of a common air defense doctrine. Here it was agreed that two panels would be established to prepare the doctrine: the Air University would monitor the panel concerned with policy and doctrine and the Air Defense Command would monitor the panel studying tactics and procedures.[98] This same pattern would be repeated in other doctrinal studies.

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Even though the postwar organization of the Army Air Forces had been designed to provide for a smooth transition into the autonomous United States Air Force, some changes were necessary when the National Military Establishment got underway in September 1947. General Spaatz became Chief of Staff, United States Air Force, and Lieutenant General Vandenberg, who had been Deputy Commanding General and Chief of Air Staff in the Army Air Forces, became Vice Chief of Staff, United States Air Force. Looking forward to the establishment of the United States Air Force, and not at all sure that the postwar organization of the Army Air Forces would be suitable to the autonomous service, Spaatz had suggested that the Air University should use some of its highly-experienced students to examine the whole scope of air organization. Prepared as a seminar activity in the first class of the Air War College, Problem No. 4, Proposed Reorganization Army Air Forces, was completed on 6 January 1947. This study recommended that the Headquarters, United States Air Force, should be "a policy and planning staff with virtually all the operational activity of the Air Forces to begin at the major command level below this staff." Believing that "wars are waged with two weapons--men and materiel--and the combination of the two provide for operations," the Air War College study recommended that all headquarters staffs in the Air Force should be organized into three activities: personnel and administration, materiel and logistics, and plans and operations. Possibly reflecting the views of Major General Orvil A. Anderson, who was the founding Commandant of the Air War College, the study also recommended that the most effective utilization of air power in an over-all strategy required the consolidation of air defense, strategic striking, and tactical support forces into a single command. The study accordingly proposed to eliminate the Strategic Air Command, the Tactical Air

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Command, and the Air Defense Command and to place all air power capabilities under a single Air Combat Command.[99]

Whether by design or coincidence, Spaatz accepted the three-deputy system recommended by the Air War College when he reorganized Headquarters, United States Air Force, on 10 October 1947. This reorganization divided Air Staff functions between the Deputy Chiefs of Staff for Personnel and Administration, Operations, and Materiel, and the Comptroller, who would later be recognized as a Deputy Chief of Staff. Some of the functions which had been exercised by the Deputy Chief of Air Staff for Research and Development necessarily passed upward to the newly-created statutory Research and Development Board of the National Defense Establishment, and the October reorganization of the Air Staff placed the remaining responsibilities of the office in the Directorate of Research and Development under the Deputy Chief of Staff for Materiel. The new Director of Research and Development would serve as the military director of Dr. Von Karman's Scientific Advisory Board, but he would otherwise be subordinated to the Deputy Chief of Staff for Materiel.[100]

During the negotiations over unification, the Air Board was said to have served Spaatz in a role similar to that of a "board of directors in a business organization."[101] With unification attained in the summer of 1947, however, Major General LeMay suggested to Spaatz and Vandenberg that it might be well to establish a USAF Aircraft and Weapons Board, consisting of all major air commanders. LeMay reasoned: "We should have more than just the staff experience in Washington participating in the discussions of new weapons." He thought that the new board would constantly survey the research and development program to insure that proper weapons were emphasized, developed, and procured for the combat units.[102] When it was assembled for its first meeting on 19 August 1947, the USAF Aircraft and Weapons Board comprised the Air Force deputy chiefs of staff and the major air commanders. Meeting on call during 1948, the Aircraft and Weapons Board examined, discussed, and offered formal recommendations on programs which were submitted to it by subcommittees of officers drawn from Air Force headquarters and from the major commands. As a vehicle for handling high-level problems, the Aircraft and Weapons Board rapidly eclipsed the Air Board, especially after January 1948 when Knerr was transferred from the Secretary General position to assume other duties.[103]

Shortly after becoming Chief of Staff of the Air Force on 30 April 1948, General Vandenberg began to be dissatisfied with the manner in which the Aircraft and Weapons Board (which he had had a large part in establishing) was functioning. With fifteen senior members talking and voting there was much confusion, and it was difficult to prevent leaks of information out of such a large body. Vandenberg also believed: "In the final analysis, the top command of the Air Force is responsible for the weapons with which it will fight the war." Effective on 29 December 1948, Vandenberg accordingly established the USAF Board of Senior Officers, headed by

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Lieutenant General Fairchild, who had become Vice Chief of Staff, and with the Deputy Chiefs of Staff for Operations and for Materiel and the Commanding General, Air Materiel Command named as voting members. Both Secretary Symington and Vandenberg referred problems to this board, but neither attended its sessions nor sought to influence its deliberations, which commonly included a solicitation of opinions from the major air commanders. The establishment of the USAF Board of Senior Officers foreshadowed the end of the Air Board, which finally became completely dormant in the autumn of 1949.[104]

3. The Air Force in the Developing Cold War Strategy

When the War Department began its planning for a postwar defense establishment in 1943, no one identified a likely adversary for the United States. The fact that the Soviet Union would become an enemy to the free world apparently became known to different leaders at different moments. Thinking back to the time that General Bradley and he had gone forward to meet with Soviet Marshal G. K. Zhukov in May 1945, General Vandenberg recalled a feeling of foreboding about Russia. The Soviet army was digging in, and Zhukov proudly displayed new jet aircraft and Stormovik fighters which had technical features that American designers had said were impossible. "I remember talking to General Bradley," Vandenberg recalled, "about my concern over the apparent feeling. . . that the Russians had. . . masses of manpower and no brains."[105] Putting his thoughts on paper, Spaatz wrote Arnold on 11 October 1945: "With the rapid weakening of our forces in Europe and Asia, the USSR is able to project moves on the continent of Europe and Asia which will be just as hard for us to accept and just as much an incentive to war as were those occasioned by the German policies. . . . I believe we should proceed rather slowly toward demobilizing our armed forces, particularly units of our Strategic Air Command."[106] Looking back at the events of 1945, General Marshall agreed that the "confused and tumultous demobilization was very injurious" and that it had weakened the diplomatic initiative of the United States. Marshall maintained that the United States could not have established "a very large force" in the period of postwar exultation, but he felt even more strongly that "the failure to establish a very definite procedure for maintaining our defensive posture was a very serious error."[107]

In 1945 and 1946 both the foreign policy and the military policy of the United States assumed that the United Nations "would gain rapid and growing recognition as a central factor in the establishment and maintenance of world security."[108] Based upon this assumption, General Eisenhower directed that Army and Air Force strength levels for the fiscal year beginning in July 1946 should be kept to the minimum. In May 1946, Spaatz was willing to hope that the United Nations would establish international arrangements for collective security, but he was unwilling to rely upon a hope.

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"In modern war," he pointed out, "any nation losing command of the air approaches to its vital areas is in serious peril. . . . The surest defense will be our ability to strike back quickly with a counteroffensive, to neutralize the hostile attack at its source, or to discourage its continuance by striking at the vitals of the aggressor."[109] When it published its first plan for training and employment on 25 July, the Strategic Air Command pointed out: "No major strategic threat or requirement now exists nor, in the opinion of our country's best strategists, will such a requirement exist for the next three to five years." Serving in the Office of ACAS-3, Brigadier General Thomas S. Power indorsed the letter back with the admonition: "While the probability of a major strategic threat or a major armed conflict involving this nation in the next three to five years may appear to be remote, the possibility of such an occurrence cannot be excluded."[110]

During 1946 General Spaatz strongly supported a 70-group strength for the Army Air Forces, but his greatest immediate problem was to salvage something from the explosive demobilization that would reduce the air arm to a strength in December 1946 of only 55 groups, of which two could be counted as combat ready. In the emergency, Spaatz viewed the Air Force mission as being: "(a) To provide a long-range striking force in instant readiness and with the power and capacity to destroy the storehouse of enemy weapons and thereafter to reduce the enemy's industrial capacity and war-making potential. (b) To provide in peacetime the minimum establishment for prompt and rapid expansion from peace to war." In the critical months of 1946, Spaatz gave first priority to "the backbone of our Air Force--the long-range bomber groups and their protective long-range fighter groups organized in our Strategic Air Force."[111]

When the Strategic Air Command was established, air strategists were said to have recognized that the adaptability of nuclear weapons to delivery by air at great distances "makes the airplane at present, and its descendants in the future, the greatest offensive weapon of all times."[112] The plans for the Strategic Air Command, however, were predicated on scientific reports that fissionable materials were very scarce and that a state of nuclear plenty was improbable. Arnold had stated that nuclear weapons would be scarce and very expensive.[113] As a result of this prediction, the Strategic Air Command planned to employ both high explosive and nuclear weapons. In order to perform its mission, the Command asked that it eventually be assigned 21 bombardment groups (very heavy), nine fighter groups (very long range) and three reconnaissance groups (very long range). When he was assigned to head the Strategic Air Command in 1946, General George C. Kenney immediately organized one wing with three B-29 groups as the atomic-capable strategic striking force.[114] The size of this force was described as sufficient "to fully exploit the expected availability and effectiveness of new bombardment weapons including the atomic bomb."[115]

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Before World War II air power had been unable to project across ocean barriers without the aid of surface craft, but the prospective development of 10,000-mile range aircraft--including the Northrup XB-35 "Flying Wing" and the Consolidated XB-36--promised to open a new air frontier over the frozen wastes of the Arctic. "We must visualize," said Spaatz, "the launching of heavy blows from any point on the globe against any other point."[116] In November 1945 a 6,553-mile flight of four B-29's led by Brigadier General Frank A. Armstrong from Hokkaido to Washington over the top of the world demonstrated that the Arctic was no barrier to air travel.[117] The Strategic Air Command's plan for training and employment issued on 25 July 1946 acknowledged the concept of transpolar air operations and divided the world into three sectors of potential operations: the North Atlantic, the North Pacific, and the Far East. In a future war, the Strategic Air Command thought it certain that "there will be but one Theater of Operations covering the entire globe or at least the Northern Hemisphere." Moreover, the next war would almost certainly "be primarily an air war until air supremacy is obtained, since surface forces cannot successfully operate without that supremacy." The Strategic Air Command's concept of operational employment accordingly called for a centralized control of the global strategic bomber force and a periodic rotation of bomber, long-range fighter, and reconnaissance groups from home bases in the United States to forward bases in the North Atlantic, North Pacific, and Far East. In a war emergency, the plan assumed that a relatively few atomic-capable B-29's would be employed, probably on the direction of the President, either as a part of larger B-29 formations or as individual aircraft which would strike at night or under cover of bad weather.[118]

"Destruction is just around the corner for any future aggressor against the United States. Quick retaliation will be our answer in the form of an aerial knock-out delivered by the Strategic Air Command." A public relations release thus explained the Strategic Air Command's concept of employment in August 1946.[119] As a matter of fact, however, the strategic striking force was very weak. Although the Strategic Air Command possessed the only two fully combat operational groups in the United States, it did not expect to have a total of four B-29 groups and two long-range fighter groups operational before February 1947.[120] As a result of weakness, the Army Air Forces was unable to measure up to its first postwar crisis, which occurred in August 1946, when two American C-47's were shot down by Communist pilots over Yugoslavia and the State Department proposed an immediate and aggressive use of air power over that country. Norstad had to point out that the Air Force was too weak to risk war. In place of the show of force over Yugoslavia, Assistant Secretary of War for Air W. Stuart Symington proposed an around-the-world B-29 flight, only to have this turned down by the State Department. In November, however, the Strategic Air Command was suddenly directed to send six B-29's to Europe: led

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by Colonel James C. Selser, Jr., these planes left the 43d Bombardment Group's base at Davis Monthan Field, Arizona, on 13 November 1946, made the trans-Atlantic crossing, and landed safely at Frankfurt, Germany, despite low ceilings and half-mile visibility. In a 12-day stay in Europe, the B-29's made flights along the borders of Soviet occupied territory and surveyed airfields to determine their suitability for B-29 operations.[121]

* * * *

In the midst of the explosive demobilization of its group strength, the Army Air Forces found it impossible to procure new aircraft that were needed for modernization and to keep the aircraft producers of the United States in a solvent condition. Believing that national security required the maintenance of a healthy aircraft industry which would be capable of rapid expansion within a one-year period of warning, Assistant Secretary of War Robert A. Lovett had sponsored the establishment of an Air Coordinating Committee with members from the War, Navy, and Commerce Departments in December 1944. After detailed study of mobilization requirements, the Air Coordinating Committee recommended on 22 October 1945 that the military services would have to procure a minimum of 3,000 aircraft, or an airframe weight of 30,700,000 pounds, each year in order to maintain the nation's aircraft industries in a condition that would permit rapid expansion. This recommendation was predicated on an assumption that there would be a civilian requirement for 325 commercial transports and 20,000 private airplanes each year.[122]

As it finally materialized, the Air Force 70-group and 22-squadron program called for a total of 6,869 aircraft, while the 27 Air National Guard and 34 Air Reserve groups would be authorized an additional 5,572 aircraft, making a grand total of 12,441 aircraft. In order to replace losses in a period of conflict in which the aviation industry was gearing up for war production, the Air Force wanted to maintain an additional reserve of 8,100 aircraft.[123] Based upon estimates of attrition and a planned program of obsolescence (which would transfer aircraft from primary to secondary missions, such as training, after a given number of years), the Air Force computed that the annual procurement requirements of the 70-group and 22-squadron program would be its proportionate share of the 3,000 planes which the Air Coordinating Committee indicated as being the figure that the military services needed to purchase annually. The Air Force would expect to maintain "technical air supremacy."[124] "Quality of equipment is of major consequence," Spaatz explained. "Only technical air supremacy will permit an air defense capable of detecting and intercepting a possible surprise attack with the air weapons of the future; an air offense capable of destroying critical targets in enemy territory; and effective cooperation with the surface forces on land and sea."[125]

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Despite their appreciation of the need for aircraft modernization, both Arnold and Spaatz found it difficult to justify aircraft purchases while the Army Air Forces was retrenching. In the last years of World War II the Army Air Forces had placed heavy orders for modern aircraft: in fiscal year 1944 it had ordered 100 global B-36 bombers and 498 new P-80 jet fighters; in fiscal year 1945 it had ordered an additional 417 P-80 fighters and 100 P-84 jet fighters. With new planes on order from war appropriations, it was difficult to justify the purchase of more aircraft at the same time that tremendous holdings of war-surplus planes needed liquidation. Rather than incur criticism for purchasing new and improved transport aircraft at the same time that it was releasing planes to the civil a lines, for example, Arnold directed on 27 August 1945 that the AAF would reduce its procurement objectives for transports "to the absolute minimum for development purposes."[126] In fiscal year 1946 (which began on 1 July 1945 and was the first postwar year) the Army Air Forces purchasing authorization was cut back to 662 aircraft, the principal models including 60 of the improved Superfortresses which were designated B-50's, 250 twin-fuselage Mustang fighters which had been adapted as an interim all-weather interceptor and designated as P-82's, and 141 P-84 jet fighters.[127]

As it was drawn up in the spring of 1946, the postwar aircraft procurement plan of the Army Air Forces reflected the fact that large stocks of World War II planes were still combat capable, that atomic bombs were scarce, and that new jet aircraft were very expensive. Brigadier General Alfred R. Maxwell, Chief of the Requirements Division ACAS-3, visualized the following future aircraft requirements. Aircraft of the global B-36 type would be important as special weapons for employment against extremely long-range targets--possibly A-bomb targets--but such planes would not be procured in large numbers. Medium bombers of the B-50 type would be "work horse" bombers for medium range and would be produced in large numbers. Penetration fighters would continue to be the most important fighter type, but all-weather and interceptor fighters would increase in importance as enemy nations threatened American air supremacy. To give fighter support for long-range bombers, the Air Force proposed to develop a parasite fighter that would be transported by a bomber to a target area and rejoined to the bomber for the trip home. Strategic and tactical reconnaissance planes would continue to be modifications of standard bomber and fighter models. Troop carrier aircraft would include large helicopters (which would replace gliders) and large transport models capable of moving completely-equipped infantry and armored divisions to any combat zone in the world. As a matter of priority, the Army Air Force wanted to develop jet bombers, but with current technology jet aircraft used large amounts of fuel and did not have the range demanded of bombers.[128]

In its budget requests for fiscal year 1947 the Air Force sought

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to follow the program summarized by Brigadier General Maxwell and to begin to procure aircraft required for a modernized 70-group program. In its review of the military requests, the Bureau of the Budget severely reduced all items of the budget, including funds requested for aircraft procurement. It struck out requests for authority to procure new transport aircraft on the ground that proposed contractors would not be able to accomplish the proposed schedule, although the Air Force believed that they could. It also reduced the over-all program by 35 bombers and 42 fighters, and, after Congress had voted aircraft purchase funds for fiscal year 1947, the Bureau of the Budget subsequently impounded $30 million of aircraft procurement funds which was transferred to the pay and travel funds of the Army.[129] In fiscal year 1947 the Army Air Forces accordingly expended $302,684,000 for aircraft procurement and placed orders for a total of 769 aircraft, including such principal types as 73 B-50's, 96 B-45's, 80 P-80's, 191 P-84's, and 33 P-86's. The B-45 was a new light jet bomber which was designated as a replacement for the A-26 as a ground-support aircraft; the P-86 Sabre was a new swept-wing jet interceptor.[130]

The AAF aircraft procurement program for fiscal year 1947 was less than half of the Air Force proportionate share of the amount recommended by the Air Coordinating Committee as necessary to maintain a solvent aircraft industry.[131] In the spring of 1947, when it was drawing up its budget requests for fiscal year 1948, the Army Air Force put in for 1,844 planes, a figure based upon a modernization of 55 groups and 15 skeleton groups and not directly upon any plan to keep the aircraft industry healthy.[132] An economy-minded House of Representatives, plus rising costs of aircraft, cut the Air Force program far below the requested figure. Based upon an authorized expenditure of $495,507,000, the Air Force issued procurement orders for 965 aircraft in fiscal year 1948. The purchase included 82 B-50's, 43 B-45's, 154 P-84's, 188 P-86's, and, for the first time since the war, 120 new-model troop carrier and transport aircraft.[133] The transports included 27 C-97's, a global transport version of the B-29, and the troop carriers included 36 C-119 Flying Boxcars.[134]

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"The weapons of today are the museum pieces of tomorrow," General Arnold had warned when he was in the process of leaving office in November 1945.[135] Based on guidance provided in Dr. Von Karman's Toward New Horizons, Arnold talked confidently about supersonic flight and intercontinental missiles. As drawn up in the winter of 1945-46 by the Air Materiel Command, a 5-year Army Air Forces research and development program generally reflected the findings of Von Karman's scientists and was designed to provide a continuity to air research and development efforts. The program sought to conserve scarce engineering and scientific resources of the nation, but it was predicated on the basic rule that the Air

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Force would not engage in "in-house" research and development unless private agencies were unwilling to do the work on a contract basis.[136] In explanation of the 5-year program, Major General LeMay observed: "Time in this period of unprecedented scientific progress can be the decisive factor in the continued existence of the United States."[137] General Spaatz spoke of the requirement for maintaining a "technical air supremacy," and in a statement of general AAF policy in October 1946 he emphasized that "the Army Air Forces must maintain a position of preeminent leadership in research and development."[138]

After studying the results of captured German scientific data, Von Karman's AAF Scientific Advisory Group had reported that the Germans appeared correct in their conclusion that a transoceanic rocket could have been developed. Von Karman also suggested that rocket-driven airplanes would be necessary in order to attain the higher and higher altitudes required to maintain air superiority. Rocket barrages with atomic warheads, Von Karman said, could well become the only effective air defense weapons.[139] Von Karman's findings were quite different from those of Dr. Vannevar Bush, when he offered his scientific advice to the Senate Committee on Atomic Energy in December 1945: "We have plenty enough to think about," Bush said, "that is very definite and very realistic--enough so that we don't need to step out into some of these borderlines which seem to be, to me, more or less fantastic. Let me say this: There has been a great deal said about a 3,000-mile high -angle rocket. In my opinion, such a thing is impossible today and will be impossible for many years. The people who have been writing these things that annoy me. . . have been talking about a 3,000-mile high-angle rocket, shot from one continent to another, carrying an atomic bomb and so directed as to be a precise weapon which would land exactly on a certain target, such as a city. I say, technically, I don't think anybody in the world knows how to do such a thing, and I feel confident it will not be done for a very long period of time to come. . . . I think we can leave that out of our thinking. I wish the American people would leave that out of their thinking."[140]

In making up its 5-year research and development program, the Army Air Forces chose to believe Von Karman rather than Bush. "There is great danger that the Air Force," stated Major General Knerr, Secretary-General of the Air Board in February 1946, "may find itself in the position of the Coast Artillery and the Navy in the not too distant future thru failing to realize that the airplane can well join the battleship and antiaircraft artillery as ineffective weapons carriers. The aerial missile, by whatever means it may be delivered, is the weapon of the Air Force."[141] During 1946, the Air Force accordingly negotiated a contract for Project MX-774 with Consolidated-Vultee Aircraft for study and investigation of missile guidance and control, rocket engine sniveling, and lightweight missile structures--the whole project looking toward the eventual development of an intercontinental ballistic missile. Another contract was negotiated with North

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American Aviation for rocket propulsion and for the research and development of a pilotless aircraft which would become known as the Navaho. One of the contracts awarded to RAND required it to investigate the feasibility of a minimum-orbital satellite which would provide photographic reconnaissance of inaccessbile areas of the earth.[142]

Despite the fact that it attached great importance to its 5-year research and development program, the Air Force was not notably successful in getting funds for it. For fiscal year 1947 Congress appropriated $186 million for AAF research and development.[143] Major General LeMay was certain that all of this money could have been obligated by the end of the fiscal year, though not at a uniform rate. The Bureau of the Budget, however, did not feel that all of the appropriation could be obligated, and in January 1947 it notified the War Department that the fund would be cut by $100 million. After a reclama, the Bureau released $25 million of the amount in question, but continued to impound $75 million of the air research and development fund which was transferred to pay and travel of the Army, where there were deficiencies.[144] Both President Truman and an economy-minded House of Representatives reduced requested Air Force appropriations for fiscal year 1948, with the result that Congress finally appropriated only $145,300,000 for air research and development for the fiscal year beginning on 1 July 1947. This figure would be the nadir of Air Force research and development appropriations after World War II.[145]

Writing on 11 April 1947, Major General LeMay emphasized that "the greatest need at this time is assurance of a stabilized annual appropriation for research and development."[146] Later on, Department of Defense experts would state that the curtailment of research and development in the immediate postwar years had been a major mistake.[147] And the reduction of air research and development funding had an immediate effect upon Air Force work on guided missiles. Making his last appearance as Deputy Commanding General of the Army Air Forces before the House Appropriations Subcommittee in March 1947, Lieutenant General Eaker explained that with an all-out program (similar to that which had expedited the nuclear weapon) a 5,000-mile missile could probably be developed in five years. The Air Force, however, could not stand the expense of such a program and would have to progress on the research and development effort at a more leisurely pace which might produce an intercontinental missile in 10 to 15 years. "We cannot, therefore," Eaker said, "abandon the development of the very long-range very heavy bomber as a primary weapon of our long-range striking force but we should, as a wise precaution, spend the necessary experimental funds to insure that we are the first in the first in the field with a long-range guided missile which may be the primary weapon at some future date, but probably not within 15 years."[148] As it happened, however, the Air Force was compelled to give even more emphasis in spending its scarce research and development funds to the support of the air force in

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being than Eaker had thought would be necessary. These projects included range extension, long-range strategic aerial reconnaissance, new jet bombers, high-thrust aircraft propulsion systems, short-range airborne guided missiles, and high-speed fighters.[149] In 1947, the Air Force reevaluated its guided missile requirements and gave priorities to research and development projects that promised to increase the capabilities of the air force in being. The new order of priority for missiles included: (1) missiles to enhance strategic air bombardment with conventional aircraft, (2) air defense missiles, (3) surface-to-surface missiles, and (4) interim missiles to include guided bombs and drone aircraft. Under this criteria and because of shortages of funds, the missile project MX-774 was not renewed in 1948, but the Consolidated-Vultee Aircraft Corporation would continue to carry on some studies in the inter-continental ballistic missile field with its own funds.[150]

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In the winter of 1946-47 the United States began to recognize that its policy of cooperation with the Soviet Union was rapidly breaking down. The antics of the Soviet representatives in the United Nations, the Iranian crisis of 1946, the Greek civil war, and Soviet pressure on Turkey gave the United States a better appreciation of the bipolar nature of world power and of the challenge of Soviet expansionism. "If we have war it is going to be with Russia," wrote Professor W. Barton Leach in February 1947. "If we have no war with Russia we shall have no war at all for at least two decades." While Leach had returned to civilian life he remained a close friend of General Vandenberg's, and he may well have expressed some degree of Air Force thinking.[151] Appearing before the House Subcommittee on Appropriations in February 1947, Brigadier General George A. Lincoln again demonstrated--with increasing urgency--the close relationship between military capabilities and foreign policy. "The War Department's broad policies. . .," he stated, "must be based on those of our State Department. Conversely, the State Department, in formulating its national policies must take into consideration the capabilities of the armed forces to maintain a respectable position in the world which makes our emissaries respected."[152] Revealing clearly for the first time that the United States recognized the menace of the Soviet Union, President Truman requested authority from Congress on 12 March 1947 to extend military and economic assistance to Greece and Turkey to enable them to combat internal Communist subversion and external Soviet pressure. In view of the deterioration of relations with the Soviet Union, General Spaatz began to speak openly of a war with "a continental empire" and the "problem of winning against great masses of people with great internal resources."[153]

With full support from the War Department, Spaatz submitted a budget for fiscal year 1948 that would have permitted the Army Air

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Forces to attain a minimum permanent postwar strength of 70 groups and 22 separate squadrons. The Bureau of Budget, however, reduced the air request to an amount sufficient to maintain only 55 peace-strength groups and 17 separate squadrons. The Air Force nevertheless obtained authority to base its procurement and training objectives on a 70-group strength and to activate 15 record groups and 5 record squadrons that would not be manned or equipped.[154] In appearances before the House Subcommittee on Appropriations, Spaatz emphasized America's vulnerability to air attack from across the Arctic and urged that the only way to prevent bombs from falling on the United States "is to get them at the place they start from, and that is primarily our mission." Major General O. P. Weyland, Chief of AAF Plans, pointed out that America's air strategy was one of defense and retaliation. "It is inconceivable," said Weyland, "that the United States will start an aggressive war. Hence, it is obvious that at the start of a war, we will be the recipient of an all-out surprise attack."[155]

In May 1947 Congress appropriated the $400 million that President Truman requested as aid for Greece and Turkey, thus indicating approval for the Truman doctrine's objective of containing Soviet expansion. But the 1st Session of the 80th Congress was reluctant to vote military appropriations in the amounts requested. The House made a 10 percent cut in the AAF budget, and only part of it was restored by the Senate after General Eisenhower made a personal plea that the money was required.[156] Some of the cause for the reluctance to vote military preparedness funds may have sprung from the findings of the President's Advisory Commission on Universal Military Training, which reported on 29 May 1947. This distinguished panel endorsed military preparedness as the surest way of checking international aggression. It believed that World War III would begin with atomic sneak attacks against the United States, but it felt that such attacks were not imminent. "For a period estimated by responsible scientists at not less than 4 years and not more than 10 years," the commission reported, "we can expect immunity from such an attack because we alone will possess the atomic bomb." In a final summation, the President's Commission noted that "we cannot safely assume that we will have sole possession of atomic explosives beyond 1951, although most scientists and engineers familiar with the production of the atomic bomb believe it will be 1955 at the earliest before an attack in quantity can be made against us."[157] As a matter of record, moreover, the Joint Chiefs of Staff and specifically both Spaatz and Vandenberg placed more emphasis on aid to threatened nations under the Truman doctrine and the Marshall economic recovery program than they did to attainment of the 70-group program. "The 70-group program," Spaatz testified, "should not be reached at the expense of arms aid to Europe." "I think," said Vandenberg, "that the 70-group program, as visualized by the Air Force, with Europe unprepared, would not be as efficient as a lesser number of groups with a sound economy

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of the United States and a western Europe that could resist aggression and give us time."[158]

While it was understood that most of the units would be equipped with World War II aircraft, the Army Air Forces obtained authority in July 1947 to activate or organize all of the groups of the 55-group phase of the 70-group program and to have them in place with some degree of operational effectiveness by the end of the year. In the final allocation of strength, the 55 groups included 13 very heavy bombardment, 3 light bombardment, 24 fighter, 7 reconnaissance, and 8 troop carrier groups.[159] Each major command sustained a reduction of combat strength, but the new allocation indicated that the Army Air Forces was beginning to mobilize against a particularized strategic threat somewhat different from the generalized concepts in initial postwar planning.

"As the initial blow will come from the air and be delivered by air power," stated General George C. Kenney, who headed the Strategic Air Command, in September 1947, "the answer must be for us to maintain our air power strong enough to deter any possible enemy from attacking us."[160] Under the 55-group phase, 12 very heavy bombardment, 5 fighter, and 1 very long range reconnaissance groups were assigned to the Strategic Air Command.[161] While the Strategic Air Command thus enjoyed priorities in manning and equipment, it did not obtain new equipment or a complete acceptance of its operational concept. Immediately after VJ-day, the Twentieth Air Force had been assigned to the Pacific Theater, with the result that one very long range reconnaissance squadron continued to be assigned to the Far East Air Forces in the Pacific. The Strategic Air Command maintained that these units should be placed under its command and that their functions should be performed by SAC groups which would stage to Pacific bases as necessary, but General Douglas MacArthur, Commander-in-Chief, U. S. Far East Command, did not agree to give them up.[162] Other than the fact that B-29's would be unable to reach many targets in Russia, the Strategic Air Command's most pressing aircraft problem concerned fighter escort. The Army Air Forces accepted the position that: "The necessity of providing adequate fighter protection for very long range bombardment aircraft was conclusively demonstrated during World War II." To protect bombers against hostile jet fighters, SAC would require jet escort fighters, but no American jet fighter had enough range to escort a B-29 and it was problematical whether jet aircraft could escort relatively slow conventional B-29's. Pending solution to the problem, the Strategic Air Command indicated that it would expect to operate its bombers over hostile territory only at night.[163]

In initial postwar planning, the Army Air Forces had considered air defense essentially a mobilization problem. When he was named to head the Air Defense Command, Lieutenant General George E. Stratemeyer was accordingly instructed to give most of his attention to the establishment of an aircraft control and warning system and to the management of the Air National Guard and Air Reserve, which

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would, upon mobilization, provide fighter units for air defense.[164] As thus laid out, the air defense mission appeared simple, but Stratemeyer found it complex. Thinking in terms of scarce military funds and the eventual need to detect and destroy supersonic jet aircraft and nuclear missiles, Stratemeyer thought that first priority in the Air Force budget should be given to research and development, second to the Strategic Air Command, and third to the air defense system.[165] Stratemeyer believed that both the equipment and doctrine for air defense was obsolete,[166] and he urged that a minimum nucleus of regular Air Force interceptor groups ought to be assigned to the Air Defense Command. While it held to the concept that all available fighter units would be assigned to air defense in an emergency, the Army Air Forces agreed that the Air Defense Command should have some regular groups of its own. As a result, a fighter group was activated at Dow Field, Maine, in November 1946, and two additional fighter groups (all-weather) were assigned to the Command in May and June 1947 with stations at Mitchel and Hamilton Fields.[167] The fighter groups assigned to air defense were withdrawn from the Tactical Air Command, and, despite efforts to dramatize the tactical air mission, Lieutenant General Quesada found it hard to maintain a going organization. Shortly after its establishment, the Tactical Air Command organized its assigned groups into the Ninth Air Force and the Third Air Force (Troop Carrier) but because of the reduction in its troop carrier units the latter organization was inactivated on 1 November 1946.[168] Since most tactical air units were assigned to the Far East Air Forces, the United States Air Force in Europe, the Alaskan Air Command, the Pacific Air Command, and the Caribbean Air Command, the Tactical Air Command possessed only one light bombardment, three fighter, three tactical reconnaissance, and three troop carrier groups as its share of the 55-group strength.[169]

* * * *

"At the present time," noted Forrestal after he had become Secretary of Defense, "we are keeping our military expenditures below the levels which our military leaders must in good conscience estimate as the minimum which would themselves ensure national security. By so doing we are able to increase our expenditures to assist in European recovery." Forrestal considered that the United States was taking a calculated risk that was justifiable. "As long as we can outproduce the world, can control the sea and can strike inland with the atomic bomb," he wrote, "we can assume certain risks otherwise unacceptable in an effort to restore world trade, to restore the balance of power--military power--and to eliminate some of the conditions which breed war."[170] Forrestal's reasoning held good only as long as the United States possessed an aircraft industry that could meet the mobilization requirements of the nation's armed forces. By the spring of 1947 it was evident that

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many of the postwar assumptions regarding this industry were in error. The widespread assumption that a rising demand for commercial aircraft would help tide a number of companies over readjustments failed to materialize; the aircraft industry remained from 80 to 90 percent dependent upon government purchases of military aircraft. The Air Force and the Navy had been unable to purchase a quantity of aircraft required to keep industry solvent, and the changing year-to-year purchasing programs had caused higher pricing of aircraft, thus reducing the quantity that could be purchased. Jet aircraft, moreover, cost substantially more than conventional planes, thus further decreasing quantity procurement.[171]

Despite their pressing concern for European recovery, both President Truman and Congress knew increasing alarm for the state of preparedness of the American aircraft industry. At the recommendation of the Air Coordinating Committee, Truman appointed a committee on 18 July 1947 headed by Mr. Thomas K. Finletter and charged it to make an objective inquiry into national aviation policies and problems and to assist him in formulating an integrated national aviation policy. The President's Air Policy Commission assembled on 29 July, held formal hearings from 8 September to 3 December, and completed its report on 30 December 1947.[172] Meanwhile, Congress--where the Republican Party held a majority--felt "a general concern over national security and the threatened bankruptcy of the aircraft industry and civil air carriers." Authorized on 22 July 1947, a temporary Joint Congressional Aviation Policy Board was formed with Senator Owen R. Brewster as chairman, and it organized an advisory council of civil aviation representatives and retired military leaders, including General Arnold. The Congressional Board held its first meeting on 15 September: while it held frequent meetings of its advisory council and staff after this it chose to use the elaborate testimony of the President's Commission rather than call witnesses. The Congressional Aviation Policy Board made its report to Congrees on 1 March 1948.[173] Although the conclusions of the Finletter and Brewster investigations were quite similar, the Brewster board was more pronounced in its criticism of the defense establishment. From the outset of its investigation, moreover, the Brewster board believed that "the primary problem of national aviation policy was one of providing well-balanced military and naval air forces rather than one of finding means to maintain an aircraft industry. If the former were accomplished," the board believed, "the health of the latter would be assured."[174]

In November and December 1947 the testimony of influential witnesses before the President's Aviation Policy Commission manifested a growing awareness of the importance of American military strength but illustrated diverse opinions as to what its composition ought to be. "Insofar as our thinking about preparation, readiness for war, or national security. . . is concerned," said Secretary Forrestal, "we are faced with the hard and solid fact that as a democracy we do not start wars and therefore can never be in a

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complete state of readiness. . . . This nation's experience has been a clear demonstration that peace will not be furthered by the neglect of military strength. . . . In the past, we have invited aggression by that neglect. The military policies of this nation stem from a single desire and obligation. That is to use our strength as a force for peace." He emphasized the close relationship between the State Department and the National Defense Establishment: "One of our principal tasks," he said, "is to see to it that there is integration between our foreign policy and our military attitude. In other words, to see to it that the policy does not outstrip power."

Forrestal pointed out that America's concept of national security had changed. Before World War II, he said, "our concepts of security were the integrity of our own domain, and the freedom from. . . attack or danger of invasion. . . . In my own view. . . our security is now far broader than that. Our security is. . . our ability to contribute to the reconstruction of the world, and . . . our military requirements have to be fitted into the pattern of what we do toward the other larger results, in other words, the reconstruction of society." He also said: "It would not serve us to have the greatest military establishment in the world and concurrently be going down the road to continued and continuous inflation." He did not agree that the individual military services should present their requirements to Congress because "even in wartime, you could never meet the requirements of all the services . . . there has to be an accommodation of both. . . saying what we need and then someone saying what we shall get." As for air power, Forrestal believed that "the United States must have air forces sufficiently powerful to protect its own security and territory and sufficiently powerful and versatile to be capable of making swift and effective counterattacks in the event of war." He felt that air power should be developed over a period of years in an orderly manner, and he expected that the Joint Chiefs of Staff would provide a strategic plan for the military establishment which would give "an opportunity to bring into better balance the components of that establishment."[175]

Leading the Navy testimony before the President's Air Policy Commission, retired Admiral Nimitz provided a statement prefaced with a warning: "Unless we retain our ability to control the sea. . . we may eventually find ourselves exchanging long range air attacks which will be indecisive alike against ourselves and our enemies, but at the same time damaging to our own cities and vital installations. Nimitz emphasized that naval aviation was an integral part of the fleet. "I cannot. . . accept the idea," he said, "that naval aviation is a part of the Air Force. . . . I regard the Navy, the Air Force, and the Army as you would the three legs of a stool. . . and I think each one of those forces must be strong enough to carry out the mission which is assigned to it." Secretary of the Navy John L. Sullivan argued that "any de-emphasis in Naval aviation spells the end of America's control of the sea."

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"During the war," he said, "England learned that whenever a sufficient number of German bombers came over on a determined raid, enough of them got through to give a great deal of trouble. . . . Later on, when the bombs kept coming over it was most apparent that the only defense against determined air attack or guided missiles--and the same proves true in the atomic techniques--the only defense is to . . . put a very large number of men on ships, transport them overseas and capture the platforms from which those weapons are launched."[176]

"I believe in air power, without 'ifs,' 'buts,' or 'howevers,'" stated former Secretary of War Robert P. Patterson. "I believe that our national defense should be centered on air power. . . to a far greater degree than is the case at present. It is my opinion. . . that we will not need the strongest Army in the world or the strongest standing Navy in the world, but we will need the strongest Air Force in the world."[177] Secretary of the Army Kenneth C. Royal described air power as "our first line of defense in the event of war," but, in view of the fact that World War II had had "to be won by tanks, guns and men, on the ground," he asked the commission "not to forget that the Navy and the Army, as well as the Air Forces, must be taken into account in cutting up shares of national defense."[178] Representing views of a scientist, Dr. Karl T. Compton, President of the Massachusetts Institute of Technology, stated that the question of whether more powerful nuclear weapons could be developed was still in the realm of speculation, but he felt that a surprise atomic attack against the United States even with current weapons would be a "very unpleasant sort of prospect." He recommended a requirement for a mobile striking air force to be employed "as a strategic weapon against the most important of the enemy's sources of industrial and military warfare." "I believe," he concluded, "that the existence of a striking Air Force of that type, always ready as a threat of retaliation, would be the strongest single thing that we could do in this country, to act as a deterrent against aggression by any other nation."[179]

Appearing in behalf of the Air Force, Secretary Symington offered the view that the United States had been "forced into a position of world leadership and of responsibilities of a global extent" at the same time that it had "lost the cushion of time and distance." Spaatz described the major segments of the Air Force plan for national security as being the 70 combat groups, adequately manned and equipped civilian components, plans and installations for aerial defense of the United States, a research and development program second to none, vigorous and alert aircraft manufacturing and air transport industries, and an industrial mobilization plan. Both Spaatz and Vandenberg devoted most of their testimony to explaining the aircraft requirements of the 70-group program.[180] Major Alexander P. de Seversky, however, discussed broader aspects of air warfare. "As long as we use piloted aircraft," he argued, "the destruction of the enemy cannot be accomplished without first

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assuming control of the air above his territory. . . Penetration by piloted airplanes, even with jet and rocket propulsion, will be unthinkable without all-out air combat. Only with the advent of intercontinental rockets can there be any talk of penetration without combat." He pointed out that the 70-group Air Force would not necessarily represent air power-in-being in the full strategic sense. "A strategic military force is one which is self-sustained in its own medium, regardless of its base; capable of assuming control of its medium while denying it to the adversary. By thus assuming freedom of action in its own medium, it can bring about the end of hostilities through the direct application of force upon the enemy's means to wage war." In the past, armies had been strategic forces on land and navies on the high seas. "Today," he said, "when neither of them can maintain a battle under hostile skies, they have ceased to be strategic forces and become auxiliaries to Air Power." Seversky conceived that an air force-in-being should have two main divisions: an intercontinental striking force large enough to paralyze an enemy's industrial establishment and a continental defense force of a size sufficient to defend the vital industries of the United States.[181]

"We believe," stated the President's Air Policy Commission on the basis of testimony presented to it, "that the United States will be secure in an absolute sense only if the institution of war itself is abolished under a regime of law." Since early attainment of this condition seemed doubtful, the commission found that "our security includes. . . winning any war we may get into. . . not losing the first campaign of the war. . . not having our cities destroyed and our population decimated in the process of. . . winning the first campaign. . . not having our way of life. . . taken from us in preparing for war."[182] The Congressional Aviation Policy Board reported that the only defense against modern war "will be swift and more devastating retaliatory attack." The board also noted that "the primary military objective of modern warfare is no longer the armed forces of the enemy. The primary objective is the war potential or . . . the industrial organization and the resources of the enemy. . . . The great contenders in a possible war of the future will first engage in the political and then the industrial phases of that war. The political phase of the next war has been actively engaged in since VE-day--and the industrial phase is clearly recognizable." [183]

With professed reluctance, the President's Air Policy Commission stated that "relative security is to be found only in a policy of arming the United States so strongly (1) that other nations will hesitate to attack us or our vital national interests because of the violence of the counterattack they would have to face, and (2) that if we are attacked we will be able to smash the assault at the earliest possible moment." The commission recommended that the United States should maintain "an adequate Navy and Ground Force" but that the military establishment "must be built around the air

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arm. . . . Our military security must be based on air power." In view of the violence of an enemy attack against the United States, the commission stated: "what we must have and can support is a reasonably strong defensive establishment to minimize the enemy's blow, but above all a counteroffensive air force in being which will be so powerful that if an aggressor does attack, we will be able to retaliate with the utmost violence and to seize and hold the advanced positions from which we can divert the destruction from our homeland to his."[184]

The President's Air Policy Commission sought to base its military aircraft procurement recommendations on a firm estimate of the date by which an enemy nation might be expected to possess nuclear weapons. The commisssion found that expert opinion on the subject varied from that of some highly qualified persons who said that other nations might already possess the weapons to that of other equally well qualified persons who estimated that other nations would not possess atomic weapons in quantity for fifteen years. The commission thus set its own date of 1 January 1953 as A-day--the date when the U.S. air arm should be able to deal with a possible atomic attack against the United States. The commission stated that a future hostility might well be a localized conflict or a "practice war" such as the Spanish Civil War had been, but it urged that the United States must assume that "if the enemy can do it he will make a direct air assault on the United States mainland regardless how or where the first shooting starts." The commission recommended that immediate steps be taken to build the Air Force to 70 groups (6,869 first-line aircraft), the Air National Guard to 27 groups (3,212 first-line aircraft), and to equip the 34-group Air Reserve adequately. The Air Force was also judged to require an additional reserve of some 8,100 aircraft. It recommended that the 70 groups should be ready for service by 1 January 1950, and the complete Air Force program should be in being by the end of 1952. The commission found it more difficult to evaluate Navy requirements for aircraft: while the Navy would not be required to oppose a hostile surface fleet in the future, it would be expected to keep supply lines open to forward air bases and to oversea sources of essential war materials. The aircraft carrier would be the major ship of the future Navy, and in order to carry out its future responsibilities (one of the most important being protection against modern submarines) the Navy would require 5,793 first-line planes, plus about 5,100 in support. The Navy had presented strong arguments for increasing its air strength to 8,000 first-line planes with 6,500 planes in support, but the President's Commission believed that such an increase would constitute a naval expansion which should be deferred until the Joint Chiefs of Staff had completed a strategic plan that would demonstrate the need for a naval expansion. In addition to providing the minimum-level combat air arm which the United States would require on 1 January 1953, the President's Air Policy Commission believed that expanded aircraft procurement would

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enable the nation's aircraft industries to maintain the industrial base that would be required for a national mobilization emergency.[185]

The Congressional Aviation Policy Board was openly critical of the fact that the Joint Chiefs of Staff had not completed "a unified plan of action" for a future conflict that would have allowed it to make an exact computation of the aircraft requirements of the Navy and the Air Force. In view of the "inability of the Joint Chiefs of Staff to prepare a unified plan," the Congressional Board accepted the unilateral statements of requirements offered to it under two plans of action: Plan A, to provide air strength necessary to mount promptly an effective, continuing, and successful air offensive against a major enemy; and Plan B, to prevent the loss of a war at the outset of hostilities and to provide effective retaliation but not a sustained offensive action. Plan A included the Air Force's 70-group program with 20,541 aircraft plus the Navy program of 14,500 aircraft, or a total of 35,041 aircraft to be procured between 1949 and 1953, when level-off procurement would begin. Plan B was substantially the same program, less reserve aircraft. "We believe," stated the Congressional Aviation Policy Board, "that when . . . a unified plan has been determined, the total requirements of the armed services may be materially reduced below the totals of the estimates prepared unilaterally."[186] As an additional means of maintaining a desirable mobilization base, both the Congressional Board and the President's Commission suggested that the armed services should give thought to the performance of a part of their aircraft maintenance on a contract basis with civilian industrial organizations. Contract overhaul of military aircraft should result in monetary savings and would build up civil staffs trained in such work for use in a mobilization emergency.[187]

Some of the men who worked on the President's Air Policy Commission report expressed regret that the commission had not been more critical of the weaknesses of the over-all defense organization, particularly the inability of the Joint Chiefs of Staff to provide an over-all defense plan for the United States.[188] Seversky later suggested that the President's Commission "strategically didn't make much sense" except to the aviation industry, because it recommended everything that flew--strategic aviation, tactical aviation, naval aviation, marine aviation, airlines, helicopters, private flying. Seversky described the division of the strategic problem into two phases, according to whether or not Russia had atomic weapons, as being unrealistic. "That, I thought," said Seversky, "was a great fallacy because improved explosives don't necessarily change strategy; they may change tactics, but they do not change strategy. Whether you are carrying TNT or atomic bombs, you will have to win control of the medium through which you want to make a delivery. The means of delivery are more important than the explosives."[189] A board of Air Staff officers named by Secretary Symington to analyze the reports of the President's Commission and the Congressional Board took more optimistic attitudes when it reported on 23 March 1948. These officers judged the four primary functions of the Air

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Force to be to provide defense against air attack, to possess the capability to deliver an immediate and retaliatory attack against an aggressor, to provide tactical air support to ground forces, and to gain and maintain air supremacy in order to carry out sustained air operations against vital enemy installations. Since both the commission and the board had recommended that the Air Force attain a 70-group strength, the board of officers recommended that the Air Force begin an immediate expansion toward that program.[190]

* * * *

In the summer of 1947, prior to the organization of the National Defense Establishment and the investigations by the President's Commission and the Congressional Board, the Army, Navy, and Air Force had prepared unilaterally their budgets for fiscal year 1949. The budgets were based on an over-all amount of $10 billion which President Truman had indicated would be available for military defense, and, even though it was said that the service budgets were developed from Joint Chiefs of Staff plans, the Joint Chiefs neither reviewed nor approved the detailed military budget. When Forrestal appeared before the President's Commission, he let it be known that he would be very reluctant to disturb the structure of the fiscal year 1949 military budget, except on the urgent request of the Joint Chiefs of Staff.[191] The Air Force portion of the national defense budget for fiscal year 1949 allowed the operation of a maximum of 55 combat groups and 17 separate squadrons and provided $700 million for the continued modernization of the combat groups by replacement of their World War II aircraft.[192]

In visualizing the expenditure of the $700 million for new aircraft, Air Force planners committed enough funds in the 1949 budget for the purchase of additional jet fighters to permit a total of 13 of the Air Force's 24 fighter groups to be equipped with these aircraft.[193] None of the available jet fighters would be capable of escorting bombers to far-distant targets, and the Air Force still accepted the doctrinal lesson of World War II to the effect that an attainment of a preliminary air superiority was necessary in order that surface operations could be successfully undertaken or that decisive bombing of an enemy's vitals could be accomplished. In July 1947, however, in the United States Strategic Bombing Survey report entitled Air Campaigns of the Pacific War, Major General Orvil Anderson questioned the air superiority doctrine. "Air superiority is not an end in itself," suggested Anderson. "Operations must be evaluated in terms of the decisiveness of the action and the cost to our own war potential. If the over-all damage inflicted on the enemy significantly outweighs the cost of the operation in terms of manpower, materiel, and production potential, the operation may be strategically sound."[194] During World War II, the Eighth Air Force had found that the best method for daylight penetrations of Germany was with large

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bomber formations; in the summer of 1947, however, interceptor tests flown by the 1st Fighter Group against B-29's indicated that P-80 pilots had difficulty intercepting a single B-29.[195] As the speed of both bombers and fighers increased, General Kenney reasoned that "dog fighting" between aircraft would be impossible and that intercepting fighters might be able to make no more than a single head-on pass against a bomber.[196]

While Air Force thinkers began to express some cautious optimism that the employment of nuclear bombers without fighter escort might be strategically feasible, the USAF Aircraft and Weapons Board knew a good bit of uncertainty about the kinds of bombers that ought to be procured for the Strategic Air Command when it began to study the problem of attacking Soviet targets in the autumn of 1947. At this time it still appeared that the future supply of atomic bombs would be very limited and that the Strategic Air Command would have to plan to use a heavy proportion of conventional bombs in a strategic air campaign. The major problem, however, was to penetrate to and to attack heavily defended targets in the Soviet Union with atomic bombs.[197] The only intercontinental bomber which the Air Force had in prospect was the giant conventional B-36. An order for 100 of these planes had been placed on 23 July 1943, but to meet price rises and the costs of improved engines this wartime order had been cut to 95 aircraft. The war appropriation covering the contract would run out in June 1948, and the Air force would need new appropriations to complete it. The B-36 was large and appeared to be relatively slow, but it was the only aircraft which could bomb Soviet targets from bases in the United States.[198] B-29's and improved B-50's were already in the Strategic Air Command inventory, but these planes lacked enough built-in range to strike deep-in Soviet targets and return. The Air Force had two jet strategic bombers under contemplation. In response to a requirement in 1944, the Boeing Company had developed the six-jet, medium-range B-47. In 1946 Boeing had won the design contest for an intercontinental jet bomber which would be designated as the B-52, but, in its design stage with available power plants and a requirement for built-in intercontinental range, the B-52 was threatening to become even larger than the B-36.[199] Recognizing that Air Force bombers lacked global range, Colonel Dale O. Smith suggested in an article published in the autumn of 1947 that the Air Force might prepare its aircrews to fly one-way atomic combat missions. Smith suggested that the crews would have a good chance to evade and survive. Such blitz tactics would rapidly expend the bomber force, but Smith thought that there "seems to be little doubt that the nation making the first atomic bomb strike in force will be the victor."[200]

In an effort to clear up indecision within the Air Force regarding the strategic bomber program, General Spaatz formed a Heavy Bombardment Committee on 9 September 1947 with representatives from the Air Staff, the Strategic Air Command, the Air University,

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and the Air Materiel Command and charged it to study "methods of and instrumentalities for air delivery of individual and mass atomic attacks against any potential enemy from bases within the continental United States." In its discussions, the bombardment committee shared the current concern that the B-36 might not have as good a chance to penetrate as would faster medium bombers. Based on this belief, the committee sought means to extend the range of medium bombers. General Kenney had already urged the development of tracked landing gears which would enable his bombers to operate from hastily-prepared airstrips, possibly on the polar ice caps. Another alternative, favored by both the Strategic Air Command and the Air Materiel Command, was to develop air-to-air refueling equipment and to employ airborne tanker aircraft which could refuel strike aircraft en route to a target. Such aerial refueling had been used in 1929 when Major Spaatz and Captain Eaker had broken the world's aircraft flight endurance record in the "Question Mark." Thought had been given to the use of aerial refueling during World War II, but the technique was logistically infeasible for supporting massed bomber attacks which employed iron bombs. As a means of extending the range of fighter-escort aircraft, General Vandenberg had urged aerial refueling in 1945. Aerial refueling would be expensive, however, since two aircraft--a bomber and a tanker--would be required to accomplish a single sortie.

After studying all aspects of the bomber problem, the Heavy Bombardment Committee recognized that the most practical way to extend the range of existing medium bombers and to lighten the design weight of the proposed intercontinental B-52 jet bomber would be to develop equipment and techniques for air-to-air refueling of bombers from specially-equipped tanker aircraft. Aerial refueling also would permit the B-47 jet bomber, which was still in prototype awaiting decision for production, to strike far-distant targets. The committee therefore recommended that air-to-air refueling be developed as a matter of first priority. It nevertheless emphasized that the Air Force should not completely close the door on the development of aircraft with built-in range. Since much of the information about the B-36 was still speculation, it recommended that the Air Force ought to continue the funding of the 95 B-36's which were on order. The latter serial models of these B-36's could be equipped with improved engines, and it might be possible to convert some of the earlier serial B-36S's into aerial tankers. At sessions held on 27-30 January 1948, the USAF Aircraft and Weapons Board accepted the Heavy Bombardment Committee's recommendations, and Spaatz gave his formal approval to them on 3 March 1948.[201]

In the winter of 1947-48, the Soviet Union began to reveal its aggressive designs upon Western Europe. According to unofficial reports reaching the U.S. State Department late in 1947, the Soviet general staff sought permission to push troops straight into Western Europe, thus preempting with military force before Marshall Plan aid could become effective. As the story was told, however, the

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Politburo overruled the Red Army and issued orders for internal Communist strikes and revolts throughout Western Europe. The organization for revolution was activated in December 1947, and, after an agonizing week of strikes and disorder, the essential structure of European governments held up.[202] On 24 February 1948, however, a Communist coup d'etat overthrew the government of Czechoslovakia, which had beena model of democratic rule in Central Europe. Few Communist acts of aggression shook the western nations as profoundly as the loss of this friendly republic to the forces of Soviet subversion.[203] In a top-secret message from Berlin on 5 March, General Lucius D. Clay, Commander-in-Chief, U.S. European Command, reported that war might well be imminent. "For many months, based on logical analysis," Clay messaged, "I have felt and held that war was unlikely for at least ten years. Within the last few weeks, I have felt a subtle change in Soviet attitude which I cannot define but which now gives me a feeling that it may come with dramatic suddenness."[204]

When he appeared before the House Subcommittee on Military Appropriations on 16 March 1948, Secretary Forrestal conceded that the international position of the United States had deteriorated. "Wars," he said, "are usually caused by the assurance on the part of an aggressive power that it possesses sufficient superiority to overcome any possible obstacles to the success of its military efforts. . . . Since the United States is a democracy--a form of government which traditionally does not start a war of aggression--its national defense policy must be directed at preventing the development of that tempting imbalance of power." Forrestal admitted that the President's Commission and the Congressional Board had shown that the nation's air strength was less than its strategic position required. "There is no question," he said, "but that our national security would be greatly enhanced by such a powerful Air Force." He nevertheless argued that the Armed Forces budgets had "to strike a balance between funds which are available and expenditures which might be considered strategically desirable or even essential." Forrestal thus supported the $10 billion military budget, which would maintain the Air Force at 55 combat groups and would keep the Army and Navy in an appropriate balance with this force. "While the Air Force and naval aviation alone may be the cutting edge," he concluded, "we must also have the logistical organization to back them up, the adequately equipped Ground Force to seize and hold the bases from which planes fly, the ships with which to supply and help protect such bases, and all of the other elements of balanced strength."[205]

Speaking to the same committee later in the day on 16 March, Secretary Symington emphasized that an air force in being provided two assets: "It serves as an active deterrent to any aggressor, and it is the force which envelops him in prompt and decisive retaliatory action if he risks war with the United States." In response to a

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direct question, both Symington and Spaatz asserted that the minimum air power necessary for the security of the United States was the 70-group program. And Symington agreed that the "maintenance of an adequate Army" was "essential to the effectiveness of the Air Force." Several hundred thousand Army troops would be necessary for "holding and servicing an air-base complex in a forward area." In subsequent testimony, General Omar N. Bradley, who had succeeded General Eisenhower as Army Chief of Staff, demonstrated the Army's importance by visualizing how a future war would be fought: "First, by repelling any attack made against us, and repairing the damage, and preparing the people to receive that shock without getting too discouraged. Next, we would immediately secure bases we do not now have from which he might attack us. . . . Next, we would try to launch a counterattack against him by air. The next phase would be trying to move those bases closer to the enemy."[206]

While Congressional hearings on the Defense Establishment's fiscal year 1949 budget continued, the Soviet commander in Germany served notice on 1 April 1948 that his troops would begin to inspect Allied trains and trucks going to Berlin. The Soviet military blockade of Berlin was beginning although it would not be clamped down in earnest until June. When Forrestal appeared before the House Armed Services Committee on 12 April, Representative Carl Vinson told him frankly that he intended to seek to secure an additional $992 million of aircraft procurement funds to provide a 70-group Air Force. Answering a question that Forrestal had put to them earlier, the Joint Chiefs stated on 14 April that, based solely on military considerations, they believed that the administration should advocate a balanced military establishment commensurate with the 70-group program for the Air Force. To support such a balanced force, more than $9 billion would need to be added to the fiscal year 1949 budget. Forrestal returned this report with an additional request that the Joint Chiefs give him an estimate of the additional force which could be obtained with an additional $3 billion rather than $9 billion. Within the Air Force share of this increment, Spaatz figured that the Air Force could--by utilizing many mothballed planes rather than buying a complete complement of new aircraft--afford to activate all of the 70-group program except for two light bomber and two troop carrier groups which could be delayed since they would be scheduled to support ground divisions which would not be active before 1950. Apparently accepting the Joint Chiefs' planning, President Truman forwarded a supplemental appropriation request to Congress on 13 May asking for $3,068,441,000.[207] Truman stated that every effort should be made to reassure the public that the increased appropriation was "not one of mobilization for war, but rather one of maintaining a firmer foundation of preparedness on which a more rapid mobilization could be based than would be possible without the increases." Truman enjoined Forrestal to proceed with great care in making commitments and to give the entire program a realistic review in September and December 1948.

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On 25 June Truman further directed that the Air Force would not expand beyond a strength of 411,000 men and 9,240 active aircraft pending further review in the autumn of 1948.[208]

Shortly after he succeeded Spaatz as Air Force Chief of Staff on 30 April 1948, General Hoyt S. Vandenberg faced the immediate problem of mobilizing existing Air Force capabilities to resist Soviet aggression in Germany and the longer range problem of expanding the Air Force within the limits set forth by President Truman. In Germany, on 24 June, Soviet troops finally halted all rail and road movement from the west into beleaguered Berlin. Later on, General Maxwell D. Taylor would assert that people like General Clay and others felt that the United States "should have used force on the highway, at least to verify what the Russian intent was."[209] Contemporary evidence, however, indicates that from the start of the crisis Washington authorities proceeded on the assumption that Berlin would be supplied as long as possible by airlift. "After discussion with the military services. . . and . . . throughout the National Security Council and finally with the President and the appropriate committees of Congress to whom I reported," said Under Secretary of State Robert A. Lovett, "we decided to stand firm in Berlin and not be thrown out, confident that we could do the job ultimately by the same techniques that we used in lifting approximately 70,000 tons in one month over the hump from India into China at very high altitudes."[210]

In Germany, where he had been assigned as commander of the United States Air Force in Europe, Lieutenant General LeMay started the Berlin Airlift with locally available planes on 26 June 1948. Back in Washington, Secretary of State Marshall and Under-Secretary Lovett emphasized that the United States could not afford to bluff. "We had to have something to back us up," Lovett maintained, "in case the Russians wanted to use this as an excuse for a war." At a meeting on 27 June, Forrestal, Lovett, and high-ranking officers discussed the advisability of deploying two additional B-29 squadrons to join the squadron of the 301st Bombardment Group which was on a rotational tour of duty at Furstenfeldbruck Air Base in Germany and of securing approval from Great Britain for the movement of two other B-29 groups to British bases. With Truman's approval, the State Department queried Britain on her willingness to accommodate the groups and received an affirmative reply.[211] On 27 June, Air Staff officers went to Andrews Field and verbally briefed the Strategic Air Command as to what was expected of it. Without delay, the Strategic Air Command ordered the two remaining squadrons of the 301st Group to move to Goose Bay, Labrador, the normal summer staging point for Europe. The 28th and 307th Groups were put on short alerts at their home airfields. Given orders to continue the deployment, the 301st Group was in place in Germany on 2 July. Some additional time was required to prepare bases in Great Britain, but the 307th arrived there on 17 July and the 28th had its planes in England on 18 July.[212] As soon as the B-29 deployment was completed,

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the Military Air Transport Service was able to put most of its capabilities into the Berlin Airlift, and Major General William H. Tunner took command of the augmented Airlift Task Force (Provisional) in Europe on 30 July. Ultimately employing USAF, Navy, and Royal Air Force transport aircraft, Tunner soon geared up "Operation Vittles" to a maximum capacity which would lift a total of 2,325 million tons of food, fuel, and supplies into Berlin before the blockade was ended. One of the most important immediate lessons of the airlift, according to Tunner, was the inherent efficiency of large transport planes to accomplish important airlift missions.[213]

"For the first time in History," stated Air Force magazine in September 1948, "the United States is employing its Air Force as a diplomatic weapon. . . . Today, in keeping with its coming of age as the nation's first line of defense, the USAF has taken on two big assignments in international affairs. . . . One is what has been called 'the return of the American Air Force to Europe,' the arrival of two groups of Strategic Air Command B-29s in England. . . . The second is the Berlin Airlift. . . . The first chapters of the 'role of air power in diplomacy' are being written here."[214] Earlier in the summer, Forrestal had feared that the British might not be willing to accept forceful diplomacy that carried a risk of war, but in October Chancellor of the Exchequer Sir Stafford Cripps assured him that "Britain is placing its main reliance on the development of fighter aircraft to insure the security of Britain. Britain must be regarded as the main base for the deployment of American air power and the chief offensive against Russia must be by Air." When Forrestal visited Britain in November 1948, Winston Churchill told him that the United States ought not to minimize the destructive power of atomic weapons lest the Russians receive dangerous encouragement. Speaking in person in Boston on 31 March 1949, Churchill advanced the same view even more positively. "It is certain," he said, "that Europe would have been communized like Czechoslovakia and London under bombardment some time ago but for the deterrent of the atomic bomb in the hands of the United States."[215]

4. Strategic Bombing and the B-36 Controversy

"I am firmly convinced," wrote Dr. Edward Teller, the nuclear physicist who had done pioneer work on the A-bomb and who would father the H-bomb, "that in the early postwar years secrecy was a powerful barrier between military men who were clinging to the past and scientists who were turning away from what seemed a frightening future."[216] The whole matter of atomic weapons continued to be a very heavy secret which was not even shared among all top-level military officers. Writing in November 1948, Bernard Brodie reported there was "reason to believe that the amount of uranium and thorium available in the world for the manufacture of atomic bombs is much more limited than was being assumed two years ago, and the deposits available are much more accessible to the United States than to the

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Soviet Union."[217] Knowledge of the size of the U.S. atomic weapons production effort and the stockpile was confined to a very small circle. As late as May 1951, General Douglas MacArthur testified that he did not know the number of atomic weapons in the U.S. stockpile.[218] Although two years had passed since Hiroshima and Nagasaki had been destroyed by atomic weapons and additional tests of atomic bombs had been made at Bikini and Eniwetok in the summer of 1946, there was lingering uncertainty in the military services as to the potential affect of atomic weapons on the old techniques of war. One viewpoint was that an atomic bomb was merely another weapon. While his statement was soon retracted, the head of the Navy's Aviation Ordnance Branch told the House Committee on Armed Services in October 1949: "You could stand in the open at one end of the north-south runway at the Washington National Airport, with no more protection than the clothes you now have on, and have an atom bomb explode at the other end of the runway without serious injury to you."[219]

Although Air Force thinkers never underestimated the destructive capabilities of atomic weapons, they apparently required time in which to grasp the potential gamut of effects which these weapons held for air operations and the modifications of air doctrines which could be accepted when they were employed. One of the principal results of the clear identification of Soviet Russia as the major menace to world peace was a vigorous analysis within the National Military Establishment of the potential influence of atomic weapons on future American military strategy. The concept that atomic air power could "kill a nation" apparently emerged in the Air Force Directorate of Intelligence during the winter of 1947-48 when target planners were attempting to work up a list of industrial objectives in the Soviet Union which had been requested by the Joint Chiefs of Staff. In the aftermath of World War II, the U.S. Strategic Bombing Survey depreciated the effectiveness of Royal Air Force attacks against German population centers, and USAF target planners accordingly attempted to develop Soviet steel, electric power, oil, aluminum, aircraft engines, and tank factories as air targets. Most of these specific targets were found to be located within 70 Soviet cities, and this fact led some target planners to suggest that atomic attacks might be directed against the Soviet cities rather than the specific industries. The concept followed that the mission of atomic air attack might be to destroy governmental control and industrial mobilization and support potential instead of specific industrial targets. "I think," remembered Colonel Grover C. Brown, who had been assigned to the Directorate of Intelligence, "it was a sort of a shock to a lot of people when a few began to talk about bonus effects and industrial capital and particularly when some began to ask what was a city besides a collection of industry?"[220]

When members of the State Department's Policy Planning Staff were briefed concerning the concept of atomic bombardment of Soviet

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be completely opposed to it. "If you
Leningrad, and the rest," George Kennan
you will simply convince the Russians
g to destroy their very society and
indeterminate guerrilla war against the
oted as responding: "The negative
an atomic attack might endanger
221

tomic air attacks specifically directed
would not be accepted, the thinking did
cepts of its strategic capabilities.
ce Chief of Staff, Spaatz wrote: "The
ower is to attack--not other aircraft
comprise the source of an enemy's
icle published shortly after his
"It is theoretically possible to
e war just finished that the precision
e miles of industrial area in a score
y cripple Russian industrial power."
rgued for the decisiveness of
paatz reasoned that Army and Navy
re forward air bases. "Only from
of American air strength, including
trol of the enemy air space. And not
could we be absolutely sure of the
[redacted] power could not gain and hold forward air bases, Spaatz considered that ground and sea forces would "remain indispensable supporting instruments in the struggle for the mastery of the air" until intercontinental air weapons were developed.[222]

Speaking out in a "gloves off" talk in Los Angeles on 16 July, Secretary Symington for the first time publicly criticized the balanced force concept of American defense which had come out of World War II. According to a newspaper report, Symington assailed "ax-grinders dedicated to obsolete methods" of warfare, who contended that large Air Force appropriations might "unbalance" the three armed services, and he declared that air power should not be put in balance with the Army and Navy but with the power of potential adversaries.[223] In a letter on 11 August 1948, General Kennedy pointed out that atomic bombs and other modern developments had made profound changes in the concepts of war. "When we consider that 100 atom bombs will release more foot pounds of energy than all the TNT released by all the belligerents of World War II combined. . . and that the effort could be put down in a single attack, it is evident that the long drawn out war is out of date. . . . No nation, including our own, could survive such a blow. A war in which either or both opponents use atomic bombs will be over in a matter of days so that our target analysis system should change. Bombing of targets which will affect enemy production in a few

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months is meaningless. There is no time to try to destroy the enemy air force. The air force that is superior in its capability of destruction plays the dominant role and has the power of decision. The inferior air force has no role. Before it can be built up the war will be over. The advantage accruing to the aggressor who makes such a surprise attack has become so great that it can almost be considered decisive."[224]

Making a reevaluation of Douhet's principles in the light of atomic explosives in the summer of 1948, Lieutenant Colonel Joseph L. Dickman found that the Douhet theory was "not only a pattern for the conduct of the war but also a guide for the preparation for one." After demonstrating that the power of atomic bombs validated Douhet's principles, Dickman suggested a corollary rule: "If, at any time, it appears that expenditures for tactical aviation will jeopardize development in strategic, the former will have to be sacrificed."[225] In a study prepared on 10 August 1948, Colonel William W. Momyer, Director of Plans of the Tactical Air Command, analyzed the whole Air Force mission. He pointed out that the Tactical Air Command would not become involved in hostilities unless the atomic offensive failed and the war degenerated into a conventional air-surface action, a contingency which he did not anticipate would occur at all, and, in any event, not until approximately two years after the onset of a war. Momyer pointed out that Tactical Air Command's fighters would pass to the operational control of the Air Defense Command at the onset of hostilities, he argued for a more effective cross-training of fighters to perform both air defense and tactical air missions. Finally, he questioned the planned use of jet fighters in an escort capacity as "an obsolete concept of the last war."[226]

Three articles in the autumn 1948 issue of the Air University Quarterly Review strongly advocated a strategic bombardment strategy. "We have come to the realization that if we are to have peace in our time it will have to be a Pax Americana," wrote Lieutenant Colonel Frank R. Pancake. "There has been a further awakening to the fact that the instrument of Pax Americana must be Air Power, just as the instrument of Pax Britannica a century ago was sea power. . . . In the event of another war our first and perhaps only major offensive effort will be strategic air attacks."[227] Writing on the relationship of air power and foreign policy, Lieutenant Colonel John P. Healey stated: "The historic discrepancy between our foreign policy aims and their means of military support is now ended. The 'quantum jump' taken by military technology in this country affords a measure of military power sufficient to support our present aim if such power is wisely used as a deterrent."[228] Looking backward at World War II, Colonel Dale O. Smith noted that "air siege" or strategic bombardment was "generally considered to have been the most decisive factor" in the defeat of the Axis, but that the strategic bombing effort had required the support of surface combat. In the war against Germany, the strategic bombing effort had been frequently switched from one target system to another in the expectation that a "key" target system could be destroyed with decisive results. In the end, Smith

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said, "when German industry collapsed, no single target system was responsible, but rather a widespread disintegration of all industry occurred." From this experience, Smith thought it plausible to conclude that "the most effective air siege will result by concurrently attacking every critical element of an enemy's economy at the same time. . . . If all the critical industrial systems could be destroyed at one blow, so that recuperation were impossible within any foreseeable time, there seems little question but that a nation would die just as surely as a man will die if a bullet pierces his heart and his circulating system is stopped." Smith visualized an atomic striking force of 300 B-29's directed against an enemy nation, and he thought there was little doubt that "an offensive bomber force, utilizing tactical surprise, will be able to penetrate to targets in the enemy heartland." Believing that the strategic air assault with atomic weapons would destroy a modern nation, Smith suggested that the Air Force should abandon "the old doctrine of 'sustained' operations." "The atomic bomb is real. . . . There need be no doubt about its combat worthiness," he wrote. "Why then must we revert to the old TNT bombs and forever hamstring our logistical and tactical plans with the requirement for sustained operations?"[229]

* * * *

Even though a bill which authorized a peacetime Air Force strength of 70 groups and an eventual level-off purchase of 5,200 aircraft a year was lost in the closing rush of the 80th Congress during the late summer of 1948, General Vandenberg considered that Congress--by providing the first increment of funds for such a purpose--had given the Air Force a clear mandate to expand to the 70-group objective. The Air Force therefore decided that the purchase of the 2,201 new aircraft which could be funded with the augmented fiscal year 1949 appropriations would be pointed toward accomplishment of the 70-group program. It thus contracted to purchase 190 B-45 aircraft, which would partially equip five light bombardment groups and three night tactical reconnaissance squadrons. In the spring of 1948 many Air Force officers had continued to be skeptical of the B-36, but when the Air Force began to get deliveries of some of these planes the test data worked out from them was so much better than had previously been reported that Vandenberg elected on 24 June to continue the funding on the original contract for 95 aircraft. Contracts were also awarded for 10 B-47 jet bombers, 132 B50D's, 1,457 jet fighters, and 147 transport and troop carrier planes. By stretching available personnel strength rather thinly, moreover, the Air Force activated a total of 60 combat groups before the end of 1948.[230]

In the spring of 1948 when work was begun on fiscal year 1950 budget requests, the Air Force assumed that appropriations would be enlarged to support expanded personnel strength and aircraft

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procurement necessary for the 70-group program. The Air Staff therefore first submitted a request for an $8 billion appropriation to the Secretary of Defense. Then, as Secretary Symington explained, "word got around that again the three services were going to ask for everything they could get on a unilateral basis and then we were all going to be cut proportionately because there was no agreed on strategic plan against which to buy." Symington therefore took personal responsibility for raising the Air Force budget request to more than $11 billion. As a result, the uncoordinated original estimates of the three military services received by Forrestal totaled more than $30 billion.[231] Two things shortly indicated that no such amount of money would be available. During fiscal year 1949 the Bureau of the Budget had expected that the Treasury would have a $5 billion surplus, but because of an economic recession there would be a deficit of almost $2 billion instead. In the summer of 1948, acting on advice from the Bureau of the Budget and apparently without consulting the National Security Council or the Joint Chiefs of Staff, President Truman established a ceiling of $14.4 billion on the National Defense budget for fiscal year 1950.[232] The wide difference between the military requirements submitted by the individual services and the presidential ceiling forced the Secretary of Defense to make decisions.

In an effort to return responsibilities for stating force requirements to the Joint Chiefs of Staff, Secretary Forrestal secured the appointment of a budget review board of three officers from the services headed by General Joseph T. McNarney, Commander of the Air Materiel Command. As early as 10 July, Forrestal also submitted a formal request for budgetary guidelines to the National Security Council, and, when he received no response, he evidently sought bits and pieces of advice elsewhere. U.S. Ambassador to Russia Walter B. Smith told Forrestal that the Russians did not, in his opinion, have the industrial competence to develop the atomic bomb in quantity for "five or even ten years." General Vandenberg reassured Forrestal that the Air Force could drop the atomic bomb "where, how, and when it was wanted." Working in terms of requirements for balanced forces, the McNarney Board reduced the service requests to $23.6 billion but could go no lower. The Joint Chiefs of Staff estimated that the $14.4 billion budget would limit U.S. offensive action against Russia to a strategic air offensive from Britain and suggested that for $16.9 billion the United States could maintain forces needed to control the Mediterranean as well as conduct the strategic air offensive. Forrestal presented these facts to Truman on 5 October, but Truman preferred to hold to the $14.4 billion budget and to plan to take care of the Mediterranean with a supplemental appropriation if an emergency arose.[233] In a final conference with the President on 9 December, Forrestal and the service secretaries again advocated the $16.9 billion budget, but Truman would not budge from $14.4 billion. Faced with this positive ceiling, the Joint Chiefs of Staff agreed that the funds should be

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subdivided at $4.834 billion for the Army, $4.624 billion for the Navy, and $5,025 billion for the Air Force.[234]

Aware that it faced definite strategic requirements and would be unable to expand to 70 groups, the Air Force began to reorganize its forces in the winter of 1948-49. Under the "14.4 billion concept," the Air Force mission (as defined by the USAF Board of Senior Officers) would be: "(a) Initially, to launch a powerful air offensive designed to exploit the destructive and psychological power of atomic weapons against the vital elements of the Soviet war-making capacity. (b) To provide on an austerity basis for the air defense of the United States and selected base areas. (c) To provide the air components necessary for the advancement, intensification, and/or diversification of our initial offensive until forces generated from inadequate mobilization bases have become available."[235] Seeking to pool the resources which could be used for more than one purpose, the Air Force on 1 December 1948 established the Continental Air Command at Mitchel Field as the superior headquarters to the Air Defense Command and the Tactical Air Command. The Continental Air Command received direct command over the six air forces formerly assigned to the Air Defense and Tactical Air Commands, both of which were reduced to the status of operational headquarters. The Continental Air Command also took over three of the Strategic Air Command's fighter groups.[236] Although the consolidation of commands was a product of austerity, Colonel W. H. Wise, Deputy Chief of the Air University's Evaluation Division hailed it as being fundamentally correct and called for further consolidation. "An Air Force Combat Command," he recommended, "should be so organized and constituted as to make it readily feasible to employ maximum strength in the performance of the mission at hand, be it strategic, tactical, or defensive. . . . Since an Air Force properly organized and equipped to achieve success in the decisive phase will be capable also of performing the necessary tactical operations in the exploitation phase, the peacetime maintenance of a specialized air arm at the expense of the strength and effectiveness of the decisive air echelons is unwarranted. The soundness of this concept is already recognized in the Air Force, but how soon corrective action can or will be accomplished is a matter for conjecture."[237]

Since the budgetary limitations would force the Air Force to reduce its combat strength to 48 groups and 10 separate squadrons and to change its aircraft purchase programs, General Vandenberg assembled the USAF Senior Officers Board in Washington on 29 December 1948 for the first of seven day-long sessions. Because of the illness of General Fairchild, General McNarney presided as acting-chairman, and the other two members of the board were Lieutenant General Lauris Norstad and Lieutenant General H. A. Craig. Recognizing that the Joint Chiefs of Staff had for the first time provided a strategic concept of operations against Soviet Russia, the Senior Officers determined that "the launching of an atomic offensive and the defense of the Western Hemisphere and the essential base areas from which to

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launch the atomic offensive must be considered as the primary mission of the Air Force and must be given the greatest consideration and priority." Because of the supreme importance of the strategic air mission which was now being vested in the Air Force, the board decided that means must be found to deliver the atomic stockpile under the most adverse conditions foreseeable, which included loss of advanced bases in the United Kingdom and an unexpected failure of aerial refueling techniques.238

Seeking to make a determination in regard to requirements for strategic bombers, the USAF Senior Officers Board heard testimony from Lieutenant General LeMay, who had taken command of the Strategic Air Command on 16 October 1948. LeMay stated his basic conviction that "the fundamental goal of the Air Force should be the creation of a strategic atomic striking force capable of attacking any target in Eurasia from bases in the United States and returning to the points of take-off." In order to deliver the atomic stockpile, LeMay needed four groups of bombers and one group of strategic reconnaissance aircraft. LeMay liked the B-36. In its tests in 1948, the B-36B had proven to be a better aircraft than had been predicted. By attaching two twin-jet pods (actually B-47 engines) to the big conventional bomber, the B-36B would be able to operate on a target run at an altitude of 45,000 feet and a maximum speed of 378 knots. Assuming that the Soviets were not more advanced in aerial defense than was the United States, the Senior Officers reckoned that the B-36B would be able to penetrate Soviet defenses: with its range, moreover, it would be able to cover 97 percent of Soviet target complexes from bases in North America. The B-36 could also haul 43 tons of conventional bombs over medium ranges, and this would permit a great intensification of a conventional air offensive if advanced bases were available. The Strategic Air Command was already programed to get two groups of B-36's, and the Senior Officers concurred with LeMay's request that the Command be authorized a total of four groups of B-36B's and one group of RB-36B's, all to be equipped with supplemental jet pods.239

Since the 48-group program would reduce the Strategic Air Command's strength to 14 bomber groups, the Senior Officers Board gave careful consideration to the aircraft composition of the 10 groups that would be equipped with medium bombers. These planes might be called upon to deliver nuclear weapons, but they would more probably be dispatched with conventional bombs in the wake of a B-36 atomic attack or against targets (such as Soviet oil) that were too small to warrant atomic bombs. The Senior Officers noted that sufficient B-50's had been delivered or were on order to equip and maintain five medium bomber groups and one reconnaissance group. They recommended that two other medium groups and one medium reconnaissance group should be equipped with the speedy but range-limited B-47's. The remaining three medium bomber groups and one medium reconnaissance group would continue to be equipped with B-29's and RB-29's, but the Board noted that the Air Force had issued procurement

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orders for 30 B-54A aircraft--an ultimate development of the B-50--which would probably become the replacement for the B-29's and RB-29's.[240]

The Senior Officers Board made no recommendations as to the aircraft to be used for a modernization of the two strategic weather reconnaissance groups and the one strategic mapping group which would continue in the 48-group program. The five light bomber groups which had been put in the 70-group program chiefly to perform ground support mission were reduced to a single group. Tactical reconnaissance was also reduced to the equivalent of one group (two squadrons in the United States and one in the Far East). The Board postponed consideration of the aircraft requirements for the four heavy troop carrier groups and two light troop carrier groups which would remain in the 48-group program, but it gave careful attention to the equipment and composition of the 20 fighter groups which would be kept in active service. In World War II, the F-47 and F-51 had served as admirable all-purpose fighters, but the Board reasoned that the advent of jet power probably prevented the development of a successful all-purpose jet fighter. The F-80's, F-84's, and F-86's would be no more than marginally effective against any bomber faster than a B-29, and the Board accordingly recommended that a pure interceptor type fighter should be developed by 1953-54. Pending further developmental work in fighters, the Board recommended that the F-84 and F-86 should perform both interceptor and penetration missions, but it stated that the 20 fighter groups should be divided into 8 penetration groups, 7 interceptor groups, and 5 all-weather fighter groups.[241]

The cut-back of the Air Force from its planned objective of 70 groups to 48 groups necessarily reduced the weight and speed of the initial air offensive, seriously delayed the time at which the Air Force would be prepared to support exploitative surface operations, and reduced the fighter defenses which had been planned for advanced American bases in the United Kingdom. Recognizing these limitations, Vandenberg approved the report of the USAF Senior Officers Board, and Secretary Symington also gave his approval to it when it was submitted to him on 13 January 1949. On 5 February, the Joint Chiefs of Staff approved the Air Force deployment inherent in the 48-group program.[242] The sudden termination of the 70-group objective meant that the Air Force had ordered aircraft from fiscal year 1949 money that it would be unable to use. By cancelling various orders including 51 B-45's no longer needed for light bombardment groups, 118 F-93's ordered as penetration fighters, and 30 C-125B assault transports that had been designed to replace gliders the Air Force recaptured some $269,761,000 from fiscal year 1949 supplemental funds which could be applied to the purchase of B-36's. In a series of actions begun on 29 January 1949, the Air Force requested authority from Secretary Forrestal to purchase 32 B-36's and 7 RB-36's and to modify the B-36's already on hand or on order with jet pods. While this request was under study in the National

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Military Establishment Research and Development Board, LeMay requested still more B-36's on 2 February. LeMay told Vandenberg that he had carefully compared the projected performance capabilities of the B-36's against those of the B-54's and that he had decided that the B-54 contract ought to be cancelled and enough B-36's be bought to equip two additional groups. The Board of Senior Officers reconvened on 21 February to hear about the proposed change, and it agreed that either B-36's or B-47's ought to be procured instead of B-54's. Both the Board and General Vandenberg were willing to cancel the B-54 contract, but they were reluctant to convert two medium bombardment groups into heavy bombardment groups. At another meeting of the Senior Officers Board on 8 March, LeMay offered a compromise proposal whereby he would retain the existing group structure but would increase the aircraft complements of each B-36 and RB-36 group from 18 to 30 aircraft. This proposal was accepted, and the Air Force secured the cancellation of the B-54 contract and a recertification of funds to purchase 36 B-36's and 5 additional B-47's. Shortly before his resignation as Secretary of Defense on 28 March, Secretary Forrestal approved the basic decisions to procure additional B-36's, and, on 4 May 1949, President Truman formally released the funds for the several B-36 projects.[243]

In other meetings during the spring of 1949 the USAF Senior Officers Board took long looks at Air Force development in relation to the new strategic planning. In January, the Board recommended that the B-52 be designed to transport atomic weapons and that any accommodation made to permit it to carry iron bombs should not increase its basic weight. In March, the Board accepted the B-52 as the follow-on replacement to the B-36 and recommended that B-36 production facilities should be changed over to B-52 production as soon as unit B-36's had been obtained to outfit four heavy bomber and two heavy reconnaissance groups. In March the Board also recommended that B-47 production ought to be accelerated in order that these medium jets could eventually replace the conventional B-29's and B-50's. In a meeting in May, the Board gave detailed consideration to Air Force fighters and transports. After study of all available fighters, the Board agreed with the recommendation of Major General Saville, head of the Air Defense Command, that the F-86 Sabre was the best interim air defense fighter that could be procured. The Board had earlier recommended that the Air Force should purchase no more than service test quantities of light cargo aircraft, and in May it concluded that all transports procured ought to be designed to meet emergency and wartime military cargo airlift requirements of the Army and Air Force. The Board recommended that the C-97 be continued in production until the Douglas C-124, which most closely met wartime cargo requirements and should become the standard heavy transport, could begin to reach units in May 1950. Although the Board reduced most requirements for smaller troop carrier planes, it recommended continued production and procurement of C-119 aircraft, planes which were suited for air

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drop and air delivered transport functions.[244]

* * * *

While military planning emphasized that budget ceilings necessitated redirections in strategy, President Truman apparently had begun to think seriously about collective security as early as the summer of 1948. In March 1948, the Western European nations concluded the Brussels Pact pledging themselves to collective self-defense, and in the following July Truman instructed Under-Secretary of State Lovett to begin exploratory discussions looking toward the participation of the United States in a broadened Atlantic alliance. Agreements were reached on the general nature of such a treaty in September, and in December Secretary of State Dean Acheson began to negotiate the treaty in private. In his inaugural address on 20 January 1949, Truman spoke of a need for a collective defense of the North Atlantic area.[245]

When they appeared before Congressional committees in support of the National Military Establishment budget for fiscal year 1950, the military leaders generally emphasized the force reductions that were impending. Appearing before the House Subcommittee on Appropriations on 31 January 1949, Forrestal justified the budget as one "designed to maintain a military posture for the preservation of peace." Forrestal continued to believe in balanced forces, but he admitted that "as air power expands its radius it may be that you will have a war in the future where you will rely on it alone." He favored the 70-group concept as an authorized force, but he believed that this should be an ultimate--rather than an immediate--goal.[246] Army officers did not question the new strategy. Secretary of the Army Kenneth C. Royall mentioned that for the first time in American history the defense budget had been correlated for the three services, and Lieutenant General Wedemeyer, the Army's Deputy Chief of Staff for Plans and Combat Operations, observed that "for the first time in my knowledge since I have been in the Army the strategy has been correlated and integrated."[247]

At Air Force hearings early in February, Secretary Symington explained that the Joint Chiefs of Staff had accepted strategic bombing as the primary mission of the Air Force and had approved the establishment and maintenance of the 48 combat groups and 10 separate squadrons. The Air Force Assistant for Programming, Major General F. H. Smith, Jr., frankly described the 48-group program as having "definite capabilities in the strategic air-offense field and . . . a respectable defensive power," but noted that it was "deficient in its means to exploit the offensive, because it is shy in the essential close support of the ground-force elements and in pursuing the tactical advantage with fighter bombers and light bombardment." Appearing on 7 February, Vandenberg did not question the President's decision to limit the military budget, but he gave his own purely personal military viewpoint on the matter. "Not taking into consideration the other factors which I realize must be

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taken into consideration," he said, "but speaking purely from a military point of view, it is my opinion that the minimum defense forces, as far as the Air Force is concerned--and with world conditions as they are today--would consist of a 70-group Air Force."[248] In speaking on the 1950 budget, Secretary of Navy John L. Sullivan made oblique remarks about the "enthusiasm of single-weapon experts," but the Navy supported the budget, even though under it the number of its attack carriers would have to be reduced from 11 to 8 and there would be other substantial reductions in naval vessels afloat.[249]

While the leaders of the National Military Establishment supported the presidential budget, Congress apparently believed that it would be necessary to have a stronger Air Force if the nation was to follow an air strategy. On 28 March, Chairman Carl Vinson of the House Committee on Armed Services proposed that the Air Force receive an addtional $800 million in order to enable it to maintain 57 effective combat groups. Two days later, Chairman George H. Mahon of the House Subcommittee on Armed Service Appropriations stated that Congress had already taken the initiative to provide a 70-group program, and he recommended that Congress increase the Air Force appropriation by about $1 billion so that the Air Force could maintain about 60 groups.[250] With such an amount of money, the Air Force proposed to add six strategic bomber groups, thus restoring the Strategic Air Command to its 70-group program strength, and to maintain three fighter, one light bomber, and one troop carrier group in order to support the Army.[251] After exhaustive debate, Congress finally added over $746 billion to the Air Force appropriation for fiscal year 1950.[252]

At the same time that the fiscal year 1950 budget was under consideration in Congress, the Department of Defense had already begun to make its estimates for the 1951 budget. On 21 January 1949, Forrestal brought General Eisenhower back to Washington on temporary duty to work with the Joint Chiefs of Staff in the preparation of a war plan which he hoped would be the basis of future budgets. In preparing for the 1951 budget, Forrestal also directed each service chief to review his portion of the war plan and state the forces that would be required. These force levels would then be costed for budgetary purposes. Following the same procedure used the year before, the Joint Chiefs established a budget advisory group and headed it with Vice Admiral Robert B. Carney. Assisted by the plans staffs of the three services, the Carney group took longer than expected in its deliberations and was eventually unable to provide unanimous recommendations to the Joint Chiefs. Increasingly fatigued with his duties, Forrestal arranged for his resignation, and President Truman requested that he introduce Louis A. Johnson to the duties of Secretary of Defense. Accompanied by Johnson, Forrestal took the Joint Chiefs to Key West in February 1949 for several days' uninterrupted study of force levels. Here, the Joint Chiefs were still unable to resolve all their problems within the $14.4 billion which they expected to be the budget ceiling for

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fiscal year 1951, but they agreed to accord priorities to forces on the basis of, first, what would be necessary in order to avoid defeat, second, what would next be necessary, and, third, what they would require if each service could have every type of weapon that it wanted.[253]

In December 1948, when they had considered the force structure to be attained under President Truman's budget ceiling, the Joint Chiefs of Staff had been able to agree upon all items except the number of attack carriers that the Navy would continue to operate. The Air Force recommended four, the Army six, and the Navy nine. Unable to agree, the Joint Chiefs had passed the problem to Forrestal, who had decided that the Navy would retain eight attack carriers and attendant forces on active duty.[254] Apparently troubled after his return from Key West about the matter of the supercarrier United States, which the Navy was beginning to build, Forrestal asked Secretary-designate Johnson to make a thorough study of the problem, saying that he had come to have doubts about it but did not feel that he could do anything. Shortly after he became Secretary of Defense on 29 March 1949, Johnson asked the Joint Chiefs to state their opinions on the aircraft carrier. Admiral Louis E. Denfield, Chief of Naval Operations, favored the completion of the $188 million vessel, on which some $20 million had already been expended. General Bradley, on the other hand, reasoned that budgetary restrictions already seriously limited the maintainance of minimum levels of balanced forces, that the fundamental purpose for which the supercarrier was designed lay within a primary function of the Air Force, that the Soviet Union was not a naval power, that the potential use of carrier air forces against land targets was limited. He therefore concluded that it was "militarily unsound to authorize at this time the construction of additional aircraft carriers or to continue expenditures on the U.S.S. United States." Vandenberg also expressed his opposition to the large carrier because he could "see no necessity for a ship with those capabilities in any strategic plan against the one possible enemy." He added that limited defense funds imposed a necessity "of never buying a second priority item when essential items are still unbought." When his opinion was asked, General Eisenhower agreed that construction of the large carrier should be cancelled. After consulting with President Truman, Secretary Johnson issued orders on 23 April discontinuing the construction of the United States.[255]

While background negotiations were privately conducted, the text of the North Atlantic Treaty was released to the public on 18 March 1949, a little more than two weeks before it was signed on 4 April in Washington by representatives of Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal, the United Kingdom, and the United States.* By adhering to the

*Greece and Turkey were invited to join NATO on 15 February 1952, and these two nations signed the treaty later that spring. The Federal Republic of Germany would be admitted to NATO in 1955.

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treaty the member nations agreed that an armed attack against one or more of them in Europe or North America should be considered to be an attack against all of them. Each of the members agreed to "assist the Party or Parties so attacked by taking action as it deems necessary, including the use of armed forces, to restore and maintain the security of the North Atlantic area." The over-all Western Union command structure established by the Brussels Pact would become a part of the North Atlantic Treaty Organization (NATO). When he forwarded the draft treaty to Truman on 7 April, Secretary Acheson pointed out that it did "not mean that the United States would automatically be at war if we or one of the other parties to the treaty were attacked." The United States would be obligated to take promptly the action which it deemed necessary, but the decision would have to be made in accordance with the constitutional processes under which only Congress had the power to declare war. President Truman sent the treaty to the Senate on 12 April 1949, and, in spite of spirited debate by opponents of American involvement in European affairs, the Senate voted 82 to 13 to accept it on 21 July 1949.256 While the North Atlantic treaty was under consideration in the Senate, the Soviets evidently realized that the Berlin Airlift had thwarted their efforts to starve West Berlin and that the Berlin blockade was leading to Western European military unification. First informally on 27 April and then firmly on 12 May, the Soviets agreed to end the Berlin blockade. Continued for a while to build up supply stockpiles, the Berlin Airlift officially ended on 30 September 1949.257

The principle of collective security manifest in the Atlantic Pact permitted a formalization of the American military strategy which had already been necessitated by the presidential budgetary ceilings in fiscal year 1949. On 25 July, President Truman requested Congress to appropriate $1.4 billion for military aid to countries which were vital to the security of the United States. The major portion of the appropriation would be devoted to the needs of the western European nations. Appearing as the representative of the Joint Chiefs of Staff in support of the mutual defense assistance act before the House Committee on Foreign Affairs on 29 July, General Bradley outlined the new collective strategy. "The essence of our over-all strategy," he said, "is this: There is a formidable strength, and an obvious economy of effort, resources, and manpower in this collective strategy, when each nation is capable of its own defense, as a part of a collective strategic plan." In approving the mutual defense assistance act, the Joint Chiefs followed "the principle that the man in the best position, and with the capability, should do the job for which he is best suited." The Joint Chiefs also assumed that:

> First, the United States will be charged with the strategic bombing.
>
> We have repeatedly recognized in this country that the first priority of the joint defense is our ability to deliver the atomic bomb.

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> Second, the United States Navy and the Western Union naval powers will conduct essential naval operations, including keeping the sea lanes clear. The Western Union and other nations will maintain their own harbor and coastal defense.
>
> Third, we recognize that the hard core of the ground power in being will come from Europe, aided by other nations as they can mobilize.
>
> Fourth, England, France, and the closer countries will have the bulk of the short-range attack bombardment, and air defense. We, of course, will maintain the tactical air force for our own ground and naval forces, and United States defense.
>
> Fifth, other nations, depending upon their proximity or remoteness from the possible scene of conflict, will emphasize appropriate specific missions.

Bradley urged that the defensive capabilities of the United States would be improved if the military assistance program was put into effect.[258] Most members of Congress apparently accepted the idea that military aid was needed, but many objected to the manner and timing of the request, to the amount, and especially to the proposal that the President have a free hand in allocating the money and arms. A new administration bill, sent to Congress on 5 August, proved more acceptable because it eliminated the blank-check authority for the President. On 28 September, Congress passed the Mutual Defense Assistance Act of 1949, authorizing an appropriation of $1,314,010,000, and on 6 October the President signed his approval. The act authorized $1 billion in arms assistance to the North Atlantic countries but provided that $900 million of it would not be available until the President had approved recommendations for an integrated command structure. The remaining funds were committed to the military aid of Greece and Turkey, Iran, the Philippines, the Republic of Korea, and the Republic of China.[259]

In the spring of 1949, when Congress added $726 million to the Air Force appropriation for fiscal year 1950, President Truman and Secretary Johnson were willing to hear Secretary Symington's plea for a 70-group Air Force, but Truman subsequently impounded the additional funds and kept the Air Force at the 48-group level. Not waiting for the beginning of fiscal year 1950 to initiate its downward readjustment in strength, the Air Force began to inactivate tactical organizations in March 1949. By the end of the year it would possess 47 groups and 13 separate squadrons. Generally following the recommendations of the USAF Senior Officers Board, the aircraft authorized for procurement in fiscal year 1950 included 34 B-36F's and 13 RB-36F's, 81 B-47's, 709 jet fighters, 14 C-97's, 51 C-119C's, and 50 C-124's, plus miscellaneous aircraft for a total of 1,252 planes.[260]

Based partly upon the impoundment of the funds that Congress had voted for Air Force expansion, the Joint Chiefs of Staff assumed

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that the budgetary ceiling for all military forces during fiscal year 1951 would be the same austere $14.4 billion that had been authorized in fiscal year 1950. In May, Secretary Johnson took the Joint Chiefs to another conference in Key West, where they established the force levels that could be supported with $14.4 billions. Quite without warning in July, however, President Truman summoned Department of Defense officials and the Joint Chiefs of Staff to this office, where the Director of the Budget told them that the national defense expenditures for fiscal year 1951 must be reduced to $13 billion.[261] "I was sick about it," said Secretary Johnson, as he recalled his reaction to the news. While he tried to get the figure raised, he was unsuccessful. "The climate on the Hill, the climate of the President's economists and all the rest of the economists, the climate of the world at that moment--the airlift having been successful--the climate was," Johnson recalled, "there was going to be peace."[262] In view of the reduction of the budget, each armed service would have to stand a further reduction in forces. While the connection was not mentioned the reduction in the defense budget was the same amount that Truman had requested for mutual defense assistance: the President may have intended that reductions in U.S. forces would be compensated for by an increasing effectiveness of friendly allied forces.

* * * *

In the winter of 1948-49 the U.S. Navy accepted the new American military strategy based upon a primacy of the strategic bomber offensive. According to Vice Admiral Arthur W. Radford, however, the Navy Department had not known of the Air Force plans to purchase additional B-36's for strategic bombing until reports to this effect appeared in the newspapers.[263] At the first Key West conference the Secretary of Defense had laid down the principle that each service should develop the weapons it required to perform its mission: the cancellation of the United States on the split advice of members of the Joint Chiefs appeared to negate this principle. Since Secretary Johnson had cancelled the supercarrier without consulting either the Chief of Naval Operations or himself, Secretary of the Navy Sullivan resigned his office on 26 April, explaining that he expected the decision not to develop a powerful weapon would also "result in a renewed effort to abolish the Marine Corps and to transfer all naval and marine aviation elsewhere."[264] Within the Navy Department a civilian public relations specialist drew up an anonymous document, widely circulated in April and May, that charged that the B-36 had been selected through corruption, that the Air Force was obsessed with a belief that "airplanes can reduce warfare to a clean, quick, inexpensive and, to our side, painless procedure," that Air Force statements about the performance capabilities of the B-36 were "false," "silly," and contrary to "all common sense and all engineering knowledge," and that in the

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effort to obtain the B-36 the Air Force had cancelled purchase of other aircraft to the detriment of continental air defense and the air support of the Army.[265] The Navy also anticipated that in its 1951 budget it would have to reduce its attack carriers from 8 to 6, its escort carriers from 10 to 8, its carrier air groups from 14 to 6, its patrol squadrons from 30 to 20, and its Marine air squadrons from 23 to 12.[266] In response to a request for an opinion, the new Secretary of the Navy, Francis P. Matthews, informed Congressman Vinson on 20 July that the Air Force was "unbalanced in favor of strategic bombing to the detriment of its ability to provide tactical air support for ground forces and for other missions involving tactical aviation. Some reduction of the large bomber groups translated into tactical aircraft would produce better balance with the entire program, still being within the 48-group limitation."[267]

As it was directed to do by the House of Representatives, Congressman Vinson's Armed Services Committee began hearings in August in which all principal officials who had been concerned with B-36 procurement were examined. Early in the hearings the author of the anonymous charges appeared and confessed the falsity of his allegations. After three weeks the committee unanimously resolved on 25 August that not one iota of evidence had been presented to it that would support charges that fraud or favoritism had played any partin the procurement of the B-36 but that the testimony had shown that the Air Force had selected and procured the bomber solely on the grounds that it was the best aircraft for its purpose. Even though it suspended the B-36 hearing early, the Committee expressed itself as deeply disturbed "by reason of recent developments within the Department of Defense which might have resulted in the impairment of the proper functioning of one or all of the services and thus endanger the national defense."[268] Because of this belief, the Committee opened a second phase of its hearings on 6 October and heard testimony on the national defense program for twelve days. In the course of often repetitious testimony in the two hearings, Navy, Air Force, and Army officers presented detailed but somewhat different analyses of their concepts of national military capabilities and national military strategy.

In his letter to Vinson at the outset of the hearings, Secretary Matthews demonstrated that the primary mission of the Navy was to command the seas and that, in order to carry out its primary mission, the Navy had to have weapons which could "destroy enemy forces threatening that command." Taking a corporate view of the responsibility of the Joint Chiefs of Staff to insure the defense of the United States, Matthews was willing to grant each service a responsibility to inquire into the expenditure of scarce defense funds by the other services, but he nevertheless argued that a chief of any service was best informed as to the weapons his service needed to carry out its responsibilities. As for the B-36, Matthews charged that the plane sacrificed performance characteristics to

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obtain intercontinental range. As long as the Navy controlled the seas, Matthews submitted that advanced bases would be available to the Air Force, which should, therefore, develop and employ shorter-range and higher-performance bombers.[269]

Heading a long list of distinguished Navy witnesses, Vice Admiral Radford expressed his opposition to the B-36 because it had "become, in the minds of the American people, a symbol of a theory of warfare--the atomic blitz--which promises them a cheap and easy victory if war should come." He believed the B-36 to be an obsolete aircraft suited only for city bombing. "Are we as a nation," he asked, "to have 'bomber generals' fighting to preserve the obsolete heavy bomber--the battleship of the air?" He insisted that a proper air strategy ought to be built around short-range jet aircraft such as the B-47 and naval jets which would, operating from advanced land bases and aircraft carriers, establish control of the air over hostile territory and then wage strategic air warfare campaigns.[270] Rear Admiral Ofstie made a distinction between "strategic air warfare," which was directed against an enemy's will and ability to wage war, and "strategic bombing," which he and other Navy witnesses arbitrarily described as an indiscriminate blitz against urban areas. Ofstie supported strategic air warfare and accurate attacks on precise military targets, but he deplored the strategic bombing which had unwisely destroyed Germany and Japan. Ofstie thought that the concept of "instant retaliation" had produced an illusion of power and even a kind of bomb-rattling jingoism." The strategic bomber force, moreover, was an independent force which served none of the primary demands for national security--the defense of western Europe, the protection of forward bases, the early reduction of enemy military potential, or command of the sea. "Must the Italian Douhet continue as our prophet," he asked, "because certain zealots grasped his false doctrines many years ago and refuse to relinquish this discredited theory in the face of vast, costly experience? Must we translate the historical mistake of World War II into a permanent concept merely to avoid clouding the prestige of those who led us down the wrong road in the past?" [271]

Appearing as the next principal witness for the Navy, Brigadier General Vernon E. Megee, Assistant Director of Marine Aviation, emphasized the Marine Corps belief in tactical air power. "The evidence appears conclusive," he stated, "that in both the Atlantic and Pacific battle areas, tactical aviation, not strategic bombing, was the decisive factor." He charged that the Air Force was neglecting the development of tactical air power, and further asserted that the Air Force's "traditional doctrinal insistence on coequal command status at all levels of contact with the ground forces. . . deprives the Army commander of operational control over his supporting elements and requires that ultimate decision must be made at the level of the highest echelon, in case of a dispute between ground and air commanders."[272] Continuing the Navy testimony, Fleet Admiral Ernest J. King pointed out: "Mass bombing is merely a specialized task and big bombers alone will not assure us

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command of the air. Without control of the air, the job of the soldier, the sailor, and even the job of the strategic airman becomes more difficult, perhaps impossible."273 As an advocate of air power, Admiral Louis E. Denfeld, Chief of Naval Operations, favored an initial air offensive by the nation's total military air power--Air Force, Navy, and Marine Corps--at the outset of a war. He believed that the airplane had materially altered the conduct of war, but that it had not changed the basic principles and objectives of war. "The defeat of the armed forces of the enemy," he said, "is still the primary objective of war. Air power is not an end in itself."274

Because of the nature of the charges under investigation, Air Force leaders devoted most of their time to a detailed history of B-36 procurement, but on 12 August Vandenberg described the strategic situation and the objectives and the capabilities of the Air Force. Disdaining to talk in riddles, he identified the Soviet Union as the "one military threat to the security of the United States and to the peace of the world." The aggressive thrust of the Soviets could be contained only by economic and military power of western nations. "The only war a nation can really win," he said, "is the one that never starts." "When reason, good will, and the accommodation of competing national interests give assurance of keeping the peace," he thought, "the maintenance of deterrent forces will be unnecessary. Until that day comes, the striking power of atomic weapons in the hands of this country is a prerequisite of national and world security."275

As his statement continued, Vandenberg described the Air Force mission as being the defense of the United States against air attack, the maintenance of forces in being necessary to attack immediately and effectively the vital elements of an enemy's warmaking capacity, and the preparation of air power which would work in conjunction with surface forces. While all of the missions were important, the Joint Chiefs had determined that the capacity for immediate retaliatory strategic attack was essential: this attack would blunt an enemy's initial operations and lay a foundation for subsequent operations by land, sea, and air forces. Although the Air Force had given first emphasis to its strategic air elements, Vandenberg pointed out that the distinction made between strategic air operations (attacks against an enemy's industrial strength) and tactical air operations (attacks against an enemy's military forces) was not completely valid. Such a distinction, he said, "denies the unity of air power, by failing to recognize that strategic and tactical air units are component parts of a whole and are complementary forces." As a matter of practicality, he demonstrated that it was more difficult and more expensive to destroy a deployed tank or plane than to destroy them in the process of manufacture, but the choice of air targets depended upon the situation. "The ultimate objective of the strategic air campaign," he said, "is to reduce an enemy's capacity to below the level at which he can support his war

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effort. However, there may well be interim or emergency objectives of overriding importance. For example, this would be the case if the enemy had a long-range air fleet and a stock of atomic bombs, and if this disposition of these weapons rendered them vulnerable to attack by a strategic air force. Before attacking an enemy's economic strength, it might be mandatory, in the interest of survival, to take action to prevent these weapons of mass destruction being employed against us. Likewise, a hostile army poised on a European frontier might, under certain circumstances, provide the best target for a strategic air force."276

In justifying the employment of B-36's under conditions where air superiority would not have been attained, the Air Force appeared to be deviating from its findings that control of the air was necessary for a strategic air campaign. Vandenberg was reluctant to discuss the matter in open sessions, but he reiterated the historic fact: "No bombing mission set in motion by the Army Air Forces in World War II was ever stopped short of its target by enemy opposition." In response to another pointed question, he said: "We have new tactics, new techniques, new speeds, new altitudes, an entirely different type of explosive. Where at one time the losses might be unacceptable, in another war, in order to destroy a target, they might be very acceptable."277 Pressed still further, Vandenberg made an appraisal that would plague him for the next several years. "In our defensive system or in that of Britain or of any other country with an air defense system," he said, "the ultimate that we can ever hope for from the point of view of destruction of forces launched against us is in the neighborhood of 25 percent. That is the ultimate, and it undoubtedly would be less than that."278

In their testimony before the hearings, both Symington and Vandenberg emphasized that the Joint Chiefs of Staff were in full agreement that "the capacity for an immediate retaliatory strategic bombing offensive is considered essential to the security plans of the United States." "Today," said Vandenberg, "our air potential is the most effective single deterrent to aggression; it is the strongest single force working for peace."279 "In the first place," said Symington, "the Air Force believes that the atomic bomb plus the air power necessary to deliver it represent the one most important visible deterrent to the start of any war. . . . Secondly, if war comes, we believe that the atomic bomb plus the air power to deliver it represents the one means of unloosing prompt crippling destruction upon the enemy, with absolute minimum combat exposure of American lives."280 Both Symington and Vandenberg disavowed any belief that an atomic blitz could produce a "quick, easy, and painless war." "We can hope, but no one can promise," said Symington, "that if war comes the impact of our bombing offensive with atomic weapons can bring it about that no surface forces ever have to become engaged. Disregarding such an illusory hope, we do know that the engagement of surface forces will take place with much

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greater assurance of success and much fewer casualties to the United States and its Allies if an immediate, full-scale atomic offensive is launched against the heart of the enemy's war-making power."[281] Vandenberg also emphasized that "any possible future war can be won only by the highest degree of teamwork among the Army, Navy, and Air Force." He specifically denied that the Air Force sought to take over Navy or Marine aviation, and he stated a belief that any future war "will be concluded on the ground." Vandenberg nevertheless pointed out that "balanced forces" were forces that were "balanced against the task to be performed. . . . Balance among military forces," he thought, "should be based on the time sequence of military tasks called for in the strategic timetable."[282] This concept had caused him to oppose the construction of the super-carrier. "I am in favor," he said, "of the greatest possible development of carrier aviation to whatever extent carriers and their aircraft are necessary for fulfillment of a strategic plan against the one possible enemy we have to face." Aircraft carriers had been of great importance in the island campaigns of the Pacific, but Vandenberg believed that a future war would resemble the war against Germany rather than that against Japan. While he did not believe that a supercarrier would be of value in a continental war, he saw a great requirement for the employment of aircraft carriers in antisubmarine warfare. He said that he was "not only willing but insistent that the types of carriers which can help meet the threat of an enemy submarine fleet shall be developed fully and kept in instant readiness. The sea lanes must be kept open."[283]

Speaking as the newly-appointed Chairman of the Joint Chiefs of Staff, General Bradley deplored the fact that too many secrets were being spread on the record but nevertheless felt forced to disclose the military plans and preparations of the United States. With reference to the corporate Joint Chiefs of Staff, Bradley waid: "We all believe that the No. 1 priority for the Air Force must be strategic bombing ability." The Joint Chiefs "considered the fact that we were able to retaliate quickly as one of the big deterrents to war today." He identified Soviet Russia as the major adversary to the United States and saw Europe as "the first prize for any aggressor in the world today." His basic concept of U.S. military operations in a future war included the defense of the United States and North America, early retaliation from combat-ready bases, the seizure of forward bases to permit attacks against enemy targets from shorter ranges, and the ultimate necessity "to carry the war back to the enemy by all means at our disposal" including "strategic bombardment and large-scale land operations." In a continental war, he believed there would be little requirement for "island-hopping" and predicted that "large-scale amphibious operations, such as those in Sicily and Normandy, will never occur again."[284]

In his discussion of strategy, Bradley defined strategic bombing as "violent airborne attacks on the war-making capacity or potential of an enemy nation." He justified strategic bombing: "From a military standpoint, any damage you can inflict on the war-making

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potential of a nation, and any great injury you can inflict upon the morale of that nation contributes to the victory." As for the charge that mass bombing was immoral, he pointed out that "war itself is immoral." "Strategic bombing," he said, "has a high priority in our military planning, because we cannot hope to keep forces in being of sufficient size to meet Russia in the early stages of war. This is particularly true since we are never going to start the war, and the Soviet Union because of their peculiar governmental organization can choose the date of starting it. Lacking such forces in being, our greatest strength lies in the threat of quick retaliation in the event we are attacked." The insinuation that the atomic bomb was relatively ineffective drew Bradley's strongest refutation. "The A-bomb," he said, "is the most powerful destructive weapon known today. . . . As a believer in humanity I deplore its use, and as a soldier I respect it. And as an American citizen, I believe that we should be prepared to use its full psychological and military effect toward preventing war, and if we are attacked, toward winning it."[285]

Both Bradley and General J. Lawton Collins, now the Army Chief of Staff, refuted the charge that the Air Force had neglected tactical aviation. Bradley pointed out that in the face of very strong enemy opposition in Europe the Ninth Air Force had allocated approximately one group for the support of each two Twelfth Army Group divisions; using this comparison as a guide, he questioned whether the Marine Corps required the equivalent of seven groups for the support of only two Marine divisions.[286] Speaking of his experience in Europe during World War II, General Collins recalled that "the tactical air forces were able both to support the ground forces and to assist in the safe conduct of our strategic bombers in their missions of destruction and isolation of the battlefields." To prevent the costly duplication which would have ensued if the Army had insisted on retaining its own organic close-support aviation, Collins said: "The Army. . . willingly agreed to the transfer to a Department of the Air Force of tactical air along with air transports." He expressed dissatisfaction with the lack of progress being made in developing joint interservice doctrine, but he stated unequivocally that the Air Force was cooperating with the Army. Purely as a personal opinion, Collins predicted that airborne operations would be much more important in a future war with "the only potential enemy" than large-scale amphibious operations.[287]

During the course of the unification and strategy hearings, Chairman Vinson and several committee witnesses took note of the fact that the Secretary of Defense had organized a Weapons Systems Evaluation Group to provide the Secretary and the Joint Chiefs of Staff with objective analyses of the effectiveness of competing weapons systems. At Newport in August 1948 the Joint Chiefs had agreed that the establishment of a weapons evaluation group was desirable and necessary. Secretary Forrestal promptly established the Weapon Systems Evaluation Group, headed by Dr. Philip M. Morse,

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who had headed the Navy's Operational Evaluation Group during World War II, and with a membership of military officers and civilian operations analysts. At the request of President Truman, WSEG made a detailed study of the Strategic Air Command between August and December 1949: though the results of the study were never released, a source described as knowledgeable stated on 6 January 1950 that the B-36 could be expected to have a better than even chance of delivering its bombs to a target area. The study apparently reinforced the Air Force position that the B-36, while not perfect, was capable of going anywhere of importance in the world and dropping an atomic bomb.[288] Although the fact could not be presented in the public hearings, General LeMay would later recall that the Soviet air defenses in 1949 and for several years afterward were too weak to have effected unacceptable losses on a nuclear-laden strategic bombing force. "We didn't have to worry about winning an air power battle," he reminisced, "because the Russians had no threat against us. . . . We could ignore the rule book in winning the air power battle and go about destroying their resources."[289]

Both at the time that the hearings were in progress and afterward the B-36 and unification and strategy investigations were seen to involve challenges which had been made to broad concepts of unification and of strategy. "Despite protestations to the contrary," General Bradley observed, "I believe that the Navy has opposed unification from the beginning, and they have not in spirit as well as deed, accepted it completely to date." Bradley called for team play in national defense: "This is no time for 'fancy dans' who won't hit the line with all they have on every play, unless they can call the signals."[290] In the course of the hearings, Chairman Vinson openly deplored the fact that the national military budget was being prepared in terms of ceilings worked out by the Treasury and the Bureau of the Budget rather than in terms of the nation's risks and foreign policy requirements. "The first duty of our Government," he said, "is to provide for the national defense. I am less fearful of deficit financing than I am of the designs of the Russians." Vinson told Secretary Johnson that he felt that Congress and the American people believed that the nation required a 58-group Air Force.[291]

Although the House Committee on Armed Services favored an expansion of the Air Force, the committee's formal report on the unification and strategy investigation made on 1 March 1950 explicitly endorsed strategic pluralism in defense organization. Speaking of strategy, the committee concluded that "the basic reason for this continuing disagreement is a genuine inability for these services to agree, fundamentally and professionally, on the art of warfare. . . . Of course, with the views so sharply opposed, both services cannot be right; the committee suspects that both are right--and that both are wrong. The true answer probably lies somewhere in the gulf between the two." Especially in the early

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stages of unification before a "one-armed-force" esprit had developed, the committee expressed "strong doubts that it is a service to the Nation's defense for the military leaders of the respective services to pass judgment jointly on the technical fitness of either new or old weapons each service wishes to develop to carry out its assigned missions." Holding that "military air power consists of Air Force, Navy and Marine Corps air power, and of this, strategic bombing is but one phase," the committee expressed an intention to examine any proposals for reducing the size of Marine aviation very closely, deplored the manner in which the construction of the United States had been cancelled, and announced that it would rely upon the professional endorsement of Air Force leaders (subject to evaluation by the Weapons Systems Evaluation Group) as to the capabilities of the B-36 bomber. The committee thought that the Weapons Systems Evaluation Group would be a proper forum for examining competing weapon systems, but it stated that the "appropriate role" of the group would be "to evaluate weapons after they have been developed, not to instruct the services what types of weapons they will or will not develop." Finally, the Armed Services Committee emphasized its belief that unification ought to involve a comprehensive and well-integrated program for national security based upon three separately administered military departments.[292]

Coming in the autumn of 1949, when the Soviet Union staged its first atomic explosion and thus served notice that the United States no longer possessed a nuclear monopoly, the strategic bombing controversy stood as a benchmark in the movement toward armed service unification. The "Revolt of the Admirals" clearly embittered interservice relations. "I have been here for some years," said Secretary Symington, "and I think the hatchet job that is being done, and has been done on the B-36 is the best hatchet job that I have seen since I have been in town."[293] On the other hand, General Bradley's reference to "fancy dans" left a false impression that difficulties in armed service unification arose from personality rather than more fundamental issues that needed attention. After a retrospective analysis of the controversy, a civilian student, James C. Freund, concluded that "the budget-first approach to national security emerged as the real culprit on the scene," but he also pointed out that the controversy conclusively demonstrated that unification had not solved all defense problems, that military problems were becoming increasingly dependent on technological judgments, that Congress was unprepared to formulate or pass judgment on strategic and technological issues of defense, and that the military leaders had proven unable to arrive at unanimous decisions on weapons and strategy.[294]

Speaking shortly after the "interservice row of 1949" had taken place, Major General John A. Samford, the Air Force Director of Intelligence, pointed out that the armed forces leaders had been unable to agree on the art of warfare. "Since it has been stated that military men are unable to reach any fundamental agreement on the art of war," he predicted, "it seems very probable that

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civilian thought will go to work to help them."[295] This prediction would prove to be correct. The strategic bombing controversy had two other important effects. For a number of years after 1949, the Joint Chiefs of Staff would accept a practice of stating quantitative requirements for military forces and of leaving qualitative requirements to the providing service: thus, for example, the Joint Chiefs would determine the number of aircraft carriers or heavy bombardment groups that would be required to implement strategic plans but they would not determine the size or the types of carriers or the kinds of bombers that would be provided.[296] The hearings also demonstrated that the Air Force had not given enough realistic thought to the problem of targeting nuclear weapons: this matter would receive serious attention within the year that followed the investigations.

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CHAPTER 6

RESPONSES TO SOVIET NUCLEAR WEAPONS AND LIMITED WAR, 1949-1953

1. Evolving Patterns of Defense Organization

Established by statute in the spring of 1948 to examine governmental organization and operations, the Commission on Organization of the Executive Branch (better known by the name of its chairman, former President Herbert Hoover) divided its work among special task force committees, and for more than six months, the Committee on National Security Organization, headed by Ferdinand Eberstadt, heard testimony on the functioning of the National Military Establishment. On 16 December 1948, the Eberstadt task force released a lengthy report, which was summarized by a Hoover Commission report issued on 28 February 1949. The Hoover report concluded: "The authority of the Secretary of Defense, and hence the control of the President, is weak and heavily qualified by the provisions of the act of 1947 which set up a rigid structure of federation rather than unification. . . . The National Military Establishment . . . is perilously close to the weakest type of department."[1] After a year of operating under the 1947 act, Secretary Forrestal also reported a firsthand observation of certain weaknesses and inconsistences in the act which had not been foreseen at its passage.[2]

In a message to Congress on 5 March 1949, President Truman accepted many of the recommendations made by the Hoover Commission and by Secretary Forrestal in proposing changes to the National Security Act of 1947. He wished basically to convert the National Military Establishment into an executive department to be known as the Department of Defense and to provide the Secretary of Defense with appropriate responsibility and authority and with civilian and military assistance adequate to fulfill his enlarged responsibilities. Truman specifically recommended that the Departments of Army, Navy, and Air Force be designated as "military departments," and that the Secretary of Defense should be the sole representative of the Department of Defense on the National Security Council. Where the Hoover Commission recommended that the Departmental Secretaries should become Under Secretaries of Defense, Truman wished to retain them to administer their respective military departments under the authority, direction, and control of the Secretary of Defense. He also recommended that Congress authorize an Under Secretary of Defense and three Assistant Secretaries of Defense, place the statutory duties of the Munitions Board and the Research and Development Board under the Secretary of Defense and provide for a Chairman of the Joint Chiefs of Staff who would take precedence over all other military personnel, be the principal military adviser to the President and the Secretary of Defense, and perform such other duties as they might prescribe.[3]

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At hearings on the proposed legislation held by the Senate Committee on Armed Services in March 1949, Secretary Forrestal candidly acknowledged that he had originally opposed a too great concentration of power in the Secretary of Defense but he had come to believe that there were sufficient checks and balances inherent in the governmental structure to prevent misuse of the broad authority which he felt must be vested in the position. As a part of an evolutionary development, Forrestal thought that the proposed amendments to the national security act would "convert the military establishment from a confederacy to a federation."[4] At another appearance before the same committee in April, Secretary Symington expressed strong Air Force support for increased defense centralization. "From the very beginnings of hearings on the proposal to unify the armed services," he pointed out, "the Air Force has favored centralization and clear definition of authority and responsibility for the positions of the Secretary of Defense and the head of the Joint Chiefs of Staff." He personally favored the Hoover recommendation to designate the Departmental Secretaries as Under Secretaries of Defense. "I would say," he concluded, "that any diminishing of the power and prestige of the Air Force as a result of making the Air Force a military department instead of an executive department would be very much in the interest of the United States."[5]

With a few modifications, President Truman's recommended amendments to the national security act passed the Senate unanimously on 26 May 1945, but, in the House of Representatives, Chairman Vinson's Committee on Armed Services was openly skeptical of the bill. "What has been worrying me. . .," Vinson told the new Secretary of Defense Louis Johnson as hearings began on 28 June, "is that the Congress is frozen out, kept at arms' length, from the problems of the three Departments. I cannot reconcile this with the constitutional responsibility of the Congress, and I think this bill should be amended to keep Congress a part of the team."[6] Vinson felt that the Secretary of Defense already possessed powers that were adequate for the purposes of unification. While the House Armed Services Committee was considering the legislation, Congress passed and President Truman signed into law on 20 June the Reorganization Act of 1949, which authorized the President to institute reorganization plans within the executive branch, unless a house of Congress should veto the proposal by a majority vote within 60 days. In accordance with this authority, Truman submitted Reorganization Plan No. 8 on the National Military Establishment to Congress on 18 July, which proposed to accomplish most of the earlier legislative recommendations by executive action. While Truman preferred that Congress would act on the matter by regular legislative process, he apparently used the reorganization plan procedure to emphasize the importance of his recommendations. Since the bill passed by the House differed markedly from that voted by the Senate, the legislation was rewritten in a conference committee in an acceptable form, and the compromise bill became law on 10 August as the National Security Act Amendments of 1949.[7]

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The National Security Act Amendments of 1949 established the Department of Defense as the successor to the National Military Establishment, thus reducing the Departments of the Army, Navy, and Air Force to military rather than executive departments. The Secretary of Defense was given "direction, authority, and control" over the Department, but the services were to be "separately administered." The Secretary was prohibited from transferring or consolidating any combat function, and he was required to report to Congress any reassignment of non-combat functions. The services could no longer appeal directly to the President or the Bureau of the Budget, but any Service Secretary or Chief of Staff could, after notifying the Secretary of Defense, make recommendations to Congress on his own initiative. The act established the position of Chairman of the Joint Chiefs of Staff, who was charged to preside at meetings of the Joint Chiefs, to prepare agenda for the meetings, and to inform the President or Secretary of Defense of issues upon which the Joint Chiefs had not been able to agree. The act provided that the Chairman of the Joint Chiefs of Staff could not vote and that he would have no command authority. No changes were made in the existing status of the Munitions Board or in the Research and Development Board. The Deputy Secretary of Defense was given precedence within the Defense Department immediately after the Secretary, and three Assistant Secretaries of Defense were authorized. The Secretaries and under secretaries of the military departments and the chairman of the Munitions and Research and Development Boards were designated as non-permanent members of the National Security Council.[8]

* * * *

In its report on 16 December 1948, the Committee on National Security Organization, headed by Ferdinand Eberstadt, proposed that immediate steps should be taken to establish closer working relations between the Joint Chiefs of Staff and the Research and Development Board to assure that advances in weapons and weapon systems should be adequately considered in the formulation of strategic plans.[9] This recommendation, which could be effected without changes in legislation, apparently reflected a growing appreciation of the basic "closed-circle" relationship between scientific development and military strategy. According to Mr. Karl F. Kellerman, the Executive Director of the Research and Development Board's Committee on Guided Missiles, however, the Research and Development Board found it very difficult to obtain long-range strategic guidance from the Joint Chiefs of Staff. "We ask them, "Kellerman said, "what the war will be like so we can plan intelligently for new weapon development and they counter by asking us what new weapons will be available so they can plan intelligently for the future war."[10] In the limited defense budgets of the late 1940's, moreover, research and development funding had been reduced in favor of operating forces. "There are those in high positions in the Air Force today," charged Major General Donald L. Putt, the Director of Air Force Research and

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Development, "who hold that research and development must be kept under rigid control by 'requirements' and 'military characteristics' promulgated by operational personnel who can only look into the past and ask for bigger and better weapons of World War II vintage. . . . They have not yet established that partnerwhip between the strategist and the scientist which is mandatory to insure that superior strategy and technology which is essential to future success against our potential enemies."[11]

Taking note of the Eberstadt criticisms in a letter to Secretary Symington on 15 January, Dr. Theodore von Karman, Chairman of the USAF Scientific Advisory Board, doubted that they applied directly to the Air Force but nevertheless held a meaning for all of the military services. Von Karman reminded Symington that the facilities of the Air Materiel Command at Wright Air Force Base were inadequate for research in an era of supersonic flight, and he noted the impression that the Air Force had made research and development too subservient to the procurement of materiel. "When research work becomes too closely allied with operational and procurement problems," he postulated, "one gets too little farlooking research work."[12] Writing to Vandenberg on the same day that he addressed Symington, von Karman urged that the Air Force should again establish the position of Deputy Chief of Staff for Research and Development. "Air supremacy," von Karman noted, "will be an indispensable factor in the event of another war. In the air battle, technical surprise and general technical superiority will always be decisive. . . . DECISIVE technical superiority IN TIME OF WAR will go to the side which most rapidly and exhaustively transforms new technical developments into pieces of battlespace equipment IN TIME OF PEACE." He was certain that necessary long-range planning and more effective utilization of specialized personnel, critical facilities, and limited funds could come only through more centralized Air Staff control over research and development activities.[13]

When Vandenberg asked for guidance on research and development from retired Lieutenant General Doolittle, he got much the same opinion that he had received from Dr. von Karman. "Everyone is for research and development," Doolittle shrewdly observed, "just as everyone is against sin. However, very few people will sacrifice for it."[14] Believing that some constructive action was necessary, Vandenberg asked the Air University to make a study of the research and development structure of the Air Force. In a companion effort on 7 April, General Fairchild asked the USAF Scientific Advisory Board to give him advice on the same problem. As the twin projects commenced, Major General Orvil Anderson headed the Air University study committee, and von Karman named Dr. Louis N. Ridenour to head the Scientific Advisory Board's special committee on research and development. The two groups worked closely together during the summer of 1949: the Ridenour committee submitted its report on 21 September and the Air University committee sent forward its recommendations (which included a review of the Ridenour report) on 19 November.[15]

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"Any war which we can now foresee," stated the Ridenour committee, "will be an inter-continental war, and we must presume that in such a conflict the Air Force would play a major role, since naval blockade would be ineffective and land invasion against an unweakened enemy would be hazardous in the extreme. . . . Even more important . . . is the deterrent effect of our air power upon the Russians. . . . To maintain this impressive role during the years of negotiation and diplomacy to come, the Air Force must retain its present qualitative superiority." On the philosophical level, the committee recommended: "If war is not imminent, then the Air Force of the future is far more important than the force-in-being and should, if necessary, be supported at its expense." More specifically, the Ridenour committee recommended that a position of Deputy Chief of Staff for Research and Development should be established both to head such activities within the Air Staff and to command a new research and development command which should be divorced from the procurement and production functions of the Air Materiel Command. The single agency research and development organization should be made responsible for unified budgeting, thus making it possible to identify the total costs of research and development. Strong efforts needed to be made to increase the number of technically-qualified Air Force officers and civilians and to make full use of their capabilities. The committee recommended that the air research and development command should be provided with expanded field facilities but that such facilities ought to be operated by civilian contractors, thus allowing the Air Force to concentrate its limited technical manpower in the work of contract supervision and operational evaluation. Finally, the Ridenour group recommended that the technical talent and facilities of the American universities and industries should be utilized much more fully, particularly through contracts for specific research and development projects. As an operating procedure, the committee recommended that the Air Force make a needed distinction between "components" and "systems." A "system" was conceived to be an assemblage of interacting "components" brought together to deal with a particular problem, such as strategic bombardment or air defense. "Within the Air Force," the committee recommended, "the role of systems engineering should be substantially strengthened, and systems projects should be attacked on a 'task force' basis by teams of systems and components specialists organized on a semi-permanent basis."[16]

After making its own study of Air Force research and development, the Air University committee stated: "We cannot hope to win a future war on the basis of manpower and resources. We will win it only through superior technology and superior strategy." The committee believed that Air Force leaders generally recognized the importance of research and development but that the pressures of day-to-day operational, materiel, and political problems prevented the implementation of vigorous exploratory programs. It believed that a positive system designed to secure interactions between science and strategy had to be established as an absolute and automatic function

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rather than as a voluntary functioning of personalities. Since program stability was the pressing requirement in research and development, the Air University recommended that fluctuations in availability of personnel and funds should be absorbed in those activities which were associated with the force-in-being and not associated with the Air Force of the future. The Air University committee generally endorsed the recommendations of the Ridenour group, and General George C. Kenney, now the commander of the Air University, added a strong personal approval to the report of the Air University committee: "As long as we remain ahead of any possible opponent technically," he wrote, "we could not lose a war; but if we once fall behind technically, it is difficult to see how we could win a war of the future."[17]

In Washington on 2 December 1949, a conference headed by Lieutenant General K. B. Wolfe, Deputy Chief of Staff for Materiel, and with representatives from the Air Staff, the Air Materiel Command, and the Air University, reviewed the Ridenour and Air University reports on research and development and recommended that General Vandenberg implement the philosophy contained in them. The conference noted that Vandenberg had four deputies who were responsible "for the air force of today" and suggested that it would be logical to establish a fifth Deputy Chief of Staff for Development who would be responsible for the "Air Force of the future." The conference also recommended that the Air Force accept reductions in its combat force-in-being as were necessary to support the establishment of a separate air research and development command. By implication, the Wolfe group did not accept the unorthodox Ridenour recommendation that the Deputy Chief of Staff for Development should also command the separate air research and development command. With approval from Vandenberg, the Office of Deputy Chief of Staff for Development was established on 23 January 1950, when Major General Saville assumed the position as deputy chief. The new office was provided with two directorates: Requirements and Research and Development.[18]

With the understanding that its growth would be evolutionary through a gradual assumption of research and development functions and facilities from the Air Materiel Command, the Air Research and Development Command was established under Major General Schlatter in Washington on 23 January 1950. Many months would elapse before the new command could begin to operate, but the Air Force had indicated its intention to devote new emphasis to the building of force capabilities for the future.[19] "Based on our present concept, that of retaliation," explained Major General Putt on 16 February 1950, "we have given our enemy two very important advantages, initiation and time. We shall, of necessity, have to depend on outwitting him in strategy and outplacing him in technology. . . . It is apparent that in modern strategy and technology, developments in one are largely predicated on or affected by developments in the other. We, therefore, arrive at the general position that national security will depend on our combining these two variables which we control,

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our strategy and our technology. This in a sense defines the magnitude and importance of technology to our military security."[20]

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"The primary function of the armed forces is, when called upon to do so," stated the basic War Department outline for the postwar organization of the U.S. military establishment, "to support and, within the sphere of military effort, to enforce the national policy of the nation. There must be a complete correlation of national policy with military policy; of the political ends to be sought with the military means to achieve them."[21] According to this concept that the role of the armed forces was to give authority to the conduct of American diplomacy, the foreign policy of the United States assumed the nature of an absolute, which would desirably be supported as necessary by appropriately-prepared military forces. Actually, however, from the start of the postwar period American foreign, military, and economic policies bore a closed-circle relationship in which a weakness in any one of the policies made for a weakness in them all. Dismissing for the moment the argument as to whether it was good or bad for the military to participate in the making of foreign policy, Major General Norstad observed in May 1947 that "military considerations do, in fact, play a large part in the determination of foreign policy and its implementation. This being so, it is doubly important that the military at all times remain subordinate to the political."[22]

In a discussion with Secretary Forrestal in early September 1947, Major General Norstad, who was still troubled about the prospects of military participation in diplomatic decisions, stated his view that the National Security Council might well become a forum in which military representatives could insure that the State Department did not undertake far-reaching policies requiring an amount of military support that could not be supplied by available capabilities. Seeking a clarification at the first meeting of the National Security Council on 26 September 1947, Forrestal volunteered his conception that the Council "would serve as an advisory body to the President, that he would take its advice in due consideration, but that determination of and decisions in the field of foreign policy would, of course, be his and the Secretary of State's."[23] After this, the National Security Council met ordinarily on the first and third Thursdays of each month to consider aspects of foreign, military, and domestic policy and to provide single sets of recommendations on particular problems to President Truman. If the President approved the policy recommendations, the NSC papers became the administration's policy. The chief advantage of the National Security Council appeared to be that it gave an opportunity for a member whose activity would be affected by a given policy to express his views and have his views expressed to the President.[24] In order to provide a means for exchanging political and military advice a standing interdepartmental group known as the State-War-Navy Coordinating Committee was

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established in December 1944, and in October 1945 the Secretaries of State, War, and Navy had designated the SWNCC as "the agency to reconcile and coordinate action to be taken by . . . the departments on matters of common interest . . . and establish policies on politico-military questions." In 1947, SWNCC was redesignated as the State, Navy, Air Force Coordinating Committee (SANACC) and, despite the establishment of the National Security Council, the intergovernmental agency continued to function at the working level during the administration of Secretary Forrestal.[25]

According to the prevailing concept of proper military-civil relations of the late 1940's, the State Department was expected to define foreign policy and the Defense Department was expected to implement it as requested with force commitments. When State Department planners began to attempt to prepare an integrated statement of foreign policy, however, they ran into the immediate problem that no one could authoritatively define the basic national objectives of the United States. The files of the State Department and National Security Council were filled with papers dealing with separate problems and areas, each of which dealt with separate problems and areas and included specific objectives, but there was no consolidated statement of basic American purposes. The Joint Chiefs of Staff encountered this same problem. In October 1949, General Bradley told Congressional investigators that in the absence of any authoritative definition, the Joint Chiefs of Staff had assumed: "The people of the United States have as their national objective a desire for peace and security without sacrifice of either the basic rights of the individual or the present sovereignty we cherish. . . . Secondly, we intend to maintain our political way of life and our form of government in our own country. . . . Our third objective is to maintain, and to raise, if possible, our American standard of living. And fourth, we Americans would like to have peace and security for the entire world, and all the good that these conditions can bring." Bradley conceived that the national objectives did not "demand a similar political way of life or a similar form of government in other countries of the world" and that they included a hope for "the successful development of an effective world organization, based on the United Nations." In their approach to the problem, the State Department planners finally decided that the basic national purpose of the United States was best expressed in the preamble to the Constitution: ". . . to form a more perfect Union, establish Justice, insure Domestic Tranquillity, provide for the common defense, promote the general Welfare, and secure the Blessings of Liberty to ourselves and our Posterity." In 1949 the House Committee on Armed Services was in agreement with these generalized objectives, but it suggested that the National Security Council ought to issue "a firm statement of principles upon which the Joint Chiefs of Staff may rely as an official expression of their civilian leaders."[26]

Seeking "the containment of communism and . . . the defense of America,"[27] the United States lent military and economic assistance to counter Soviet aggression in Iran, Greece, Turkey, Trieste, and

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Berlin. On 7 May 1948, however, President Truman told Secretary Forrestal that annual military budgets must be kept relatively stable in order that they would not "cut too deeply into the civilian economy,"[28] and at this time the domestic economic policy of the United States began to become the absolute which in no small part prevailed over both the foreign and military policy. Although the United States hoped to restore a balance of power in both Europe and Asia,[29] the successful civil war waged by the Chinese Communists affected American influence in East Asia. In Korea the United States remained committed to the political objective of securing the unification and independence of the divided nation, but on 25 September 1947 the Joint Chiefs of Staff considered that the American occupation troops could better be used elsewhere and would be extremely vulnerable in the event of a general war. They accordingly informed President Truman: "From the standpoint of military security, the United States has little strategic interest in maintaining the present troops and bases in Korea." In response to an American request, the United Nations General Assembly entertained the Korean unification problem and on 10 May 1948 it sponsored elections which formed the legitimate government of the Republic of Korea. The United States undertook to train and equip Republic of Korea armed forces strong enough to provide security "against any but an overt act of aggression by North Korean or other forces." The last of the American occupation forces were withdrawn from Korea on 29 June 1949.[30] In the summer of 1949, subsequent to the defeat of the Chinese Nationalist government on mainland China and its retreat to Formosa, State Department planners queried the Defense Department as to whether, if political and psychological reasons demanded, the United States could commit military forces to the defense of Formosa without improperly inbalancing the force deployment necessary for security against the contingency of general war with the Soviet Union. The Defense Department replied it could not under the limitations of the $13 billion military budget.[31] Operating with a relatively fixed annual budget despite the growing costs of modernization and the need to counter growing Soviet air offensive capabilities, the Air Force was compelled to curtail its oversea operations. "We have already closed out the Caribbean Air Command," Vandenberg pointed out in May 1950. "Perhaps," he added, "the nation should be willing to sacrifice some of its influence in Europe and Asia in order to strengthen its air defenses at home."[32]

In the postwar years members of the State Department Policy Planning Staff assumed the habit of conferring directly with members of the Joint Strategic Survey Committee of the Joint Chiefs of Staff in regard to military problems, and the SANACC provided an additional working-level agency for exchanging information and arriving at policies. In the autumn of 1949, however, Secretary of Defense Johnson ruled that State Department contacts with the Defense Department would be cleared through his office. Johnson later explained that he was seeking to insure that basic decisions would be made by the top echelons rather than by subordinate offices, but

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some persons believed that the Secretary was concerned lest pressures from the State Department to increase military forces would make it difficult for him to carry out his mandate to limit military spending.[33] Because he thought that it was improper for the National Security Council to be called upon to discuss matters that had already been agreed to at lower levels, Johnson abolished SANACC.[34] Sensitive to charges that the Department of Defense was attempting to determine foreign policy, Johnson asserted: "The Defense Department is concerned with the military. . . . Neither the Secretary of Defense nor his assistants nor the Joint Chiefs of Staff nor the Chairman have . . . tried to fix . . . foreign policy. We have stayed out of that. . . . When foreign policy is determined, then our line is determined. Within that foreign policy it is our duty to work."[35] General Bradley and the Joint Chiefs also attempted to adhere to this distinction between foreign and military policy. "We are asked the military implications of certain policies, and we try to restrict ourselves to military implications of various phases of foreign policy," he said. "This is our job as adviser to the Government on military matters. . . . We have never, to my knowledge, advocated any action which was not in accordance with the foreign policy in effect at that time."[36]

2. Soviet Nuclear Weapons and Technological Challenge

While the leaders of the United States had recognized that no nation could maintain a complete monopoly of nuclear weapons, responsible American scientists had not expected the Soviet Union to detonate an atomic weapon before 1952, at the soonest. Early in 1949, however, an Air Force long-range detection service had begun to fly missions to search the upper atmosphere for evidence of atomic explosions anywhere in the northern hemisphere, and on 3 September 1949 one of the search planes picked up a radioactive air sample over the North Pacific. After reviewing the evidence, a special committee of Atomic Energy Commission experts stated positively that an atomic explosion had occurred somewhere in Asia between 26-29 August 1949. "We have evidence," President Truman told the American people on 23 September, "that within recent weeks an atomic explosion occurred in the U.S.S.R."[37]

What was surprising was not that the Soviet Union had developed an A-bomb but that it had done so more rapidly than had been predicted. In a magazine article published during October 1949, General Bradley cautioned that the Soviet A-bomb "is no occasion for hysteria. . . . For an industrially backward country, the making of an atomic bomb is not so difficult as the problem of turning it out in quantity and delivering it. As long as America retains (as it can) a tremendous advantage in A-bomb quantity, quality and deliverability, the deterrent effect of the bomb against an aggressor will continue. Sustained research and development can keep us far in the lead with methods for intercepting enemy bomb-carriers. No one can predict what the weapons of the future may be; in the long

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run our promise of security lies in the combined, unparalleled inventiveness and industrial skill of Western Europe and America."[38]

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In spite of an official analysis that "the fission bomb was not a mortal threat to the United States" both because of its finite destructive power and the fact that the Soviets would require several years to stockpile such weapons,[39] American officials were shaken by the knowledge that the Soviets had the A-bomb. The immediate effect of the Soviet nuclear capability was to stimulate research and development in the field of nuclear weapons, and the products of the effort would have important effects upon national strategic planning.

"At the end of World War II," observed W. Sterling Cole, Chairman of the Congressional Joint Committee on Atomic Energy, "there was a general slowdown in our entire military program, including atomic weapon development. This relaxation was due in large measure to a general belief that a lasting peace had been accomplished, that we would enjoy atomic monopoly for some years, and that there would be international control of atomic weapons."[40] The two World War II atomic weapons that had been employed against Japan had been large and awkward "laboratory" models which could not have been transported by planes smaller than B-29's, and even these aircraft had to be especially modified for the purpose. As has been noted, there was a prevalent belief in scientific and military circles in the late 1940's that the world's supply of fissionable uranium was very scarce. While Air Force leaders recognized the desirability of a "family" of atomic weapons which could be employed against an entire spectrum of targets, they believed on good authority that fissionable material would always be scarce and that small atomic bombs could not be designed or produced, and consequently favored the development and stockpiling of the larger and more-efficient atomic weapons that would be employed in a strategic air offensive. The Military Liaison Committee made Army, Navy, and Air Force requirements known to the Atomic Energy Commission, but the Department of Defense was only one of the "customers" of this production agency. Since 1946 many scientists had been more interested in the employment of the atom for peace than for war.[41]

As early as April 1942, atomic scientists Edward Teller and Enrico Fermi discussed the possibility of developing a fusion-reaction thermonuclear weapon that would yield infinitely more power than the fission-type atomic weapon. But the decision had been made to develop the atomic bomb, and, while a small research program on the thermonuclear energy was continued, the Atomic Energy Commission gave no major consideration to the question of undertaking active development of a thermonuclear weapon, which would be better known as the "H-bomb." Immediately after Truman's announcement in September 1949 that an atomic explosion had occurred in the Soviet Union, a staff paper was prepared in the Joint Committee on Atomic

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Energy advocating that an H-bomb be developed, to which the Atomic Energy Commission replied that it was doing all that it could in the thermonuclear field. On the Atomic Energy Commission, however, retired Admiral Lewis L. Strauss reasoned that the United States could not afford merely to seek to maintain an arithmetic lead over the Russians in stockpiling A-bombs; on 5 October he accordingly proposed to his colleagues that the time had come for "a quantum jump" and an intensive effort to develop the thermonuclear weapon. The Atomic Energy Commission's General Advisory Committee of scientists and engineers opposed a crash program to develop an H-bomb on both technical and moral grounds, and the majority of the membership of the Atomic Energy Commission did not favor an all-out thermonuclear program. On 9 November, however, the entire problem was laid before President Truman. Writing to Truman on 25 November, Strauss recommended that Truman direct the Atomic Energy Commission "to proceed with the development of the thermonuclear bomb, at highest priority subject only to the judgment of the Department of Defense as to its value as a weapon, and of the advice of the Department of State as to the diplomatic consequences of its unilateral renunciation or its possession."[42]

Early in November the H-bomb controversy blossomed in the American public press, with elaborate arguments being developed on both sides. Troubled by the divided opinion in the Atomic Energy Commission report, President Truman on 10 November designated Secretary of State Dean Acheson, Secretary of Defense Johnson, and AEC Chairman David E. Lilienthal as a special subcommittee of the National Security Council to make recommendations to him. In the following weeks, the Departments of State and Defense moved into accord on the necessity of producing thermonuclear weapons, as did the Joint Congressional Committee. The matter nevertheless continued under consideration until late January 1950, when the confession of Dr. Klaus Fuchs, a former group leader at the Los Alamos atomic weapons laboratory, that he had passed nuclear secrets to the Russians demanded an immediate decision. In a day-long meeting on 31 January, Secretaries Acheson and Johnson agreed upon the need for immediate and full-scale development of the thermonuclear bomb. Lilienthal opposed the majority view, arguing that there was a considerable doubt as to the technical feasibility of thermonuclear weapons and advocating that a better course of action would be to create more flexible atomic weapons. At the conclusion of the discussion, the special committee recommended that President Truman direct the Atomic Energy Commission to take immediate steps to develop a thermonuclear weapon. Accepting the recommendation, Truman announced on 31 January that on the previous day he had directed the Atomic Energy Commission "to continue its work on all forms of atomic weapons, including the so-called hydrogen or super-bomb."[43]

Contrary to the expectations of Lilienthal, who resigned as Chairman of the Atomic Energy Commission on 15 February and was shortly thereafter replaced by Gordon Dean, the United States would

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not only develop a thermonuclear weapon but the emphasis upon weapons aspects of nuclear energy would also shortly provide the beginnings of a family of nuclear weapons. Late in February 1950, the Atomic Energy Commission announced that it could turn out A-bombs on a virtual production line basis. Thus the critical problem of atomic supply--long considered a question in military planning--had apparently been solved. As a matter of fact, there had never been a scarcity of uranium ores. What had happened was that the military had based its requirements on an assumption that raw materials would rigidly limit production. With requirements so limited, the Atomic Energy Commission did not step up its materials procurement program because requirements could be met without expanding existing sources. Higher prices offered for uranium ores in 1950 led to the discovery of large mineral reserves in the United States. Technological innovations in the thermonuclear program also permitted refinements in A-bomb technology. In May 1950 a military requirement for a small bomb which could be delivered by high-performance aircraft was stated to the AEC, and in this same month the Sandia Corporation reported that it would be possible to proceed with the manufacture of an efficient A-bomb which could be transported and dropped by fighter-type aircraft.[44] Where nuclear weapons had been previously available only for strategic air warfare employments, they could now be developed for tactical air warfare applications.

* * * *

Under the privilege of academic freedom and with the understanding that their views did not necessarily represent official viewpoints, the faculty and students of the Air University had begun to make analyses of the effect of nuclear weapons on warfare as early as 1947. An Air War College seminar which studied the import of the atomic bomb on strategy and tactics concluded in April 1947 that "the initial blow suffered by any nation from an atomic attack can be decisive."[45] After making a detailed analysis of the threat to the United States posed by the Soviet Union, Air War College students concluded in June 1948: "All measures short of direct military action to contain the threat of Communist domination are of doubtful effect in meeting the exacting requirements in preserving our national life. Military action using weapons of mass destruction, prior to the Soviet development of these weapons, in final essence appears to be the only ultimate means of attaining security of our nation and the world."[46] Speaking to the Air Command and Staff School in June 1949, Major General Orvil Anderson sought to outline the new patterns of air warfare in an atomic age. He said: "In World War II no fighter cap ever . . . gave adequate protection to any surface target. . . . The attackers always came through. . . . They always paid in attrition . . . but air came through, and the indications are strong that as technology advances the ability of air to come through at lesser and lesser costs is quite clear, quite apparent. You will reach the point in the distant future when you won't even

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think of opposing air in the air. . . . We'll go back to a counter-artillery work. We'll fight them at the launching site or we won't fight them."[47] In an article published in October 1949, Lieutenant Colonel Harry M. Pike, of the Air Command and Staff College faculty, frankly questioned whether the United States ought to attempt an air defense effort. "If our enemies send over great numbers of aircraft carrying enough atomic bomb-type weapons to attain a goodly part of their strategic objectives, and if our air defense system is capable of destroying only about ten percent of their planes and probably a lesser percentage of their missiles." Pike asked, "is the expenditure of such an enormous sum of money--probably billions of dollars--for an air defense system feasible and acceptable? Are there perhaps other places for us to put our money in order that the probability of attack might be made more remote?" If military funds were of little or no consideration, Pike would have favored "a mighty defense effort aimed at making this country literally unpenetrable," but under existing funds limitations he argued that an air defense system could not "rate a high rung on the priority ladder."[48]

The notion that the United States might conduct a preventive war against Soviet nuclear capabilities was completely unacceptable to Thomas K. Finletter, who replaced Symington as Secretary of the Air Force on 24 April 1950. Speaking to the Air War College on 23 May, Finletter stated bluntly: "I believe that preventive war is not a possible policy for the United States government to carry out at this time. . . . Anybody who advocates a preventing war . . . is simply taking the easiest way and is not willing to face up to the tremendously difficult political and military things we have to do. I think that the American people want their military leaders and their political leaders to work themselves out of this mess in some way which is consistent with the spirit and the creed of the American people."[49] On 7 June, Major General Saville told Air War College students that there were good military reasons why the Air Force could not reasonably think about preventive war. While scientists assumed that the nuclear explosion in August 1949 had been Russia's first test, it was possible that earlier tests had not been discovered and the Soviet Union might have a stockpile of weapons. In order to wage preventive war and simultaneously shield the United States from counter-attack, the Strategic Air Command would have to destroy the Soviet Long-Range Air Force in the initial air assault. As of early 1950, the Air Force did not have the reconnaissance and intelligence of Russia which could pinpoint the location of Soviet aircraft for an initial attack or keep account of their deployments once an attack was begun. Saville suggested that at best preventive war might well turn into a situation wherein "I'll beat your brains out and you beat my brains out."[50]

At the Massachusetts Institute of Technology, Dr. George Valley, Jr., a professor of physics and a member of the USAF Scientific Advisory Board, apparently read Lieutenant Colonel Pike's article that degraded the potential of air defense. Professor Valley believed that an air defense system capable of blunting an enemy attack could

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be had with modern technology at a cost that would not unduly detract from the support of the strategic air striking arm, and he recommended that a scientific study be made of air defense. Generals Vandenberg and Fairchild immediately called in key members of the Scientific Advisory Board and requested that action be taken to execute Valley's proposal. In November 1949, Vandenberg established an Air Defense Systems Engineering Committee under Valley and charged it to determine "the operational development of equipment and techniques--on an air defense system basis--which would produce maximum effective air defense for a minimum dollar investment." The committee of eight scientists--most of whom were associated with the Massachusetts Institute of Technology--met on weekends at the Cambridge Research Laboratories. In March 1950, the Valley committee proposed that a new system of close-in radar nets, communications facilities, information-processing computers, fighter-interceptors, and unmanned interceptor missiles would increase the probable kill ratio of attacking aircraft from 10 to 30 percent. It estimated that the interior defense would require some eight to ten mechanized air defense systems and that each would cost about one billion dollars.[51]

"The period which we all realized must some day come when intercontinental air warfare would be a possibility," General Fairchild stated on 7 February 1950, "is now at hand. . . . Air Force thought and action is oriented about the concept that our primary effort must be directed toward providing the means of surviving such an atomic phase, not only without disaster, but so that our relative strength would be such that we may mobilize and bring to bear any forces that may be required to assure victory." Fairchild believed that the Soviet atomic weapon had increased the importance of the American strategic striking force. "Indeed," he said, "its continued effective, efficient existence is the greatest deterrent against the possibility of occurrence of another great conflict. If, through the grave miscalculation of others, such a conflict should nevertheless occur, it is our strategic striking force that we must put primary reliance upon for protection of our homeland by the destruction of the bases and remaining aircraft of the long-range forces directed against us and for so reducing enemy capacity to support his war effort that we may gain the time required for ultimate victory." Even though the strategic striking force continued to be of "first importance" and "first priority," Fairchild called for a new emphasis on air defense forces. "We must," he said, "provide the greatest degree of air defense attainable, within the means available to us." The Air Force could no longer expect to mobilize air defense units in a time of emergency. "Air-defensive forces," Fairchild rules, "must be trained and equipped and in place and actually on 24-hour alert if they are to be committed to combat in defense against any sudden atomic attack--possibly one in great force." In view of the budgetary situation and the need to emphasize both the air striking and air defense forces, the Air Force had no

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choice but further to reduce the priority of the tactical air force. While the Air Force would continue to program some tactical air groups to permit peacetime training and development of tactics and doctrine, the tactical air force would not be adequate for the support of any large-scale surface operation immediately on the outbreak of hostilities. Such a force would have to be mobilized after a war's beginning.[52]

Speaking candidly of the importance of the stragetic striking force on 10 May, Vandenberg visualized a future war: "An alert enemy will strike us first. Further, our defense forces in being will kill some of the attackers but only a small percentage. To be really effective, we must have an air defense capable of killing enemy air power at its source. We ourselves must strike effectively before much else can be done by anybody. As was the case in the last war, it is up to the Air Force to carry the war to the enemy and to gain air superiority before surface operations in force can be successively undertaken."[53] Asked to explain the Air Force philosophy of air defense on 7 June, Major General Saville emphasized the "relationship between Air Defense, the Air Offensive, and Time." "I believe it's obvious to us all," said Saville, "that when we had exclusive ownership of the A-bomb we had a relative position in which we were going over the enemy and drop A-bombs on him and he was going to drop TNT on us. . . . And, at that time, it was perfectly proper completely to ignore the Air Defense business, go into the Air Offensive and give complete preoccupation to the air offensive. But when the enemy starts A-bomb stockpiling, you get a different situation. You're back into the relative war again." Saville thought that the time had come to go back to the "15-year old theory . . . that a well organized air attack once launched cannot be stopped. . . . I think you have to stop it before it is launched and you can do so by offensive means only." Thus Saville believed that the time had come for the Strategic Air Command to take the counter-atomic offensive as its number one mission. Although Saville suggested that no form of air defense could be more than 60 percent successful, he nevertheless urged that the United States must build a centralized air defense system of a magnitude that could be calculated in terms of its monetary costs to the United States and to the Soviet Union. In other words, would a dollar expended for air defense cost the Russians more than such an amount to augment their offensive capabilities in order to sustain the casualties which the air defenses would inflict on an attacking force? Saville's "guestimate" was that the United States could afford to build an air defense system with "two notch" radar--one set of radars at the interior defense line and another on offshore picket vessels--and some 67 air defense squadrons, the whole system to be capable of inflicting about 30 percent casualties on an attacking force. Such a defense would not prevent some A-bombs from falling on the United States, but it would introduce imponderables and additional requirements into an enemy's offensive plans, which would give the United States some five years that it would need to

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gear its forces to fight an atomic war. Saville did not favor the construction of a much more expensive "three notch" radar system, with a very extended early-warning radar line, until it could be determined whether other intelligence efforts could not provide the "early, early warning" more cheaply. He summed up his remarks by mentioning what he jocularly called the "Saville theory" of air defense: that the United States ought to try to gain as much time as possible in order to prepare itself to fight in an air war in which both adversaries would possess nuclear capabilities.[54]

* * * *

At the same time that he directed the Atomic Energy Commission to begin to develop thermonuclear weapons on 30 January 1950, President Truman called upon the Secretaries of State and Defense to undertake a basic review of the national political and military strategy of the United States in the light of the Soviet atomic explosion. The two secretaries in turn ordered that the work would be undertaken by an ad hoc group from the State Department's Policy Planning Staff headed by Paul H. Nitze and from the Joint Strategic Survey Committee where Major General Truman H. Landon would head a team. At the start of the study, Major General Landon was said to have felt that he had to support the $13 billion military budget that had been accepted by both Johnson and Bradley, but Nitze wanted a broader-scale study that would compute requirements without reference to arbitrary financial support. After accepting the central purpose of American policy as being the establishment and maintenance of conditions throughout the world under which the democratic experiment as laid down in the Constitution could survive and prosper within the United States, the ad hoc group viewed the principal threat to this objective as stemming from the Kremlin's design for world domination. The planners believed, however, that the Kremlin placed first importance on the maintenance of their regime in the Soviet Union, second importance on the preservation of their power base in Russia, and third importance upon the objective of eventual world domination. The planners did not believe that the Communist leaders would initiate a general war until they had developed their atomic stockpile to respectable proportions, which might take them to 1954. While the Soviets could be expected to attempt to subvert, weaken, and discredit the coalition forces opposing them, the planners doubted that the Kremlin would attempt any overt aggression until it was better prepared for the contingency that local war might spread into general war.

When the State Department planners had outlined foreign policy objectives, the determination of the alternatives permitted by the U.S. military posture concerned both the State and Defense members of the ad hoc study group. One alternative was to continue with limited military forces. This course had already proven unsatisfactory: in the summer of 1949, when the Policy Planning Staff had queried the Joint Strategic Survey as to whether it was necessary

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to attain air superiority prior to the mounting of a strategic air offensive, it had been told that air superiority was essential but that it simply could not be planned for within a $13 billion military budget. Another equally unsatisfactory course was to sacrifice foreign commitments and to withdraw U.S. power to the western hemisphere. A third alternative was to take advantage of the available nuclear stockpile and initiate hostilities as soon as possible. The fourth alternative--which the group recommended--was to initiate an immediate and large-scale build-up of American and Allied military and general strength with the expectation of developmng an adequate power shield which the United States could both resist local Soviet aggressions and deter general war, while concurrently developing means other than all-out war which would eventually achieve a modification in the nature of the Soviet regime. In mid-March the ad hoc group circulated its paper through the Pentagon, where it was endorsed by the three service secretaries and the members of the Joint Chiefs of Staff. On 12 April President Truman tentatively approved it by referring it to the National Security Council which would estimate the programs and costs involved in its implementation. Handling the paper as NSC-68, the National Security Council soon estimated that the expanded military program would cost about $50 billion a year for a number of years. While these defense expenditures appeared large, they appeared also to be within the economic potential of the United States.[55]

At the same time that the State-Defense ad hoc study group was preparing NSC-68, Congress had begun hearings on the Department of Defense budget for fiscal year 1951. Even though the budget estimates had been set up well before the atomic explosion in Russia, Secretary Johnson and General Bradley both defended the $13 billion budget when they appeared before the House Military Appropriations Subcommittee on 12 January 1950. The $13 billion budget had been divided, with $4.018 billion to go to the Army, $3,881 billion to the Navy, and $4.433 billion to the Air Force. Within this budget ceiling, the Army would maintain 10 combat divisions and 48 anti-aircraft artillery battalions--47 of these battalions having been added to the Army program for 1951 to counter the Soviet air threat. By making reductions in force (including limited status for the battleship Missouri), Admiral Forrest P. Sherman, the new Chief of Naval Operations, had obtained concurrence from the Joint Chiefs to operate seven large aircraft carriers, but because of its reduced appropriations the Navy planned to reduce its attack carrier air groups from 14 to 9, its antisubmarine squadrons from 8 to 7, its patrol squadrons from 30 to 20, and its Marine air squadrons from 23 to 12. The Air Force would continue to possess a regular force of 48 groups and 13 separate squadrons, while another 27 groups would be manned by the Air National Guard and 25 by the Air Force Reserve. While these 48 regular groups could not be equipped with modern aircraft, the $1.2 billion allocated for Air Force procurement would permit the Air Force to introduce additional jet fighter aircraft into its inventory and to complete the equipment of three

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of the four heavy bomber wings and the two strategic reconnaissance wings with B-36 aircraft. Even though the $13 billion budget ceiling had been set before the Soviet atomic explosion, Secretary Johnson asserted that the Joint Chiefs had long anticipated such an event and had tailored the forces to such an eventuality. Barring unforeseen changes in the international situation, Johnson volunteered the additional information that the Department of Defense would submit a budget request for another $13 billion in fiscal year 1952. "Frankly, considering the intelligence estimates that we have available, and realizing that the amount of money which our economy can stand for defense is a Presidential responsiblity," General Bradley said, "I am in complete agreement with that ceiling."[56]

Throughout the spring of 1950, President Truman faced the issue of whether the nation should go to the $50 billion military budget that the foreign situation required or adhere to the $13 billion ceilings set in terms of the internal domestic economy. The United States was still in an economic recession: during fiscal year 1950 receipts from taxes continued to decline and there would be a deficit of some $3 billion. In order to triple the military budget the United States would have to increase taxes heavily and to impose various kinds of economic controls.[57] Although Truman postponed decision on NSC-68, Secretary Johnson appeared before a reconvened meeting of the House Military Appropriations Subcommittee on 26 April and requested an additional $350 million for fiscal year 1951. "We want always that our Air Force, and Navy Air, shall be equal to the demand of the world situation. As long as there is doubt on anybody's part, who ought to be competent to judge," Johnson explained, "we shall try to err on the side of safety." Johnson accordingly asked that the additional money should be subdivided with $200 million going to the Air Force for aircraft procurement, $100 million to the Navy for new planes, and $50 million to be expended in converting and operating Navy anti-submarine vessels. Johnson also stated that four squadrons of Marine aircraft slated for inactivation would be continued without additional appropriation.[58] The additional $200 million would permit the Air Force to procure 77 production aircraft (medium bombers and medium and heavy transports), to rehabilitate 228 primary trainer aircraft, and to convert 71 B-29 medium bombers into aerial refueling tankers,[59] but the Air Force received no mandate for expansion. To General Vandenberg (who had allowed General Fairchild to justify the Air Force buget for 1951 and had thus escaped having to endorse limited military expenditures) the gap between requirements for the Air Force and Air Force capabilities was nothing short of tragic. "The simple and appaling fact," he told Air War College students in May 1950, "is that we will not be able to support even 48 groups out of the resources which have been proposed for us for Fiscal Year 1952." In an address in Detroit on 19 May, Vandenberg disagreed in public with Secretary Johnson's contention that U.S. military forces were sufficient and warned that the United States could not expect to mobilize for a

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war after it had absorbed a large-scale air attack. In another public address on 16 June, Vandenberg again disagreed with the administration's policy of limiting and reducing the strength of the Air Force, while at the same time it placed more and more responsibility on it.[60] Even though Vandenberg got on the record in opposition to the limited defense posture prevailing in the spring of 1950, his warnings did not move the administration toward rearmament. In East Asia, however, the Soviets were about to unleash the forces of aggression that would compel the United States to make a complete reappraisal of its military requirements.

3. Strategic Implications of Limited War in Korea

In a statement of American policy toward China on 16 December 1945, President Truman had looked upon the establishment of a strong, united, and democratic China as being of the utmost importance to the success of the United Nations, but he had emphasized that the United States would not employ "military intervention to influence the course of any Chinese internal strife."[61] President Truman would not be willing to deviate from this policy, and thus it would never be known whether the employment of American military forces might have made it possible for Nationalist China to have withstood the Chinese Communist military victory. Some RAND scholars would later argue that the critical problems faced by the Chinese Nationalists were inflation and corruption and a consequent loss of troop morale. These men believed that a relatively small number of American officers and enlisted men could have straightened out the problems of logistics, technical services, and finance for the Chinese Nationalist Army and that this assistance together with American air support and a moderate aid program for the Chinese economy might have prevented the Chinese Communist victory.[62] "The decision to withhold previously pledged American support," General Douglas MacArthur would write, "was one of the greatest mistakes ever made in our history."[63]

Following the withdrawal of American military forces from Korea in June 1949, the mission of General MacArthur's Far East Command was limited to the defense of the geographical region including Japan, the Ryukyus, the Marianas, and the Philippines. In an interview with a newspaper correspondent in Tokyo early in 1949, MacArthur did not include the Republic of Korea within America's defense responsibilities. "Now the Pacific has become an Anglo-Saxon lake," MacArthur was quoted as saying, "and our line of defense runs through the chain of islands fringing the coast of Asia. It starts from the Philippines and continues through the Ryukyu archipelago which includes its broad main bastion, Okinawa. Then it bends back through Japan and the Aleutian Island chain to Alaska." In an apparent effort to clarify a position relative to Formosa, Secretary of State Acheson in a speech before the National Press Club on 12 January 1950 stated that the defensive perimeter of the United States ran from the Aleutians to Japan, then to the Ryukyus, and then to the

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Philippines. Should an attack occur in some area outside this perimeter, Acheson stated that initial reliance for resistance to such an attack would be expected from the people subjected to the attack and "then upon the commitments of the entire civilized world under the charter of the United Nations which so far has not proved a weak reed to lean on by any people who are determined to protect their independence against outside aggression." In explaining this speech, Acheson later maintained that he had said exactly what he meant to say. "Now, I think I said what I tried to say very clearly," he stated, "that the United States had certain points which were a defensive perimeter. At those points United States troops were stationed; there they would stay and there they would fight. In regard to other areas, I said nobody can guarantee that; but what we can say is that if people will stand up and fight for their own independence, their own country, the guaranties under the United Nations have never proved a weak reed before, and they won't in the future."[64]

Although the strategic estimate included in NSC-68 reasoned that the Soviets would not initiate hostilities--not even a small war that might flare into all-out war--until they could stockpile atomic weapons, the Kremlin determined to take advantage of what appeared to be a strategic opportunity in East Asia. The Soviets apparently believed that their puppet forces from North Korea could easily overrun the defenses of the Republic of Korea, without necessitating an overt employment of either Soviet or Chinese Communist forces. Soviet strategy seems to have discounted any serious military response by the United States to an invasion of South Korea, and it evidently did not believe that the United Nations Security Council could muster any effective opposition. The Soviets may have been relatively sure of the latter assessment, because since January 1950, Jacob Malik, the Soviet delegate who could have wielded his country's veto, had been boycotting the Security Council. This assessment of Soviet strategy was arrived at by RAND associate Allen S. Whiting, after a careful study of admittedly fragmentary evidence.[65] As early as February 1951, however, Seversky suggested that Malik's failure to attend the Security Council meetings and to veto initial United Nations actions in Korea might not have been a mistake. "I do not agree," he said, "that the Soviets did not expect us to fight in Korea, or that Malik was away from the Security Council . . . by mistake. It was all done by design, to draw us from the other side of the world and use up as much as possible of our potential, and we just fell right into the trap." Somewhat later, Seversky would also suggest that the Soviets may have opened the hostilities in Korea as a part of a well-concealed plan to encourage orthodox military thinking in the United States and to lead it to prepare "to fight again decisive battles on the ground . . . on Russia's terms and under conditions . . . that favor Russia in every respect."[66]

Whatever the strategy of the Soviet Union may have been, the North Korean armed forces commenced a well-prepared invasion of the

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Republic of Korea in the early morning hours of 25 June 1950. While Soviet forces were not overtly present, General Bradley found it evident that "militant international communism inspired the northern invaders" and that, for the first time, "communism is willing to use arms to gain its ends."[67] The major lesson to the free world was that the Communists would use force to accomplish foreign policy objectives. "The communist aggression in Korea," stated Secretary of Defense George C. Marshall, who assumed direction of the nation's defense effort on 12 September 1950, "marked the beginning of a new military policy for the United States. It left no doubt that the Soviet Government and its satellites were willing to risk a general war by multiple aggression all over the world, unless confronted by substantial military strength."[68] Calling Korea "a very special situation," Secretary Finletter pointed out that the United States was compelled to participate in a peripheral war in Korea, which was not a part of its global strategy, in order to demonstrate its national will and determination to resist aggression. "The western world," he noted, "has a very large periphery which fronts on Soviet Russia. In my opinion, it cannot defend that whole periphery with armed force. The real basic might of the western world, of which the United States is the center, is the capacity and will, if absolutely driven to it, to make war on anybody who attacks."[69]

In the last week of June 1950, President Truman with advice from the National Security Council and the Joint Chiefs of Staff heeded the request of the United Nations Security Council that all member nations "furnish such assistance to the Republic of Korea as may be necessary to repel armed attack and restore international peace and security in the area." In instructions received in Tokyo on 27 June, General MacArthur was authorized to employ air and naval forces in the area south of the 38th parallel in the hope that this support would enable the Republic of Korea Army to rally and withstand aggression. On 30 June the Far East Air Forces and the Naval Forces Far East were empowered to attack military targets in North Korea. Later that day MacArthur was authorized to move ground combat troops from Japan and employ them against the North Korean Peoples Army. In authorizing these responses to the aggression, the Washington authorities approved the requests for conventional actions as they were made by MacArthur. By a fortunate circumstance, moreover, the Communists had launched their local aggression in Korea, which was one of the few spots along the Soviet periphery that was at all close to any concentration of available American military forces. In fact, the presence of U.S. forces in Japan probably had much to do with the nature of the reaction. "The reason why we got involved in this periphery war, which is not a part of our global strategy," Finletter stated, "is that the enemy came down right under our noses, where we had the greatest concentration of American military power outside the United States."[70]

Despite a complete knowledge that the Soviet Union and Communist China were aiding the North Korean armed aggression,

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President Truman was adamant that the conflict would be limited to Korea's borders. "Every decision I made in the Korean conflict," he wrote, "had this one aim in mind: to prevent a third world war and the terrible destruction it would bring to the civilized world. This meant that we should not do anything that would provide the excuse to the Soviets and plunge the free nations into full-scale all-out war."[71] In the early days of the Korean emergency, Truman directed the U.S. Seventh Fleet to isolate Formosa from the Communist mainland, ordered that Far East Air Forces and Naval Forces Far East aircraft would stay well clear of the frontiers of Manchuria and the Soviet Union, and instructed Secretary Johnson to revise a directive which he proposed to send to MacArthur so as to eliminate an implication that the United States might be planning to go to war against the Soviet Union.[72] Secretary Acheson also believed that the Korean hostilities must be limited. "The whole effort of our policy is to prevent war and not have it occur," he stated. "Our allies," he added, "believe this just as much as we believe it, and their immediate danger is much greater than ours because if general war broke out they would be in a most exposed and dangerous position."[73]

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As far as can be determined, the Washington authorities accepted the orthodox surface strategy for handling the local war in Korea presented by General MacArthur during the last week of June 1950 without making any real consideration of the employment of an alternate strategy. At a later date, Lieutenant General Wedemeyer would seriously question the wisdom of these initial decisions. "I think we Americans are surface-minded," he said. "We think in terms of the Army and Navy, and not up in the air with the new weapons that science has given us. I think that punitive action should have been taken with the Navy and with the Air Force, instead of putting ground forces in Korea."[74] When he arrived in the Far East in July 1950 as the commander of FEAF Bomber Command, Major General Emmett O'Donnell was confident that with the five groups of B-29's and with incendiary munitions he possessed a capability of destroying everything of value in North Korea within three months. "It was my intention and hope, not having any instructions," he later recollected, "that we would be able to . . . cash in on our psychological advantage in having gotten into the theater and into the war so fast, by putting a very severe blow on the North Koreans, with an advanced warning . . . telling them that they had gone too far in what we all recognized as being a case of aggression. . . . Tell them to either stop the aggression and get back over the thirty-eighth parallel or they had better have their wives and children and bedrolls to go down with them because there is not going to be anything left up in Korea to return to." After hearing O'Donnel's proposal, Lieutenant General George E. Stratemeyer, the Far East Air

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Forces commander, told O'Donnell that overriding political and diplomatic considerations prevented its acceptance.[75]

In late August and early September 1950 there appears to have been some opinion within the Department of Defense that the United States could find a solution for the Korean war by adopting stronger policies toward the Soviet Union. While the full details of the story were never told, Secretary Johnson was reported to have favored action toward Russia. In a public speech on 25 August Secretary of the Navy Francis Matthews advocated "instituting a war to compel cooperation for peace. . . . We would become the first aggressors for peace." On that same day, General MacArthur sent a statement to a veteran's organization that mentioned misconceptions about the value of Formosa to America's strategic position in the Pacific and stressed that airbases on an unbroken island chain would allow the United States to "dominate with air power every Asiatic port from Vladivostok to Singapore." When he was questioned at the Air War College by a newspaper reporter early in September, Major General Anderson reportedly stated: "We're at war, damn it. I don't advocate the shedding of illusions. Give me the order to do it and I can break up Russia's five A-bomb nests in a week." Acting more discretely inside the administration where he headed the National Security Resources Board, Stuart Symington was said to have advocated immediate action to resolve difficulties with the Soviets, while the United States still possessed a military advantage in atomic air power.[76]

According to General Collins, the Joint Chiefs of Staff were opposed to an air campaign against North Korea's cities both because the United States might have to rebuild them and because they did not wish to spread enmity among the North Korean people. "What we had in mind," he said, "was what actually transpired in the Ukraine. When the Germans went into the Ukraine, there is no question but what if they had used their heads, they might well have gotten a great deal of support from the Ukranian people in their fighting against the Russians."[77] President Truman flatly refused to accept the idea that the United Nations should charge the Soviet Union with full responsibility for the Korean conflict and demand that Moscow put an end to it. Acting on peremptory orders from Truman, General MacArthur attempted without success to recall his statement to the veterans organization. Major General Anderson was immediately suspended as Commandant of the Air War College and subsequently requested retirement. Secretary Johnson resigned as head of the Department of Defense on 12 September. Secretary Matthews, however, remained in office after he explained to Truman that he had heard preventive war talked so much that he had used the phrase in his speech without realizing its full implications to the administration's policy. Symington's suggestion that stronger action be taken on the basis of America's preponderance in atomic air power apparently did not meet the approval of the Joint Chiefs of Staff, at least two of whom reportedly "did not feel that atomic advantage was a sufficient guarantee to deter the Soviets."[78]

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In accordance with the terms of the United Nations Security Council resolution of 27 June 1950 the mission of the United Nations Command forces in Korea during the summer of 1950, as detailed by Secretary Johnson, was "to stabilize, to build up the necessary equipment to go forward, and . . . to go forward to the thirty-eighth parallel."[79] While somewhat hampered at first by the fact that it was equipped and trained for the air defense of Japan rather than for offensive employment, the Far East Air Forces committed most of its Japan-based Fifth Air Force to the Korean conflict. Assisted by carrier-based aircraft from the U.S. Seventh Fleet, the Fifth Air Force easily destroyed the small North Korean Air Force, thus establishing local air superiority over Korea in the opening weeks of the war. In order to permit outnumbered United Nations ground forces to trade space for time and to prevent the North Korean People's Army (NKPA) from overruning all of South Korea, Fifth Air Force and Seventh Fleet fighter-bombers and FEAF Bomber Command B-29's devoted an exceptionally large proportion of their capabilities to the support of the friendly ground troops. In the emergency, air bombardment had to compensate for deficiencies in Army artillery support fire. In these same weeks understrength U.S. Army divisions from Japan were committed piecemeal to the battle front in what seemed at first to be a futile effort to halt the Communist ground offensive. Speaking on 28 July to the question of why tactical air power had not stopped the North Korean ground attack, Secretary Finletter explained: "Tactical air power must be in relationship to Ground Forces. Tactical air power alone cannot win a war--any more than Ground Forces alone could win a war. . . . A force of ground troops is a kind of composite power of ground elements and air elements which support them." If opposing ground armies have capabilities which "are at all even," Finletter postulated, "air superiority will decide the outcome, because the force which has air superiority will ultimately win. However, where there is such gross disproportion as there is and has been in Korea between the ground elements, tactical air superiority of its own cannot win the immediate battle."[80]

In late July 1950, when United Nations ground forces were building a defensive perimeter around the port of Pusan in southern Korea, General MacArthur authorized United Nations Command air units to begin a comprehensive interdiction campaign against the enemy's overextended supply routes. In a six weeks effort begun early in August, the B-29 groups easily smashed such war-supporting industries as were to be found in North Korea. By 15 September, United Nations forces had been built up to a strength that they required to attack northward from the Pusan defense perimeter, and, on that same day, an amphibious landing of a two-division force behind the enemy lines at Inchon was coordinated with the northward drive. "At this time," wrote Major General O. P. Weyland, who had come to Tokyo in July as vice-commander of the Far East Air Forces, "it became

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readily apparent that the air force had done its job well. The NKPA around the Pusan perimeter was nothing more than a skeleton which had been depleted by direct destruction and starved by the interdiction program." In three months of operations under conditions of virtual air supremacy, Far East Air Forces airmen were conservatively credited with having killed some 39,000 enemy personnel and with the destruction of 452 tanks, more than 6,000 vehicles, over 1,300 freight cars, and some 260 locomotives. The number of hostile troops killed by air attack was surprisingly large: the 39,000 figure amounted to about one-third of the ten North Korean divisions which had attacked in June 1950.[81]

In the summer of 1950, the United Nations Command-Far East Command was under instructions to drive forward to the 38th parallel thus clearing the Republic of Korea of invasion forces. In view of the impending United Nations offensive at Inchon, however, the National Security Council recommended a broader interpretation of the United Nations Security Council resolution of 27 June. "We regarded," stated Secretary of Defense Marshall, "that there was no . . . legal prohibition against passing the 38th parallel." Believing that the safety of the Republic of Korea would remain in jeopardy as long as remnants of the North Korean People's Army survived in North Korea, the National Security Council recommended that, if there was no indication or threat of entry of Soviet or Chinese Communist elements into Korea in force during the United Nations offensive, MacArthur should be authorized to extend his operations north of the 38th parallel. President Truman approved this recommendation on 11 September, and, following the recommendations of the United States, the United Nations General Assembly adopted a resolution on 7 October requiring that "all necessary steps be taken to ensure conditions of stability throughout Korea."[82]

Except for a logistical airlift and an airborne operation at Sukchon and Sunchon designed to trap retreating North Koreans, the United Nations ground forces required little air support during October as they drove forward against shattered remnants of the North Korean People's Army. Interdiction and attrition air strikes became less and less effective as Fifth Air Force and Seventh Fleet aircraft sought targets in a progressively narrowing strip of territory between the advancing ground troops and Korea's northern boundary at the Yalu River. Free to build up their forces in the sanctuary north of the Yalu, the Chinese Communists moved air units equipped with Soviet built MIG-15 jet fighters to airfields in Manchuria and began to fly combat sorties south of the international border on 1 November. The next night Chinese Communist ground troops attacked and encircled the advanced elements of an American regiment near the Yalu. When the United Nations ground forces renewed their offensive on 26 November, the Chinese Communists launched a massive counterattack that shattered the United Nations forces and forced them to seek safety in a full-scale retreat from North Korea.[83] General Spaatz subsequently described what had happened: "When our Air and Navy . . . had sufficient area for operations, the force of

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the North Korean Army was finally stopped and we had the Pusan beachhead secure. Then we were able to launch a counterattack. As soon as we pushed forward to the Yalu River and closed up the area that our Navy and Air could operate in, our ground forces were in the impossible position of being met by an onslaught of Chinese Communists with our dominant air and naval power impotent. . . . If the air power could have gotten into play, and gone in to a depth of two or three or four hundred miles back along the line of communication, the condition at the Yalu River might not have obtained."[84]

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At a press conference in Washington on 30 November, President Truman stated that the United States would take whatever steps were necessary to meet the situation in Korea, including the use of "every weapon that we have." The "every weapon" included the atomic bomb. "I don't want to see it used," Truman added. "It is a terrible weapon, and it should not be used on innocent men, women and children who have nothing whatever to do with this military aggression." With conditions worsening, however, MacArthur informed the Joint Chiefs of Staff on 3 December that the United Nations Command was "facing the entire Chinese nation in an undeclared war." He called for "political decisions and strategic plans . . . adequate fully to meet the realities involved."[85] At the moment, the only direction that President Truman and the Joint Chiefs could give to MacArthur was the terse message: "We consider that the preservation of your forces is now the primary consideration."[86]

General MacArthur was not satisfied with this directive. In a message to the Joint Chiefs and in conversations with General Collins in early December, he argued that the United Nations Command should be permitted to bomb military targets in Manchuria. At least one high-ranking air officer agreed with MacArthur. "I was all for the bombing of Manchuria," stated Major General O'Donnell, "and I wanted very badly to do it as soon as we recognized the Chinese Communist forces . . . as bona fide forces. . . . I think we could have gotten in and for a very small cost in casualties we could have really hit them hard and perhaps even stopped them." Explaining his ideas more fully to the Joint Chiefs in a long message on 30 December, MacArthur suggested that an active air and naval campaign be launched against Communist China. "Should a policy determination be reached by our government or through it by the United Nations to recognize the state of war which has been forced upon us by the Chinese authorities and to take retaliatory measures within our capabilities," MacArthur wrote, "we could: (1) blockade the coast of China; (2) destroy through naval gunfire and air bombardment China's industrial capacity to wage war; (3) secure reinforcements from the Nationalist garrison on Formosa to strengthen our position in Korea if we decided to continue the fight for that peninsula; and (4) release existing restrictions upon the Formosan garrison for diversionary action,

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possibly leading to counter-invasion against vulnerable areas of the Chinese mainland."[87]

In a few critical weeks in the winter of 1950-51, the United States made some fundamental decisions regarding the employment of nuclear weapons and about MacArthur's proposal that the limited Korean war should be expanded into a general war in Asia. A number of factors apparently affected the decision on nuclear weapons. A belief that the use of atomic weapons in Korea would result in a beginning of World War III was apparently very strongly held in Europe. President Truman's intimation that the A-bomb might be used in Korea brought Britain's Prime Minister Clement Attlee to Washington for hurried consultations on 4 December. The communique that marked the conclusion of the Truman-Attlee talks noted: "The President stated that it was his hope that world conditions would never call for the use of the atomic bomb. The President told the Prime Minister that it was also his desire to keep the Prime Minister at all times informed of developments which might bring about a change in the situation."[88] In later years, General Frank F. Everest, who had been the Air Force's Assistant Deputy Chief of Staff for Operations in the winter of 1950-51, stated that the original North Korean aggression probably could have been halted by the threat of the employment of the atomic bomb but that "the United States at that time was unwilling to use such a threat and, therefore, possibly increase the dangers of world conflict." Late in 1950 atomic weapons were still configured for strategic rather than tactical applications. Unlike the Soviet Union, which had many targets vulnerable to atomic attack, Communist China appeared to present a limited vulnerability to an air-atomic campaign. The great strength of Communist China was manpower; she was relatively independent of complicated logistical support facilities and was getting most of her weapons from the Soviet Union. According to General Everest, one other factor bore on the situation. In his opinion, the United States had accepted the position that atomic weapons would be used only when the issues to be resolved were vital to the United States. Everest said that these vital interests were not defined, but he was certain that an attack against the North American continent or against the NATO allies would have been vital and would have been met with atomic firepower.[89]

During their conversations in December 1950, Truman and Attlee agreed that the United Nations should avoid a general war with China, primarily because of the threat of a global war. Much of the thinking lying behind this decision became apparent during Senate hearings in May and June 1951. Secretary Acheson believed that air attacks against Communist bases in Manchuria would "increase--and materially increase--the risk of general war in the Far East and general war throughout the world." The Joint Chiefs of Staff opposed the extension of the war to China on military grounds. "It would be militarily foolhardy," they declared on 3 January, "to embark on a course that would require full-scale hostilities against great land armies controlled by the Peking regime, while the heart

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of aggressive Communist power remained untouched." At the Senate hearings, Bradley stated: "Red China is not the powerful nation seeking to dominate the world. Frankly, in the opinion of the Joint Chiefs of Staff, this strategy would involve us in the wrong war, at the wrong place, at the wrong time, and with the wrong enemy."[90]

Believing that the American people needed to know the facts about the nation's air power and the relationship of the Korean War to global Air Force responsibilities, General Vandenberg published an article entitled "The Truth About Our Air Power" on 17 February 1951 and further developed his thought in two days of testimony before the Senate committee which was investigating the military situation in the Far East. As a basic principle, he wrote that air power was indivisible and could not properly be characterized as "strategic," "tactical," or "defensive." "The overriding purpose of every plane, whether it is a bomber or a fighter," he declared, "is to win the air battle on which final victory on land or sea is predicated." In an atomic age the air battle had to be won by an air offensive since no amount of money, however great, could provide static air defense which could "keep out a determined enemy attacking in strength."[91] Looking backward at the nineteenth century, Vandenberg pointed out that the British navy had maintained a world balance of power and had given the world many years of peace. In the twentieth century, air power was the only force that could maintain a world balance of power. With this thought in mind, Vandenberg demonstrated that the Air Force had to be kept continuously balanced against the threat of the Soviet Union. "As the power of the Russian air force increases, and their stockpile of atomic weapons increases," he said, "the job of the United States Air Force becomes roughly doubled. Whereas today it is a deterrent to war, because of its ability to devastate the industrial potential of any great nation on the globe; tomorrow, if the Russian air force has the atomic bombs and the ability to deliver them, we have to have an Air Force that can take the attrition that would be necessary to destroy that air force, and destroy it promptly; and after that, have a sufficient Air Force left to destroy the manufacturing potential of Russia, and do what we call policing action after that, to insure that it was not rebuilt." As he saw it, the Soviets were already reducing the margin of superiority of the Air Force to keep the world's peace. "Today," he said, "we have only one job that we would have to do if we got into a major war with Russia, and that is to lay waste the industrial potential of that country. Tomorrow when they have developed their long-range air force and they have more atomic weapons, we have two jobs. We would have to put into first place the job of destroying the Russian air potential that could utilize atomic bombs, and lay waste the industrial potential."[92]

Turning more specifically to the situation in Korea, Vandenberg believed that the Air Force was the "one thing that has, up to date, kept the Russians from deciding to go to war." But, in view of its global responsibilities, the Air Force was "a shoestring

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air force." If the Air Force were called upon to bomb across the Yalu it could "destroy or lay waste to all of Manchuria and the principal cities of China." In so doing, however, the Air Force would undergo an attrition which "with our start from approximately 40 groups, would fix it so that, should we have to operate in any other area with the full power of the United States Air Forces, we would not be able to." Because of the low rate of military aircraft procurement in the postwar years, the American aviation industry would be "unable until almost 1953 to do much of a job toward supplying the airplanes that we would lose in the war against any major opposition." For these reasons, Vandenberg urged that the Air Force could not sacrifice its deterrent capabilities for the sake of "pecking at the periphery" of Communist power in Manchuria and China.[93]

After outlining his reasons why the air war should not be expanded to Manchuria and China, Vandenberg laid out his view on the way in which an air war ought to be fought. "No successful operations on the surface," he said, "can be conducted until you get air superiority. And when you go against a hostile air force in order to gain that air superiority, you must first destroy the enemy air force at the place where he is most vulnerable, which is on the ground and in his nest. . . . If you don't do that, your attrition mounts in arithmetical progression." After air superiority was attained, Vandenberg declared: "Air power . . . should go to the heart of the industrial centers to become reasonably efficient. . . . In my opinion, the proper way to use air power is initially to stop the flow of supplies and ammunition, guns, equipment of all types, at its source. The next most efficient way is to knock it out along the road before it reaches the front line. The least efficient way is after it gets dug in at the front line. Nevertheless, there are requirements constantly where the utilization of air power in close support is necessary." Because of peculiar circumstances in Korea, Vandenberg demonstrated that the Air Force could not adhere to its doctrine. The war materiel that came to the enemy within Korea originated in the Soviet Union, which could not be attacked. Consequently war materiel had to be destroyed somewhere south of the Yalu, and, as a rule, Vandenberg explained, "the greatest length of road and rail that you can get the enemy from his main source of supply, the more advantageous it is to the Air Force and, therefore, as you decrease it, it become less advantageous. . . . As the distance between the Yalu River and our troops decreases, the effectiveness of our tactical air forces decreases in direct proportion." For these reasons, Vandenberg favored the achievement of a negotiated peace in Korea which would "reestablish the freedom of the South Koreans and . . . push the aggressor back." I believe," he said, "our objective is to kill as many Chinese Communists as is possible without enlarging the war at the present time in Korea. I believe that there are reasonable chances of success in achieving a negotiated peace without endangering that one potential . . . which has kept the peace so far, which is the United States Air Force."[94]

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Even though the Washington leaders sympathized with the apparently desperate condition of the United Nations Command force in Korea, they felt compelled to view Korea in terms of the global defensive situation. Believing that attempts to unify Korea by military means would be to incur an unacceptable risk of an Asiatic or general world war, the Joint Chiefs of Staff recommended that the United Nations should seek a cease-fire in Korea. At the request of the United States, the United Nations General Assembly adopted a resolution on 14 December proposing that immediate steps be taken to end the fighting in Korea and to settle existing issues there by peaceful means. On 9 January 1951, the Joint Chiefs of Staff informed MacArthur that, while the war would continue to be limited to Korea, he would inflict as much damage upon the enemy as possible, subject always to the safety of the forces under his command. "In the worst case it would be important that, if we must withdraw from Korea," Truman told MacArthur on 14 January, "it be told to the world that that course was forced upon us by military necessity and that we shall not accept the result politically or militarily until the aggression has been rectified."[95] Apparently unable to accept the limited objective, General MacArthur was openly critical of the administration policy at intervals during the spring of 1951. On 20 March, he concluded a message to Congressman Joseph W. Martin with a statement of his fundamental belief: "There is no substitute for victory." Convinced that MacArthur did not agree with United States policy in Korea, President Truman relieved him from command on 11 April 1951. Truman explained to the American people that the military objective in Korea was "to repel attack . . . to restore peace . . . to avoid the spread of the conflict."[96]

As seen from the viewpoint of General Weyland, who assumed command of the Far East Air Forces on 10 June 1951, the principal task of the United Nations air forces in the winter of 1950-51 was to prevent the Chinese armies from enveloping the retreating United Nations ground forces. Air interdiction strikes and concentrated close air support retarded the Communist advance, worked heavy destruction on enemy personnel and materiel, and enabled the friendly ground troops to withdraw to defense lines in South Korea. If the Chinese Communist air force had been able to enter combat over the ground battle area the story might have been different, but the Far East Air Forces maintained local air superiority by a combination of combat air patrols and the threat of potential striking power. Rushed into combat in Korea, the F-86 Sabre fighter proved able to overcome Soviet MIG-15 planes in air-to-air combat. "The F-86 saved us in Korea," General Nathan F. Twining stated later. "If we had not had the top day fighter, those MIG's would have come down and ruined us over there, but that day fighter licked them." While United Nations airmen were not permitted to violate the Manchurian sanctuary, Vandenberg secured acceptance of one important proviso to the restriction. In the spring of 1951, the United States delegation

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in the United Nations passed the word that if the Reds launched massed air attacks against United Nations forces in Korea American airmen would destroy the airfields from which such attacks originated. Rather than jeopardize their sanctuary, the Communists attempted to build airfields within North Korea. But each time one of these airfields neared operational status, B-29's successfully neutralized it. The Communist air commander, Weland said, was forced to learn "the basic lesson that an air force cannot be reconstituted or developed in an area where his foe has won air supremacy."[97]

"In a long-term war," Weyland remarked on 28 December 1950, "tactical air power will contribute more to the success of the ground forces and to the over-all mission of a theater air commander through a well-planned interdiction campaign than by any other mission short of the attainment of air supremacy." In times of crisis, the Far East Air Forces provided friendly ground troops with an extraordinarily large amount of close air support. Even the FEAF Bomber Command developed radar-directed night-bombing techniques which permitted its B-29's to rain down proximity-fuzed bombs on Red troops as they prepared to assault friendly ground positions. In the intervals between ground battles, however, United Nations air power was directed against the "middle miles" of the Korean transportation system that supported the Red armies. Constant air attacks against the overextended supply lines drained the Chinese Communist armies of their combat effectiveness. The massive Chinese ground attacks mounted in January and April 1951 failed because of a lack of logistical support. Seeking to exact heavy casualties upon the enemy rather than to defend geographical objectives, United Nations ground troops preserved themselves through maneuver during the Chinese attacks and launched counteroffensives when the Red assaults collapsed. During the period between November 1950 and June 1951, continued air assault against the enemy forward areas and supporting supply routes brought death to an estimated 117,000 enemy troops, destroyed 1,315 gun positions, 296 tanks, and over 80,000 buildings used as troop and supply centers. The enemy's transportation system was crippled by the loss of over 13,000 vehicles, 2,600 freight cars, and 250 locomotives to air attack.[98]

Following the collapse of the vaunted Chinese Communist spring ground offensive, United Nations Command forces drove forward on all fronts in May 1951 to clear the Republic of Korea of hostile invaders. With their forces badly beaten and on the run, the Communists decided to take advantage of the willingness of the United Nations to negotiate a Korean cease-fire. The armistice talks began in Korea on 10 July 1951, and at this time the conflict entered a new phase which ultimately would be concluded by the accomplishment of new undertakings, some of them remote from the Korean battleground. At the Kaesong truce talks, Lieutenant General Nam Il, the senior Red delegate, gave a frank appraisal of the reason why the numerically-superior Communist ground armies had not prevailed in Korea. "Without the support of the indiscriminate bombing and bombardment by your air and naval forces," he said, "your ground forces would have long

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ago been driven out of the Korean peninsula by our powerful and battle-skilled ground forces." At the juncture when the all-out ground battles were ending, Weyland also looked backward and drew lessons. "There is a tendency among many," he said, "to regard all . . . air operations against ground forces merely as support of the Army. . . . Would it not be better to recall that land, sea, and air forces are committed in support of the over-all mission of the theater commander? . . . If we take such a view, it should . . . be less difficult to see that over-all strategy must be geared to the air situation and the capabilities of the friendly air forces as much as to ground forces concepts of maneuver and fire. . . . If the objectives and situation are such that, in order to be successful, air power must be exploited to the fullest, then the ground forces must support the air forces."[99]

4. Rebuilding the Worldwide Air Force

Viewing his service as Secretary of the Air Force in retrospect, Thomas K. Finletter remarked that Korea was the stimulus that broke the log jam of fixed military budgets in 1950, but he also observed that the Korean war "had the unfortunate effect of emphasizing the importance of the weapons and tactics of the past."[100] General Vandenberg, however, saw four principal events as being instrumental in a substantial expansion of the Air Force that took place after 1950. The first was the explosion of an atomic bomb by the Soviet Union in August 1949. The second was the North Korean invasion of South Korea in June 1950, followed by the entry of the Chinese Communist armies into Korea in November, both actions signifying the willingness of the Communists to employ armed might for the achievement of foreign policy objectives. The third was the commitment of United States forces to assist in the defense of Western Europe. And the fourth was the calculation of the Joint Chiefs of Staff that by mid-1954 the Soviet Union would possess a stockpile of atomic weapons sufficient in size to mount a devastating attack against United States military installations, industry, and population centers.[101] Recognizing that the Air Force was on trial in Korea, Vandenberg ordered that every effort be made to give the utmost support to the Far East Air Forces, but the reorganization and build-up of the United States Air Force was nevertheless pointed toward the major threat presented by the growing atomic air power capabilities of the Soviet Union.

Even though it possessed a high level of experience gotten in the global air battles of World War II, the United States Air Force was still a new military organization in June 1950. Thus at the same time that Vandenberg faced the problem of mobilizing larger air striking forces, he also had to speed decision-making capabilities in the Air Staff and to rebuild a comprehensive field organization for the growing Air Force. The headquarters organization, field establishment, and force composition had to be tailored to new strategic concepts, because it was obvious that the strategy of minimum deterrence followed up until 1950 had not prevented

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the outbreak of conflict in Korea. In the House of Representatives, Chairman Vinson was openly apprehensive about Air Force capabilities for air defense and tactical air warfare. In the Senate, Paul Douglas urged that the internal organization of the Air Force ought to be established by law, as had long been the case with the Army and Navy.[102]

Although the Air Force began to reorganize its field commands in the autumn of 1950, it asked for more time to evaluate the global air situation--including Korea--before taking a stand on an Air Force organization act. At the request of Lieutenant General Stratemeyer, Vandenberg sent Colonel Ethelred Sykes, who had been serving as a special assistant to Secretary Finletter, to Tokyo early in August 1950 to analyze the air warfare lessons that were being learned there. Within the headquarters of the Fifth Air Force in Korea, Major General Earle E. Partridge also organized a Tactical Airpower Evaluation (TAPE) section. On 6 October, Lieutenant General Norstad, the Air Force Vice Chief of Staff, initiated an even larger evaluation project. "Regardless of . . . limiting conditions," Norstad said, "we must utilize the Korean experiences for future planning purposes." He sent Major General Glenn O. Barcus and a team of senior officers to Tokyo to make a broad evaluation of the effectiveness of the Air Force in Korea. Believing that there would also be a requirement for an investigation by an informed but impartial civilian, Secretary Finletter sent Dr. Robert L. Stearns, President of the University of Colorado, to the Far East to gather information that would assist him in making policy decisions. Stearns went to the Far East on 19 November, spent about 30 days in observing and gathering data, and returned to Washington, where he completed a study entitled "Korean Evaluation Project: Report on Air Operations," on 16 January 1951. The Barcus group continued to work in the theater until 31 December, and its final report was printed in seven volumes with numerous appendices on 12 March 1951.[103] In February, the Deputy Chief of Staff for Development was designated as the Staff monitoring agent to ensure that Air Staff agencies and field commands took action to meet deficiencies noted in the Stearns and Barcus reports. Following disbandment of the Barcus group, a small Korea Evaluation Group, headed by Colonel Sykes, was established within the Office of the Secretary of the Air Force to serve as a central clearing house for air studies and evaluations of the war.[104] One of the major values of these evaluations was the identification of the special circumstances prevailing in the limited war that would doubtless not be typical of general hostilities.

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In the autum of 1950, while the Air Force was expanding and establishing new field commands, Vandenberg faced the fact that he could not as an individual handle the total direction of an institution as large and complex as the Air Force was becoming, especially since he had to spend at least three days a week with the Joint

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Chiefs of Staff and to devote additional time to the Department of Defense and to Congress. For this reason, he believed that command decisions ought to be made by any one of the officers who served as Chief of Staff, as Vice Chief of Staff, or as a Deputy Chief of Staff. He wanted each Deputy Chief of Staff, in the conduct of business within the field of authority, to act as if he were the Chief of Staff. Each Deputy Chief, however, had to coordinate his actions with the members of the "top command" in order to prevent confusion, and, during the Air Force build-up, the Deputies were frequently so busy in their own offices that they had no means for coordination other than by passing papers through a time-consuming interoffice pipeline.[105]

In an effort to speed the process of making basic policies and decisions, Vandenberg established the Air Force Council on 26 April 1951. At first, only the five Deputy Chiefs of Staff served on the Council, with their senior member acting as Chairman. In July 1951, however, General Nathan F. Twining, who had become Vice Chief of Staff, began to serve as permanent chairman of the Council, whose membership now consisted of the five Deputy Chiefs of Staff and the Inspector General. The Council met each Thursday and acted on an agenda which the members prepared prior to meetings. Vandenberg insisted that the Council members were "wearing the hat of the Chief of Staff" and that they had to "leave the interests of their own particular shops back at their shops."[106] "The Air Council," General LeMay would explain later when he had become Vice Chief of Staff, "is a tool of the Chief of the Air Force, used to make sure that all major decisions that he has to make have been looked at and all the recommendations that have come to him have been looked at by the senior members of his staff."[107]

At the same time that the Air Force Council was formed to expedite the work of the "top command," four other Air Force boards were formed at the directorate level of the Air Staff. The Aircraft and Weapons Board was established on 9 July 1951 to consider the matters that had been formerly handled by the Senior Officers Board. Shortly after this, the Force Estimates Board, the Budget Advisory Board, and the Military Construction Board were established. These directorate-level boards studied problems within their framework of authority and made recommendations to the Air Force Council. Although these four directorate boards and the Air Force Council would continue to be the top deliberative and advisory bodies during the 1950's, the Secretary of the Air Force and the Chief of Staff continued to make the decisions which guided the Air Force.[108] "It should be noted," LeMay pointed out, "that the Air Force Council is not a decision-making body, but it is merely an advisory group to the Chief of Staff."[109]

* * * *

Based upon analysis of the contributions which air power could make to the national defense, the Joint Chiefs of Staff had charged

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the Air Force with responsibility for strategic bombing, the air defense of the United States, and the tactical support of surface forces. "Although those three jobs seemed pegged to different objectives," Vandenberg wrote, "it is impossible to separate them in practice because--and this is a principle ignored too often--air power is indivisible."[110] During the summer and autumn of 1950, the doctrine of the indivisibility of air power was a very real factor as the Air Force reconsidered its responsibilities and reorganized its forces.

Until the summer of 1950 the limited capabilities of the Strategic Air Command were committed to preparing to execute a strategic air campaign against war-supporting targets in the Soviet Union. At this time, however, the Strategic Air Command recognized that its atomic capability was increasing, that it was important to find some new means of defense for Western Europe against Soviet attack, and that the Army and Navy were dissatisfied with the existing air war plan. For this reason, Lieutenant General LeMay submitted a revised war plan, which was additionally revised and approved at higher level on 12 August 1950. Under the new plan the Strategic Air Command would seek to accomplish three specific tasks during a strategic air offensive: destruction of vital elements of the Soviet war-making capability, blunting of the Soviet capability to deliver an atomic offensive, and retardation of Soviet ground advances into Europe. At the time these tasks--subsequently referred to as the "Delta," "Bravo," and "Romeo" missions--were assigned, the Strategic Air Command possessed the nation's only significant nuclear capability, but provision was made in the approved plan for the eventual employment of Navy aircraft in the prosecution of the expanded air offensive.[111] While he accepted the retardation mission, Lieutenant General LeMay was apparently not entirely convinced that the Strategic Air Command should be charged to perform tactical air warfare missions. "If you have to employ strategic air power against tactical targets," he said, "you are not getting the full use of the weapon."[112]

Largely for economy but also because existing fighter aircraft were sufficiently versatile to perform either air defenses or tactical air support, the Air Force had reduced the status of the Air Defense and Tactical Air Commands in December 1948 and had placed them under the Continental Air Command. The reduced status of tactical air was not popular with the Army: thus by June 1949 the Army Field Forces had informed the Tactical Air Command that it was no longer satisfied with the cooperative air-ground establishment visualized in Field Manual 31-35, Air-Ground Operations.[113] In an informal word of advice in May 1950, Representative Vinson told Major General Thomas D. White, the Air Force Director of Legislation and Liaison, that the Air Force would have to meet the Army's requirements for air support for its own protection. He jokingly suggested that the air support mission might have to be given to the Marines if the Air Force did not pay more attention to it.[114] Taking an unusual step which they said was meant to assist rather than criticize, Representatives Vinson and Dewey Short wrote Vandenberg on 2 August

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that the House Committee on Armed Services was "definitely dissatisfied" with progress being made in the development of the nation's radar warning network and had "strong reservations about the efforts of the Air Force to deal with close air support for the Army."[115] In 1950 the Air Force also began to perceive that it would be very difficult to develop an all-purpose fighter which would have the supersonic capabilities needed to intercept and destroy future generations of hostile jet bombers and still have the relatively slow speed and long flight endurance characteristics that the Army felt to be necessary for a close air support aircraft.[116]

Even without the significant technological developments that were impending, the mobilization of additional Army and Air Force units during the autumn of 1950 would probably have forced the Air Force to reestablish a major Tactical Air Command. Moving in this direction, the Continental Air Command, effective on 1 August 1950, assigned the Ninth Air Force (Tactical) together with available fighter-bomber, troop carrier, light bomber, and tactical reconnaissance units to the Tactical Air Command. On 15 November, the Air Force specified that the Tactical Air Command would "provide for Air Force cooperation with land, naval, and/or amphibious forces," and, on 1 December, it made the Tactical Air Command a major command directly responsible to the United States Air Force.[117] Recognizing that the Tactical Air Command would need strong leadership, Vandenberg assigned Lieutenant General John K. Cannon to head it effective on 25 January 1951. In World War II Cannon had commanded the Twelfth Air Force and the Mediterranean Allied Tactical Air Force in Italy.[118]

The vague wording of the Tactical Air Command's mission statement reflected a general uncertainty of Army-Air Force relationships. In 1947, General Collins had agreed with General Eisenhower's concept that the Air Force should furnish tactical air support to the Army. In November 1950, Collins still maintained that the Army had "no intention of attempting to take over the Tactical Air Force, nor to form its own Tactical Air Force," but he informed Vandenberg that the Army was dissatisfied with the coequal status of air and ground forces. He specifically recommended that the Army commanders, down to corps level in some instances, should exercise operational control of close air support units that provided reconnaissance and fire support to ground operations. He also recommended that the Army ought to participate in the determination of requirements for close-support aircraft which, he said, "should be designed primarily for close air support roles, to include types of missions and targets, necessity for all weather operations, reasonable operational endurance, and ability to operate from advance strips in combat zones." Collins stated that tactical air units ought to be provided overseas on a basis of one fighter-bomber group per Army division and two tactical reconnaissance groups per field army.[119] In an article published in December, General Mark W. Clark, chief of the Army Field Forces, emphasized that the Army wanted a close support plane specifically designed for that mission. If the plane required protection

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form hostile fighters, the support plane could be escorted by Air Force high-performance fighters.[120] At a conference of Army and Air Force representatives held in Washington on 7 February 1951 to discuss the development of a light close-support aircraft, Army representatives reportedly made the point that multipurpose tactical fighters were frequently diverted away from close-support operations, whereas a light support aircraft which could do nothing but this mission would always be available when it was needed for air support.[121]

The Army proposals to attach supporting air groups to army units and to develop special close-support aircraft struck at the heart of the Army-Air Force air-ground doctrine that had emerged from World War II. General Cannon thought it significant that the concept of specially-committed air support units had originated in the Central Pacific and had been fostered in Korea under conditions in which the maintenance of air superiority was quite different than it had been in Europe. In the event of a war with the Soviet Union, Cannon urged that all available aircraft would be initially committed to gaining and maintaining friendly air superiority; he accordingly objected to the development and procurement of light close-support aircraft which would be too vulnerable to participate in an air war. "It appears infinitely wiser to direct our efforts toward removing present obstacles to the accomplishment of the missions of tactical air by aircraft types which are inherently capable of such accomplishment," he said, "than to design aircraft of reduced utility and performance in order to accept basic inadequacies."[122] Cannon also insisted that the Army's proposal to allocate aircraft to the support of divisions was counter to the principles of concentration of force and centralization of control.[123] Brigadier General Homer L. Sanders, Deputy Chief of Staff for Operations of the Tactical Air Command, pointed out that more than 100 close-support groups would have been needed in Western Europe during 1944-45 to have supported Army divisions on a one-for-one basis. The cost or such a tactical air force would have been prohibitive, and, at any rate, this tremendous establishment had not been needed because the flexibility in control in the air support system had permitted a rapid concentration of any number of aircraft at a given point in accordance with the needs of local situations.[124] In an article published in an Army service journal in May 1951, Colonel Francis C. Gideon, Air Force member of the Joint Strategic Plans Group, summarized Air Force thinking on the command of tactical aviation. "If air power were nothing more than flying artillery or jet-propelled cavalry," he wrote, "it would properly be placed under the command of the ground forces. But air power, of which the forces designed for close combat support of ground operations are a part, is more than this. Air power is the sum of the means necessary to dominate the air. Viewed in this light, the reasons for establishing an integrated Air Force are logical and wise; its integrity must be guaranteed."[125]

From the beginning of the controversy, Secretary Finletter and General Vandenberg assumed that resolution of such a highly complex

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question as the command and control of tactical aviation ought to be handled by military men rather than by the Department of Defense or Congress. General Collins was also willing to hear the Air Force positions on the subject, and, on 21 March 1951, he sent Vandenberg a readjustment of his original position. He recognized that centralized control of tactical air units under a senior Air Force commander might be necessary in a war against an enemy nation that had a great superiority of air power, but he wanted this senior air commander to allocate air groups to the support of field armies if the tactical situation permitted. Once air groups were so allocated to the support of an army, or an independent corps, the responsible Army commanders should be able to exercise operational control over them.[126] At this juncture, Secretary of the Army Frank Pace and General Collins agreed in a conversation with Finletter that the idea of a separate tactical close-support air force, with specially-designed close-support aircraft, ought to be laid aside until such time as the Air Force could build up tactical air forces capable of performing the multiple functions of tactical air power.[127] While the matter would be postponed, General Clark had changed none of his thinking. "I consider that the traditional Air Force doctrine, which provides for co-equal command status between ground and air at all but theater levels," Clark wrote Collins, "constitutes a fundamental defect in command relationship. This doctrine of command by mutual cooperation is unacceptable because it reserves to the supporting arm the authority to determine whether or not a supporting task should be executed. The theory of divided command in the face of the enemy is foreign to the basic concept of warfare wherein the responsible commander exercises undisputed directive authority over all elements essential to the accomplishment of his missions."[128]

At the same time that the Air Force leaders were discussing air-ground relationships, they had to make decisions as to the relationship between the Tactical Air Command and the Strategic Air Command. While the Tactical Air Command formed a Special Weapons Branch in its headquarters as soon as it learned that the development of atomic weapons that could be delivered by tactical aircraft was feasible, the assignment of the retardation mission to the Strategic Air Command in August 1950 beclouded the prospects of an atomic mission for the Tactical Air Command. Purely for test and development purposes, the Air Force permitted the modification of nine B-45's and seven F-84E's for atomic delivery and assigned them to the Tactical Air Command's 84th Bombardment Squadron (Light).[129] Early in 1951 a build-up of Soviet tactical air forces in Europe lent urgency to the reinforcement of air units in that theater. On 21 January, the United States Air Force in Europe was made a separate command under the Joint Chiefs of Staff, and it activated the Twelfth Air Force in Germany to serve as the tactical air arm for NATO ground forces and the Third Air Force to exercise area command in the United Kingdom. The Strategic Air Command activated the 5th Air Division to command its units which would be deployed to bases being built in French Morocco and the 7th Air Division to command strategic air units in Great Britain.[130] At

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about this same time the Joint Chiefs of Staff made an allocation of atomic weapons to the defense of western Europe.

As soon as atomic weapons were allocated to the defense of Europe, Lieutenant General Cannon informed the Air Force that the tactical air force ought to be charged to employ them. "A tactical fighter-bomber unit capable of delivering atomic weapons," he wrote in February 1951, "promises to be one of the most devastating striking forces that will be available to the military establishment." His position soon became quite clear. "I personally consider it extremely important," he said, "to have the strategic air forces tend to their own knitting, keep their minds on their own jobs and not be diverted from their primary mission." Cannon thought that the mission of strategic air forces was to effect the progressive destruction and disintegration of an enemy nation's morale and war-making capacity. At the outset of hostilities with the Soveit Union, he expected that the strategic air forces would be needed to assist the tactical air forces to attain air superiority and to interdict the advance of Soviet ground troops, but he maintained that such diversions ought to be as moderate as possible.[131] In the Air Staff, officers who were looking for a means of augmenting theater air power in Europe before the spring of 1952 apparently looked with some favor on Cannon's thinking. In the Office of Assistant for Atomic Energy, Colonel John D. Stevenson authored a plan looking toward the establishment of a tactical air division in the United Kingdom which would be equipped with atomic-capable B-45 and F-84 aircraft. Given authorization from the Joint Chiefs of Staff, the Air Force in July 1951 directed the necessary modification of aircraft and ordered the Tactical Air Command to organize the atomic air division. While they so decided that an atomic-capable tactical air division would be fielded, the Joint Chiefs did not relieve the Strategic Air Command of its retardation mission, and the Air Force did not commit itself to provide a follow-on tactical bomber replacement for the old B-45. "It is my considered opinion," Cannon continued to insist, "that any planning basis that relies in the main upon the diversion of strategic air effort to tactical targets is inappropriate. Strategic air power must be conserved for its primary mission and tactical air must possess integral forces appropriate and adequate to its needs."[132]

During the winter of 1950-51, the Air Force gave a good amount of attention to proposals for a reorganization of military air transport and troop carrier aviation. During April and May 1950 during maneuvers in North Carolina called "Exercise Swarmer" troop carrier and military air transport elements were combined together in a provisional air transport force that proved able to drop paratroopers to seize an airhead, to expand the airhead by the landing of transports with reinforcements, and to maintain resupply of troops surrounded by hostile forces.[133] Sent to Japan to take charge of theater airlift in September 1950, Major General Tunner organized available troop carrier and military air transport units together in the FEAF Combat Cargo Command (Provisional). Citing good experience with this organization, which could handle airborne operations and

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air-delivered supplies, Tunner proposed on 26 December 1950 that in the interest of both economy and efficiency the Air Force ought to unify all of its air transport organizations.[134] In October 1950, the Army Field Forces were reported to oppose any move to remove troop carrier aviation from the tactical air forces and to place it in a consolidated air transport command,[135] and Lieutenant General Cannon also proved to be strongly opposed to such a move. "Troop carrier units," Cannon insisted, "are combat units. The aircraft used by these units are weapons of war, just as are fighter-bombers, submarines, and tanks; therefore, troop carrier aviation is tactical aviation, and tactical aviation only. Any proposal to merge troop carrier and all air transport units into one air transport organization is basically in error in that it combines combat functions with service functions."[136]

Although the Air Force seriously considered the prospects for consolidating air transport and troop carrier aviation, final decisions allowed troop carrier to remain under the Tactical Air Command and military air transport under the Military Air Transport Service. Effective on 28 March 1951, the Tactical Air Command accordingly organized the Eighteenth Air Force to take over the training of all troop carrier wings in the zone of interior.[137] While no change was made in basic organization, the experience of the Korean hostilities was such as to cause both the Army and Air Force to accord great importance to transport aviation. General Collins seldom made a speech without referring to the importance of airborne operations and of making the Army as air transportable as possible.[138] General Vandenberg pointed out that the Air Force was forced to pre-stock critical supplies in overseas areas, a practice that not only was very expensive but also committed the striking forces to operate from bases which might be denied to them at the outset of a war. "Airlift on the scale we visualize," Vandenberg said, "would make it possible to move logistic support with and as the bombers move. If the bombers are forced to divert to alternate bases, the logistic support would likewise be diverted. Without this type support the strategic bombing force is neither truly strategic nor potent. To have truly strategic striking forces, logistics must be as strategically mobile and flexible as the forces it supports."[139] And even though the Air Force decision had gone against him, General Tunner continued to insist that air transport capabilities should be consolidated into one operating command. "Air transport today," he wrote in the autumn of 1952, "is scattered among many commands of the Air Force as well as the Navy and Marine Corps, all of whom do not have the same standards of utilization and priority urgency for their use. I feel the consolidation of these aircraft into a single command is the most efficient way to do this job. This single command would be charged with the responsibility for airlift according to the urgency of the requirements of all the armed services--in other words, the first needs of the nation."[140]

In its roles and missions, the Air Force was charged to provide an air defense of the United States, but such an air defense required

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the integration of the Army's antiaircraft artillery battalions and the Air Force's interceptor groups into one operational organization. In the course of a long dispute the Army Ground Forces had proposed in 1946 that the air defense mission actually ought to be diverted with the antiaircraft artillery to be responsible for the air defense of local areas and the fighters to provide air defense beyond the range of the ground weapons. In 1949 the Air Force stated the doctrinal position that antiaircraft artillery battalions should be placed under the operational control of the Air Defense Command.[141] Until the spring of 1950 these disputes remained academic, since the Army meant to mobilize antiaircraft battalions from the National Guard and the Air Force intended to mobilize fighter interceptor groups from the Air National Guard, both actions to take effect in some future emergency. Following the Soviet atomic explosion, the Air Force stated immediate requirements for the establishment of an operational air defense system in the United States and Alaska by 1952, and the Army, which now budgeted for 48 regular antiaircraft artillery battalions, established an Army Antiaircraft Command to assume responsibilities for field air defense matters including air defense planning. In a memorandum of agreement signed on 1 August 1950, Generals Vandenberg and Collins decided between themselves that targets to be defended would be decided upon jointly by the Departments of Army and Air Force, that the location of local antiaircraft artillery defenses would be "prescribed geographically" by similar agreements, and that Air Force air defense commanders would exercise operational control over antiaircraft artillery "insofar as engagement and disengagement of fire is concerned."[142]

The agreement between Vandenberg and Collins cleared the way for the integration of antiaircraft artillery into the growing air defense system, but it did not provide an over-all air defense organization. In the latter half of 1950, the Continental Air Command, even though it was hard pressed to handle its multitude of duties, remained responsible for air defense matters. Seeking relief from overwork, Lieutenant General Ennis C. Whitehead, the commander of the Continental Air Command, urged the Air Force to establish a separate air personnel command to handle the mobilization of Air National Guard and Air Reserve units into the federal service and to allow the Continental Air Command to continue to be responsible for tactical air and air defense. Instead of accepting this proposal, the Air Force made the initial decision to separate the Tactical Air Command, and, inasmuch as common fighter units would no longer be available for both air defense and tactical air employments, the Air Force made the additional decision announced on 10 November 1950 to separate the Air Defense Command from the Continental Air Command. At this time, the Continental Air Command remained responsible for Air Reserve and Air National Guard affairs. Lieutenant General Whitehead accordingly relinquished his old command and moved to Colorado Springs, Colorado, where he assumed direction of the Air Defense Command on 1 January 1951.[143]

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At its reestablishment as a major command, the Air Defense Command was assigned the Eastern and Western Air Defense Forces, together with the eight fighter-interceptor wings that had been assigned to the Continental Air Command. In order to spread the heavy burden borne by the two air defense forces, the Air Defense Command established a Central Air Defense Force on 1 March 1951. Operating in coordination with the Air Defense Command, the Army Antiaircraft Command established its headquarters in Colorado Springs and established Eastern, Western, and Central Army Antiaircraft Commands adjacent to the respective air defense forces. Antiaircraft artillery brigades, groups, battalions, and batteries moved into the air defense system to complement the air divisions, defense wings, groups, and squadrons of the Air Defense Command.[144] Rounding out the defense organization, the Air Defense Command negotiated agreements with the Tactical Air Command and the Strategic Air Command during April and May 1951 whereby the forces of these organizations might be used for emergency air defense missions.[145] Even though a command organization for continental air defense had been established, Vandenberg felt it necessary on 23 April 1951 to warn that 70 percent of the hostile aircraft which might attack the United States would probably get through to their targets. "There has never been in the history of air warfare," he said, "anyone who has been able to maintain as high a percentage as 30 percent destroyed. In other words, 30 percent has never yet been attained. In fact I think the greatest percentage--this is over a period of time--that has ever been attained is 8 percent."[146]

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Because of the general language of the National Security Act of 1947, the Air Force was able to generate much of its own internal organization. Air Force leaders felt that this was advantageous for an essentially new service, but there was a disadvantage in that the Air Force had no specific authorization for its strength and was also bound by the old laws which provided that Army appropriations could not be carried over for longer than two years before being expended. In Congressional hearings during 1949, Secretary Symington and General Vandenberg accordingly supported the Army and Air Force authorization legislation, which was designed to create a legal framework for the Army and the Air Force with regard to their military strength, their basic composition, and their appropriation authority. As enacted on 10 July 1950, the Army and Air Force Authorization Act established the strength of the Regular Air Force at 70 groups and 22 separate squadrons and allocated an additional 61 groups to the combined Air National Guard and Air Force Reserve. The act provided that funds appropriated to the Air Force for the procurement of technical military equipment and supplies, the construction of public works, and for research and development should remain available until expended unless otherwise provided.[147]

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Satisfied with the Army and Air Force Authorization Act, Air Force leaders were in no hurry to see the enactment of more detailed organizational legislation. "My own view," explained Secretary Finletter on 10 January 1951, "was that it was better to let the Air Force evolve for a further period of time, and to establish its ways of doing things, especially during such a dynamic time as the present, and then to codify." In the House Military Affairs Committee, however, Chairman Vinson believed that "we should try to run an establishment by law, by statute as much as possible and not entirely by the whims and views of any one individual, because individuals come and go." When the Air Force did not offer recommended legislation, Representative Paul J. Kilday's subcommittee of the Committee on Armed Services drafted a bill designated as the Air Force Organization Act of 1951. This draft measure was generally descriptive of the existing Air Force organization, but it provided that the Chief of Staff "shall have supervision of all members and organizations of the Air Force," that the major commands would be the Continental Air Command, Strategic Air Command, Tactical Air Command, Air Materiel Command, and European Support Command, and that there would be statutory positions for an Air Adjutant General, an Inspector General, and a Provost Marshal General. The bill provided that the Army's Surgeon General and the Navy's Medical Department would serve the Air Force, and that the Army's Quartermaster General, Chief of Engineers, Judge Advocate General, and Chief of Chaplains would be charged with functions and duties for the Department of the Air Force.[148]

When the House Committee on Armed Services began hearings regarding the Air Force Organization Act on 10 January 1951, Finletter stated that the Air Force ought to be permitted to attain more experience before its internal establishment was codified but that, out of deference to Vinson, he and Vandenberg would not oppose the legislation provided that it could be amended to remove restrictive provisions. Both Finletter and Vandenberg insisted that, under the direction of the Secretary of the Air Force, the Chief of Staff should command rather than "supervise" the Air Force. The National Security Act of 1947 had authorized the Chief of Staff to "command" the Air Force, and, while Vandenberg was willing to "supervise" the support activities of the Air Force, he maintained that it was essential that he retain command over the strategic air force and the air defense force. "When we are dealing with things like the type of explosives we have today, and . . . because half an hour may make the difference between the destruction of something and the saving of it based on information that Washington may have . . .," he explained, "I want to have clear command." Finletter and Vandenberg also opposed the legislative creation of Adjutant General, Inspector General, and other specialized corps within the Air Force. "Rather than having badges and differentiations," he said, "what we are trying to get in the Air Force is one unified command without distinctions." Finletter was willing to accept a unified medical service, but he maintained that the Air Force could not depend upon other services to provide

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medical, quartermaster, engineer, judge advocate, and chaplain support. "The Air Force," he announced, "will not support something which singles out the Air Force and makes it a second-grade establishment." Believing that the legislation should not be so specific as to restrict organizational development, Finletter suggested that it should establish the Air Defense Command, the Strategic Air Command, the Tactical Air Command, the Air Materiel Command, and one other oversea command as might be directed established by the President, each command to be headed by a commander in the grade of general.[149]

Despite frequent meetings Air Force leaders were not able to persuade the House Committee on Armed Services to accept the principle that the Chief of Staff should command the Air Force. The Committee recognized that the Chief of Naval Operations commanded the nation's operational fleets, but it preferred the Army system wherein "the Army has for forty-some-odd years felt the Chief of Staff should act more or less as a coordinator or director of the Army Staff." Vinson was more than a little distrusting of the wide latitude which the Secretary of Air Force wanted in order to organize the Air Force, but the Committee ultimately agreed not to recommend the legislative establishment of special corps and offices within the Air Force, while the Air Force agreed to accept a stipulation that established an Air Staff, comprising the Chief and five Deputy Chiefs of Staff. The Committee also agreed to establish the Air Defense Command, the Strategic Air Command, and the Tactical Air Command by law, leaving additional commands to be established by the Secretary of the Air Force.[150]

The amended Air Force Organization measure passed by the House of Representatives on 24 January 1951 was generally acceptable to the Air Force, except that it specified that the Chief of Staff would "supervise" rather than "command." In an appearance on 23 April, Finletter asked a subcommittee of the Senate Committee on Armed Services to accept the command concept. He argued that the Air Force Chief of Staff could not act independently of the constitutional powers of the President or of the statutory authority of the Secretary and that "the word 'command' is the more proper one to define the relationship of the Chief of Staff to the Air Force, especially to the fighting commands of the Air Force." Both Finletter and Vandenberg spoke of their desire to have "a homogenous family in the Air Force" and accordingly opposed the legal establishment of a Judge Advocate General--the only special corps authorization that had not been removed from the House bill.[151]

When it passed its version of the Air Force Organization Act on 21 June 1951, the Senate accepted the concept that the Chief of Staff should command the Air Force. As a result the legislation went to a conference committee which prepared a measure that was enacted as the Air Force Organization Act of 1951 and was signed by President Truman on 19 September. This act specified that the Air Force Chief of Staff, under the direction of the Secretary of the Air Force, should exercise command over the Air Defense Command, the Strategic Air

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Command, the Tactical Air Command, and such other major establishments as might be created in a war or national emergency to supersede one of the enumerated major commands. The Chief of Staff would supervise other portions of the Air Force. Apparently because of a high degree of importance attached to the military justice function, the act provided for the appointment of an Air Force Judge Advocate General by the President for a four year term. Based upon a Senate amendment, the act also provided that the Secretary of the Air Force would charge the Under Secretary or an Assistant Secretary to supervise all activities of the reserve components of the Air Force. The Air Force was generally satisfied with the Air Force Organization Act, but there were reports that some commands which had not been recognized as "major" commands did not like the implication that they must be "minor" commands. The Tactical Air Command viewed the act as a "milestone" in its struggle for status and recognition. Representative Vinson also commented that the organization act would obviously result in greater emphasis being placed on the tactical air mission within the Air Force.[152]

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In the same months of 1950 and 1951 that the Air Force was reorganizing to meet worldwide commitments, Secretary Finletter and General Vandenberg confronted the problem of expanding its strength. Based generally upon the requirements noted in NSC-68, the expansion of the Air Force was initially undertaken in context with the expansion of all of the military services. Early in July 1950 the Joint Chiefs of Staff approved force compositions thought necessary to support the additional requirements of the Korean fighting and to commence a limited augmentation of American armed forces, and on 24 July President Truman offered a supplemental estimate of appropriations required for this purpose. As enacted on 27 September, the First Supplemental Appropriation Act of 1951 made $11.7 billion available to the Department of Defense in addition to the $13.3 billion carried in the Defense Appropriation Act of 1951. Finletter estimated that only about $4.5 billion of the supplemental appropriation was designed to cover the current costs of Korean war and that the remainder was to provide "basic build-up." For the Air Force, the supplemental appropriation included the costs of an expansion from 48 to 58 wings, or the addition of 10 tactical air wings which were mobilized from the Air National Guard and the Air Force Reserve during the summer of 1950. For the Navy the supplemental appropriation permitted the operation of three additional attack carrier groups, three antisubmarine carrier groups, and seven patrol squadrons and the operation of nine attack and ten escort aircraft carriers.[153]

In its postwar planning the Air Force had emphasized a requirement for a minimum peacetime strength of 70 groups and 22 separate squadrons. This objective had been stated at a time when Russia did not have an atomic bomb and possessed very little air power. During

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July and August 1950 it was obvious to air planners that 58 wings or even 70 wings would be insufficient to the tasks confronting the United States. Studies as to requirements within the Air Force finally firmed up at a figure of 163 wings--138 combat and 25 troop carrier--but Air Force planners feared that a request for such an authorization would be rejected out of hand as the product of "air power extremists." In August 1950, Vandenberg accordingly stated a requirement to the Joint Chiefs for the augmentation of the Air Force to a strength of 130 wings--114 combat and 16 troop carrier. Acting at the time of the initial United Nations reverses in Korea, the Joint Chiefs on 1 September 1950 approved a build-up of the Air Force to a strength of 95 wings--80 combat and 15 troop carrier--by 30 June 1954. In the emergency created by the entry of the Chinese Communists into the Korean war, the National Security Council on 14 December recommended that the Air Force attain a strength of 87 wings by 30 June 1951 and 95 wings by one year later. The Council also directed the establishment of an expanded military production capacity which would considerably reduce the time required for a full mobilization of military forces. To cover the additional costs of the Korean war and the expansion of military forces during the balance of fiscal year 1951 funds in the amount of $16.8 billions were approved in the Second Supplemental Appropriation Act of 1951 on 6 January 1951. In the Fourth Supplemental Appropriation Act of 1951 which became law on 31 May 1951, Congress voted the Department of Defense an additional $6.4 billion to cover deficiencies in the pay and support of the increased forces. This appropriation brought the total amount appropriated to the Department of Defense for fiscal year 1951 to $48.2 billion.[154]

In the summer of 1950 both the Air Force and the Navy recognized that the aircraft industries of the United States were in a very critical position because of the limited orders for military aircraft that had been placed in the late 1940's. In August 1950, Admiral Forrest P. Sherman, Chief of Naval Operations, stated that he felt strongly that the requirement for a greatly augmented production of military aircraft was even greater than it had been in early May 1940 when the United States had markedly increased aircraft production to meet the needs of an impending World War II.[155] Under Secretary of the Air Force John A. McCone also explained that the Air Force wanted an immediate increase in aircraft production: "The Air Force policy," he said, "has been to build up to maximum acceleration irrespective of the fact that by so doing we could look forward to the time when, in the absence of a further appropriation, production would drop off very precipitately."[156] Quickly implementing the National Security Council's directive to establish a military production capacity that would considerably reduce the time required for full mobilization if a decision was made to do so late in 1951, Secretary of Defense Marshall issued orders on 18 December that the Department of Defense would follow an extraordinarily wide-base procurement policy. Marshall specifically directed that contracts were to be spread across industry as widely as possible; that additional

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contractors were to be used whenever time permitted, instead of extra-shift or overtime operations; that open industrial capacity would be used to the maximum before the expansion of facilities was authorized; and that prime contractors were to be encouraged and if necessary required to subcontract in order that the fullest use would be made of small business.[157]

Given the acceptance of this broad-base production concept, which would permit a potential doubling of production in an emergency, the Air Force could agree to the maintenance of a relatively low strength of 95 wings.[158] "An Air Force of 95 wings," Vandenberg nevertheless warned, "cannot be considered sufficient to win a major war by defeating superior strength both in the air and on the ground. A force of this size is intended primarily as a deterrent. It is is hoped also that such a force might be able to stave off defeat if the enemy should decide to risk the consequences of all-out warfare."[159] Finletter also supported the 95-wing program, but only as a "Prevention of Disaster" force.[160] Despite these misgivings, the 95-wing program called for the establishment and modernization of 95 Air Force wings, 34 separate squadrons, 30 military air transport squadrons, and 11 Air National Guard wings, plus the provision of a war reserve of 3,578 modern aircraft.[161] As finally programmed, the composition of the 95-wing objective included 4 heavy bombardment, 22 medium bombardment, 3 fighter escort, 3 heavy strategic reconnaissance, and 5 medium strategic reconnaissance wings for the Strategic Air Command; 20 wings of fighter interceptors for the Air Defense Command and theater air forces; and 4 light bombardment, 15 fighter-bomber, 4 tactical reconnaissance, 3 heavy troop carrier, and 12 medium troop carrier wings for the Tactical Air Command and theater air forces. The initial thrust toward attainment of the 95-wing strength came from the mobilization of reserve units; by the end of May 1951 all Air Force Reserve wings--20 troop carrier and 5 light bombardment--had entered the federal service, as had 22 Air National Guard wings--17 fighter, 3 light bombardment, and 2 tactical reconnaissance wings. Many of the Air Reserve wings were incompletely manned: only 13 of them could be retained as units and the other 12 had to be broken up for fillers and replacements. One of the 22 Air National Guard wings ordered into active service was converted into a light-bombardment combat crew training school.[162] In his specific comment regarding the allocation of units under the 95-wing program, Vandenberg was most dissatisfied with the air defense allocations. "The fighters that we have now," he said, "are spread very thinly and there are many holes. In the 95-group program, the provision for defense will still be, in my opinion, inadequate."[163] In order to bulwark continental air defense, the 95-wing planning called for the rebuilding of 11 Air National Guard wings and their equipment with jet fighter interceptors.[164]

In comparison with fiscal year 1950 when only 1,246 aircraft had been authorized for its procurement, the Air Force's expanded aircraft procurement funds of fiscal year 1951 permitted it to place orders for 8,578 planes. Included were 44 B-36H's and 39 RB-36H's,

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532 B-47's and 52 RB-47's, 3,993 jet fighters, 130 RF-84F tactical reconnaissance planes, 222 amphibian search and rescue SA-16A's, 231 KC-97 tankers, 656 cargo aircraft, 2,373 trainers, 182 helicopters, and 111 liaison aircraft.[165] While the procurement program was greatly expanded, the Air Force had not been able to lay down a single new basic aircraft design since 1947 and the fiscal year 1951 procurements did not represent any substantial increases in the state of the aeronautical art. The B-47 jet bombers, ordered in substantial quantities as successors to B-29's, could cruise at 500 miles an hour, but their limited combat range would force them to operate from oversea bases.

The interceptor fighters that were procured in quantity--the F-89, F-86D, and the F-94--were designed to counter a Soviet TU-4 capability that probably would not be a major threat after 1954. The only long-range escort fighter that could be provided to the Strategic Air Command was the F-84F which would have in-flight refueling capabilities. Because of a pressing requirement for fighter-bombers in the autumn of 1951, moreover, most of the Strategic Air Command's fighter-escort wings were reassigned to the Tactical Air Command.[166]

During Fiscal year 1951 the Joint Chiefs of Staff were no longer limited by a dollar budgetary ceiling given to them in advance, but, as Finletter pointed out, "as the Air Force went from 48 wings to 95, the number of Army divisions and of Navy warships went up apace. The Division-by-Services method continued to rule."[167] In June 1950, the Army possessed 10 divisions, but during fiscal year 1951 it was authorized to expand to 18 divisions and separate combat elements equivalent to 6 additional divisions. The augmentation of the Army reflected war requirements in Korea, but on 9 September 1950 President Truman announced that the Army would send four divisions to Europe to bolster the two divisions that were already assigned to the North Atlantic Treaty Organization.[168] In fiscal year 1951, the Navy increased its operating force of large carriers from 7 to 12 and its force of light and escort carriers from 8 to 15. This immediate increase returned reserve fleet units to active service, but, in recognition that converted World War II carriers could not well accommodate the heavier aircraft that the Navy was developing, Congress authorized the construction of a 57,000-ton aircraft carrier which would serve as a prototype for future development. The Marine Corps also increased to a strength of two and one-third divisions and two air wings.[169]

* * * *

In discussing the Department of Defense build-up, Secretary Finletter was convinced that "the time is past when we can any longer go on with the idea that if one service gets something the other services must get, roughly speaking, a like amount."[170] The Air Force could accept the 95-wing program only because it included a broadening of the nation's industrial base to support a future

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all-out mobilization. "We believe," Finletter explained, "that we cannot afford now to build up a standing military establishment which will be able to fight the war through. We believe that any such military establishment would run into fantastic sums of money which would be a drain on the economy which the country should not be asked to bear."[171] Although Finletter and Vandenberg both believed that the Air Force's strength should be increased to something on the order of 138 to 140 wings, they agreed to accept a force objective of 95 wings during fiscal year 1952, and the National Defense budget submitted to Congress early in 1951 called for an expenditure of $60.7 billion, to be subdivided at $20.8 billion for the Army, $15.1 billion for the Navy, and $19.8 billion for the Air Force, plus additional amounts for military construction.[172] While Finletter and Vandenberg were willing to agree with administration policy, they were subjected to heavy pressure from forces outside the Air Force to come out in favor of large increases in air capabilities.

Alarmed by President Truman's intention of committing six American divisions to the North Atlantic Treaty Organization and favoring a build-up of the Air Force for the defense of Europe rather than the employment of ground forces, Senator Kenneth S. Wherry introduced a resolution calling upon the Senate's Armed Services and Foreign Relations Committees to report whether the Senate ought not to adopt a policy on the movement of ground troops to Europe. Joint hearings conducted by the two committees during February 1951 turned into an examination of the nation's strategy and particularly the contributions that air power could make to the defense of NATO. In common with the other members of the Joint Chiefs, Vandenberg supported the administration's plan to augment the NATO surface forces. "If we do have a strong strategic air arm," he explained, "we would be able to knock out the industrial potential of an enemy country. The effect of that would take some time. In other words, down on the front lines, where there have been stockpiles of ammunition, food, gasoline, transportation, in the short distance that we are viewing in Western Europe I am of the opinion that without a delaying force it would be possible to move to the coast in spite of the fact that we did or were able to knock out an industrial potential. . . . The greatest effect, in my opinion, from that strategic effort would be if we had a force in place that was adequate to insure that they used up their stockpile of equipment and held them so that Western Europe could be saved from being overrun."[173]

In an interview in January 1951, Seversky was in favor of giving all possible assistance to permit European nations to rearm, but he wished to insure that European rearmament would be orderly. "Russia will not sit passively by and tolerate our building a European army that eventually will be able to challenge it," he said. "Russia will nip that undertaking in the bud, unless we find means of deterring Russia while the reconstruction of European strength is going on. Only American long range air power which has the vitality

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to denude Russia of its sinews of war, operating directly from the United States and partially from Great Britain, from bases inaccessible to Russian armies, can deter Russia from interfering with the rearmament of Europe." Seversky noted: "Our present Strategic Air Force is well conceived, well manned and well led, but it is only a token force. The Strategic Air Force will not be able to destroy the Russian industrial complex until it destroys the Russian Air Force and wins command of the air."[174] Writing in April, General Spaatz called upon the United States to provide the minimum divisions required to give Western Europe the courage to build up its strength, but he decried the acceptance of the "wall of flesh strategy" which he said was "the prevailing philosophy in Washington today." Spaatz stated that the Soviet Union had built up a ten-to-one superiority in jet fighters over the United States. "While we pursue the wall of flesh philosophy," he said, "we are losing the first and crucial battle in any possible war with Russia--the battle for command of the air."[175]

Many Republican senators opposed the commitment of American ground forces to the defense of Europe, but on 3 April 1951 Senator Henry Cabot Lodge, Jr. led a bipartisan effort that defeated a joint resolution that would have forbidden Truman from sending more than four divisions to Europe. Another resolution calling upon Truman to send no ground troops until the Joint Chiefs certified that "sufficient air strength will be available to control the air over western Europe to the degree necessary to assure the safety and effectiveness of U.S. ground troops" was also defeated. On 4 April, the Senate passed a resolution approving the commitment of the four additional divisions to Europe provided the Joint Chiefs of Staff certified that this was an essential step in strengthening the security of the United States.[176] Writing to Lodge on 6 April, Professor Leach agreed that the additional divisions ought to be sent to Europe, but he asked Lodge to consider that the placing of so many troops and their dependents in "a fight-to-the-death combat zone" would be "a very serious matter unless a counterpoise to Soviet air power in this area is provided."[177] In a speech in the Senate on 30 April (which he credited Leach with inspiring), Senator Lodge called attention to the fact that published reports set the strength of the Soviet tactical air force at between 16,000 and 20,000 planes, of which some 9,000 were available for an attack in western Europe. Based on his appraisal that air defense and strategic air forces ought to be increased in size and that the NATO air forces ought to have a 2-to-1 numerical superiority over Soviet tactical air forces, Lodge stated his conviction that the United States Air Force ought, as soon as possible, to be increased from 95 to a minimum of 150 groups. "Some say," Lodge remarked, "that to be certain of our superiority and not leave our destiny to the fortunes of battle, we should have 175 groups. Certainly 150 groups will get us started off the present dead center of disastrous military inadequacy."[178]

According to Leach, Finletter and Vandenberg were embarassed to learn of his correspondence with Senator Lodge. Finletter had taken

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a strong position within the Air Force against "end runs" to Congress, and both he and Vandenberg considered that they should not communicate with Lodge unless he requested it. According to Leach, they also feared that a build-up of tactical air power in Europe might result in a reduction of the proper emphasis on the Strategic Air Command; they doubted that production would be adequate to sustain the larger Air Force; and they feared that the cost of building tactical air bases in Europe would require an excessive expansion of Air Force infrastructure.[179] Appearing before the Senate Subcommittee on Military Appropriations on 13 July, Senator Lodge made an extensive statement favoring an Air Force of 150 combat wings. At this time, Finletter agreed that the proper way to allocate defense funds was to figure out the tasks to be performed and make recommendations to carry them out. Both Finletter and Vandenberg also pointed out the limited capabilities of a 95-wing Air Force, but Finletter proposed that any action to expand further than this ought to await a Department of Defense review which would take place in the autumn. Other than for answering specific questions, neither Air Force official committed himself to Lodge's proposals. But Finletter remarked: "The existing power of the Russians is such that it would probably be impossible to hold them if it were not for one factor, and that is at the moment the United States has a great superiority in atomic weapons and in the ability to deliver them." And Vandenberg noted that "within the limits of the money given to us we should endeavor to free the Air Force as much as possible from the requirement for overseas bases in the hands of other powers." Vandenberg also explained his rule for measuring the proper size of the Air Force: "There is only one valid measure of the adequacy of our own strength in the air, and that is the air strength of a potential enemy. If he decreases his air strength-in readiness, our requirements may be reduced. But as he increases his ready air forces ours must be correspondingly increased if we are to guard against the swiftest kind of military disaster. Whatever our plan or policy, we have no choice but to maintain superiority in the air."[180] Taking his case for expanded air power to the American people, Senator Lodge published an article entitled "Let's Face It--We're in a Jam" in the Saturday Evening Post on 28 July 1951.[181]

The "great debate" over the dispatch of American ground divisions to Europe produced many reasons for the expansion of American air power, but both the Truman administration and Congress remained committed to the balanced forces included in the original fiscal year 1952 budget. When the appropriation act and supplemental appropriations for fiscal year were totalled, Congress appropriated $59.4 billion of the $60.7 billion that was requested, and it would subsequently provide another $1 billion to meet additional costs arising from combat operations in Korea.[182] Granted a total obligational authority of $21.6 billion, the Army increased its force level from 18 to 20 combat divisions. With $15.6 billion in new obligational authority, the Navy continued the construction of its large aircraft carrier (which was now named the USS Forrestal) and

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began to build its sister ship, which Secretary of the Navy Dan A. Kimball indicated would be the second of the fleet of 12 modern carriers which the Navy would require. In August 1951, the Navy awarded a contract for the construction of a prototype nuclear submarine to be named the Nautilus. The Marine Corps organized and commenced training the Third Marine Division and the Third Marine Aircraft Wing.[183] Given a total of $22.2 billion in new obligational authority, the Air Force completed the activation of its 95 wings in June 1952 and during the year it placed orders for 6,944 aircraft. The bulk of these planes were already familiar types, but for the first time in several years the Air Force instituted procurement of new types of improved aircraft. Procurement orders were issued for 3 B-52A's and 17 RB-52B's, the latter to be able to serve as intercontinental jet bombers when their reconnaissance "pods" were replaced with bomb racks. In response to the Tactical Air Command's requirement for a night-intruder and night tactical reconnaissance aircraft to replace obsolescent B-26 types, the Air Force issued purchase orders for 110 B-57's and 67 RB-57's, these planes to be an American version of the British Canberra jet. Designed to replace RB-45 aircraft, the Air Force ordered a test quantity of 5 RB-66A jet aircraft from Douglas. The principal jet fighters on order were F-84's, F-86's, F-89's, and F-94's, but the Air Force issued an order for 2 YF-100A's and a production quantity of 23 F-100A's, these aircraft being improved F-86's which would be known as the Super-Sabre. Marking realization of the decision made in 1950 to abandon the use of powerless gliders in future airborne operations, the Air Force ordered 244 Chase C-123's, planes which would be known as assault transports and were to be capable of landings and take-offs from short and rough strips.[184]

* * * *

During his tenure of office Secretary Marshall had sought to meet immediate military requirements and to broaden the nation's mobilization base. When Robert A. Lovett became Secretary of Defense, he called upon the Joint Chiefs of Staff to make decisions as to the force levels beginning in fiscal year 1953 that the United States would require for the next several years. "We must try to do first things first," stated Lovett, "and not everything all at once."[185] When they surveyed national requirements and capabilities during October 1951, the Joint Chiefs of Staff were evidently impressed by the growth of Soviet air capabilities as compared with those of the United States. The notion that the United States could easily and cheaply achieve qualitative superiority over a technically inept enemy was dispelled by the appearance and performance of MIG-15 aircraft in the air over Korea.[186] Vandenberg pointed out that the Soviet Union had engaged in a forced-draft development and expansion of its air power, with the result that the Red Air Force was not only quantitatively larger than the U.S. Air Force but was also rapidly converting to modern jet equipment.[187] Speaking "not in

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prophecy but from facts," General Twining stated that the commander of the Soviet long-range air force had several hundred TU-4's at his disposal and that a new Soviet bomber of original design had been observed over Moscow in 1951. According to best estimates, the Soviet atomic stockpile would soon reach a level which could critically cripple the war-making capabilities of the United States. In 1950-51 the Soviets also rapidly expanded their radar-intercept and antiaircraft artillery defenses of their homeland. In addition to these augmentations, the Soviets also increased the strength of their already powerful tactical air armies. As a result of a prodigious postwar effort plus aircraft remaining from World War II, the Soviet Union had about 20,000 aircraft in organized air units and an equal number in various forms of reserve.[188] Unless the size of the U.S. Air Force and its rate of development were increased, Vandenberg predicted that the "narrowing margin" of air superiority which it held "will shrink to nothing in another 6 years, and control of the air, with all that it implies, will then be within the grasp of the Soviet Union."[189]

After what General Bradley described as "a very long study" the Joint Chiefs of Staff concluded that the Air Force was "assuming more than its share of the calculated risk" and agreed that the United States must increase its combat air power.[190] More specifically, the Joint Chiefs recommended that the Air Force should maintain a force level at which, in the event of a general war, it could accomplish the following essential D-day tasks: (1) To defend, by both offensive and defensive air operations, critical areas in the western hemisphere, with particular emphasis on defense against atomic air attack. (2) To conduct a strategic air offensive designed to destroy the vital elements of enemy war-making capacity. (3) To assist in the defense of the NATO area and in the defense of critical areas in the Far East, including the maintenance and defense of essential base areas and lines of communication. (4) To provide such aid to the nation's allies as would be essential to the execution of their responsibilities. The Joint Chiefs recognized that the missions of air defense and strategic air warfare were essential D-day tasks, and Vandenberg stated the corollary rule "that the No. 1 priority task of the Strategic Air Command, in event of war, is to attack the enemy's atomic delivery capability at the outset of hostilities. We place such high priority on this task because we know that our continental air defense system, however good, could not stop all the bombers that might be sent against us. Hence our long range atomic counterattack against enemy air forces must of necessity provide the principal means of our air defense of American cities and centers of production."[191]

"In spite of the fact that air power alone can never be decisive in total war," said General Bradley, "the air battle must be won if a war is to be won."[192] Reflecting the importance of air power and the principle of putting first things first, the Joint Chiefs unanimously recommended that the Army be stabilized at a force level of 20 divisions, the Navy at a force of 409 major combat

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ships with 3 Marine divisions and 3 Marine air wings, and that the Air Force be expanded to 143 wings, including 126 combat and 17 troop carrier wings. Although 1954 had previously been mentioned as the year of maximum danger, the Joint Chiefs now officially accepted that date as being the threshold year in which the Soviet Union would attain the capability to inflict critical and possibly fatal damage to the war-making capabilities of the United States. They also expected that the build-up of North Atlantic defenses after 1954 would be such that the Kremlin's chances of overrunning Europe would begin to decrease. The Joint Chiefs did not assume that a war would begin in 1954, but they believed that the year would be "a very dangerous period." Based on projections of America's industrial capabilities, they stated that the increase of the Air Force to 143 wings could be accomplished by 1 July 1954, and from a military point of view they recommended that the 143-wing program ought to be accomplished by that date.[193] After completing these force-level recommendations early in October 1951, the Joint Chiefs submitted them to Secretary Lovett. After the recommendations had been studied by an ad hoc committee chaired by Professor James R. Killian of the Massachusetts Institute of Technology, Lovett approved them and successfully defended the program before the National Security Council. President Truman approved the military build-up at a meeting in the White House on 28 December 1951, but he directed Lovett to stretch out the program in order that the armed forces budget including military assistance for fiscal year 1953 would be less than $60 billion.[194]

Since the Air Force had stated requirements for an expansion to 155 wings (138 combat and 15 troop carrier), the acceptance by the Joint Chiefs of only 143 wings committed the Air Force to a program which Finletter described as having no "fat" in it. Except for "a very small number of wings" that would be left in the Far East at the completion of the Korean war, Finletter stated that the 143-wing program contained "no wings capable of fighting anywhere else outside of the air defense of the United States, the strategic air operations against any aggressor, and the tactical air operation in Europe."[195] As it was finally established, the internal composition of the 143-wing objective placed emphasis upon the strategic air force and the air defense force, which Vandenberg stressed as being "complementary parts of the air weapon system and . . . each . . . essential to the air defense of the United States." The Strategic Air Command's share of the 143-wing strength included 7 heavy bombardment, 30 medium bombardment, 10 strategic fighter, 4 heavy strategic reconnaissance, and 6 medium strategic reconnaissance wings. Representing a substantial increase, 29 fighter-interceptor wings were programmed, most of them to be assigned to the Air Defense Command. Designed "to operate where the Army operates," the tactical air units of the 143-wing program were computed in terms of training requirements in the United States, a heavy commitment to the NATO area, and a minimal establishment in the Far East. Tactical air units would include 2 tactical bomber, 5 light bombardment, 6 day fighter, 22

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fighter-bomber, 5 tactical reconnaissance, 4 heavy troop carrier, and 13 medium troop carrier wings.[196]

Secretary Finletter hailed the 143-wing authorization as "a decision of great moment" which broke the division-by-services defense funds allocation pattern, but Truman's decision to hold military spending below $60 billion stretched the earliest date of readiness of the modernized Air Force out to 30 June 1955.[197] Even with the stretch-out of the readiness date, the accomplishment of the 143-wing program could be achieved only by the most stringent manning standards and economies of allocations of first-line aircraft including the elimination of any combat reserve, the cancellation of a planned modernization of the 11 Air National Guard wings, and the equipping of no more than half of the Air Reserve wings with first-line aircraft.[198] The decision to eliminate the hoary old requirements for a combat reserve of aircraft and aircrews was not lightly made. "We are doing it," Finletter explained, "because we are trying to concentrate the dollar on the striking power on D-day. It is an enormous saving. . . . It is possible that we have made a mistake, but I do not think so. I think the important thing is to concentrate on striking power on D-day, even though the forces may be attrited downward sharply thereafter."[199] General Twining noted that the deficiency in war reserves would be felt in five ways: "First, our capacity to continue long-range atomic attack would be sharply reduced after the crucial initial phase. . . . Second, our capacity to make good the attrition of our air units in Europe would remain slight for some time after the outset of hostilities. Third, our capacity to make good the attrition among Allied air units using American equipment would be extremely limited. . . . Fourth, our capacity to augment our air strength in the Far East in the event of a general war would be severely limited. Fifth, in the light of these realities the force contemplated . . . is down to the 'bare bones.'"[200]

In view of the prominence accorded to the Air Force in the defense budget for fiscal year 1953, Air Force leaders fully presented their concepts of air power to Congress early in 1952. Finletter related air power to deterrence. "What we are trying to do," he said, "is to create and maintain a military force sufficiently strong--with relationship to a possible enemy's capability--to be able to persuade him not to attack us--and then back of this protective shield of strength to work to achieve peace. There is no doubt . . . that this generation and this civilization cannot stand another world war. Nothing must be held back in terms of money or national effort which would prevent us doing the very best we possibly can to prevent the happening of such a catastrophe."[201] In view of wide interest in the subject, Vandenberg again explained the meaning of air superiority. "The most inefficient way to operate one's air force against another force," he said, "is to try to destroy it in the air. . . . The main defense of the United States lies in the strategic air arm's ability to destroy the bases. That is the only efficient way to knock a possible air force out of the

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air and get air superiority. In the meantime, however, you must utilize also as much as possible planes to cause them attrition in their attack; to blunt their attack against us." Referring to the situation over North Korea, where neither side had destroyed the other's air bases, Vandenberg showed that local air superiority fluctuated between the Communists and the United Nations air forces according to which side put forward the most effort at a particular time. Under these circumstances, Vandenberg continued: "Air superiority is a fleeting thing . . . until either the factories that produce the aircraft or the oil and/or the airfields and the airplanes are eliminated. Anyone with a small force can get local air superiority at times."[202] Later on, General Bradley was asked to comment on Vandenberg's explanation of air superiority. "In my opinion," Bradley said, "air superiority should be talked about only in relation to certain areas. You gain it over one area, and lose it over another one. Apparently, he was talking about over-all superiority of aircraft."[203]

Despite a very thorough presentation of national defense requirements, the Department of Defense had trouble getting the total amount of the fiscal year 1953 budget approved by Congress. As recommended by its Committee on Appropriations, the House made a $4.2 billion cut in requested appropriations, including a $1.6 billion cut in funds requested for the Air Force. "Some way must be found," stated the House committee, "to shock the people in the Department of Defense from top to bottom into the full realization that the Congress and the American people will not tolerate flagrant waste in money and manpower." Strong arguments offered by Finletter, Vandenberg, and Bradley resulted in the Senate Committee on Appropriations and subsequently the Senate restoring most of the requested Air Force funds. Approved during July 1952, the Department of Defense Appropriation Act for 1953 and the Supplemental Appropriation Act for 1953 covering military construction made $46.9 billion of new obligational authority available to the Department of Defense, including $13.2 billion for the Army, $12.6 billion for the Navy, and $20.6 billion for the Air Force.[204]

Under the ground rules adopted within the Department of Defense, the Army and Navy maintained their existing force levels but continued force modernization during the year following 1 July 1952. For the Navy this force modernization included the continued construction of the second large aircraft carrier (now named the Saratoga) and the initiation of a second nuclear submarine.[205] Attaining its 95-wing strength in June 1952, the Air Force began to build toward the 143-wing objective, the controlling factors in the augmentation being the availability of personnel, equipment, and facilities, especially in oversea areas where airfield construction did not go as rapidly as anticipated. Given an authorization to reach a total manpower strength of 1,019,000 at the end of fiscal year 1953, the Air Force possessed 106 activated wings on 30 June 1953.[206] As it placed orders for aircraft procurement from fiscal year 1953 funds, the Air Force was increasingly affected by growing

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inflation--which accounted for a 15 to 20 percent increase in dollar costs over 1950 levels--and by the high cost of complex modern aircraft.[207] In view of the completion of the requirement for large conventional strategic bombers, the Air Force ordered no additional B-36's, but it placed 500 B-47E's, 65 RB-47's, and 43 RB-52B's on order for the Strategic Air Command. The 50 RB-52B's ordered with fiscal 1952 and 1953 funds would later be redesignated as B-52B's. For service in tactical air units, the Air Force ordered 26 B-66B's and 73 RB-66B's, 191 B-57B's, and 80 RF-84F's. Orders were also issued for 2,510 jet fighters, 262 KC-97G tankers, 418 cargo aircraft, 1,158 trainers, 193 helicopters, and 20 liaison aircraft.[208]

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Following the beginning of hostilities in Korea, Secretary Finletter and other Air Force leaders continued to give first-priority importance to the development of the Strategic Air Command, but, even though military appropriations were much larger, Finletter ruefully remarked that with the public and within the Department of Defense "the fashion moved away from strategic air" in favor of tactical air and air defense.[209] Given the fact of life that total Air Force appropriations would continue to be a finite quantity calculated in terms of the economic product of the United States, the subtle downgrading of the Strategic Air Command was evident both in the proportional force composition of the 143-wing program and in the elaborate interest in tactical air and air defense manifest in studies conducted within the Department of Defense during 1951-53.

Following the same research pattern that was being used to study national air defense requirements, the Secretaries of Army, Navy, and Air Force requested the California Institute of Technology early in 1951 to study some of the problems of ground and air tactical air warfare especially as they would relate to the defense of Western Europe and to report suggestions as to how the military establishment might improve its weapons, techniques, and tactics. In order to accomplish Project Vista, Dr. Lee A. DuBridge, the California Institute's president who served as chairman of the project, and William A. Fowler, who served as the project's scientific director, built a scientific and technical staff of 113 members, of whom 39 were from the Institute's faculty. Several retired military officers, including Lieutenant Generals Wedemeyer and Quesada, participated in the nine-month study before it was completed and forwarded to the Secretaries of the Army, Navy, and Air Force on 4 February 1952.[210]

"Any battle of Western Europe," stated the Vista report, "will ultimately be won or lost on the ground." Believing that it would be possible to defend Western Europe successfully prior to 1954, Vista recommended an augmentation of Army capabilities there and the adoption of ground tactics designed to force attacking enemy

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forces into concentrations that would be rewarding to massive air strikes with atomic or conventional explosives. Despite this emphasis on the ground mission, Vista recognized that "the successful defense of Western Europe may hinge mainly on the extent to which United States and Allied tactical air power is effectively employed." Taking consideration of the increasing size of the American atomic stockpile, Vista recommended a substantial increase in tactical nuclear weapons and the building of NATO tactical air units to a strength of approximately 10,000 aircraft, to include 1,500 air-superiority fighters, 3,500 all-weather interceptors, 3,000 fighter-bombers, 1,500 attack aircraft, and 500 tactical bombers. Vista also recommended that the United States ought to have two airborne Army units of corps strength by 1954--one to be stationed in the United States and the other in Europe--and that 400 C-124 and 850 C-123 transport aircraft should be procured to transport and support this airborne force.[211]

In its description of the air power mission in Europe, Vista contemplated that the battle for air superiority would be of "overwhelming importance" during the period immediately following the outbreak of war--a period which might "last only a few days and will probably not exceed a few months." In a special study on air superiority included in the Vista report, Albert C. Reed advanced the proposition: "Air superiority has two parts, freedom and denial, both of which must be accomplished. . . . It is important to note that we are attempting to deny the USSR the use of the air; but rather, we are trying to prevent the damage that their operations might do to our war effort. In turn, we are not asking for freedom to fly, but rather for freedom to inflict damage upon the USSR." Reed proposed that the criteria for air superiority were the principles of concentration, surprise, and versatility. He urged that air superiority could be attained by a concentration of tactical atomic aircraft against Soviet airfields at the outset of hostilities. He further proposed that antiaircraft artillery would be chiefly useful for defense of point objectives, that air-to-air fighting did not promise to be very effective, that NATO air and ground forces should emphasize passive air defense measures, and that bomber aircraft should depend upon high speed, low altitude, weather, darkness, and countermeasures rather than fighter escort and defensive armament as protection against hostile interceptors. He noted that during World War II when strong fighter escort was employed the 8 percent loss rate which American daylight strategic bomber forces otherwise sustained was cut roughly in half, but he argued that some part of this reduction in losses was attributable to the heavy air attacks mounted against German airfields prior to Normandy and to a shift of sizable numbers of German day fighters to the Russian and Normandy fronts. "There is strong reason to believe," he said, "that the escort fighters might have been much more effective as fighter-bombers used against German fighter bases."[212]

Based largely on the analysis of air superiority requirements, Vista recommended that the United States should assume responsibility

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for developing a NATO tactical air force--including a tactical atomic air force--and that Great Britain should assume responsibility for the operation of a NATO air defense force, the latter to operate in the zone beginning 150 miles behind the front lines. Vista proposed to recognize air transport and air reconnaissance as missions of essentially equal importance for planning purposes to the "classical" tactical air power missions of air superiority, interdiction, and close air support. In the initial stage of the war, the tactical air force would be concentrated against Soviet air facilities, with secondary importance to be given to attacks against enemy forward supply depots, petroleum-oil-and-lubricant dumps, and high command headquarters. After the air battle had reached a conclusion, Army support operations and interdiction would be of major importance. Since the close integration of air and ground weapon systems would be important, Vista recommended major changes in air-ground doctrine. While it recommended that the joint operations center at the tactical air force-field army level would be retained as an allocating agency, Vista proposed that detailed control functions should be exercised by tactical air direction centers at the corps levels. It also proposed that at a time directed by the supreme commander, approximately one squadron from the tactical atomic air force should be allocated to the "mission control" of each field army commander in order to accomplish ground support atomic delivery and reconnaissance missions. This "mission control" authority was to include detailed target selection, attack timing, and "go" and "no-go" commands. Although the major contention of the report was that a sufficient tactical air force should be built to accomplish basic theater air missions, Vista nevertheless recommended that the Supreme Headquarters Allied Powers Europe should be authorized to coordinate Strategic Air Command and naval air operations in the NATO theater.[213] "We believe," Vista concluded, "that the United States, in collaboration with its allies in the North Atlantic Treaty Organization, can prevent the military conquest of Western Europe by the Soviet Union--and can do this in 1952 if necessary--if we try."[214]

According to an understanding between the Air Force and the Massachusetts Institute of Technology, Project Charles had been an initial study of the nation's air defense requirements which were to be further explored at a new electronics laboratory. The Air Force put up the money for the building of physical facilities near Bedford, Massachusetts; the Army, Navy, and Air Force jointly agreed on a charter for the laboratory; and the Massachusetts Institute undertook day-to-day supervision of the Lincoln Laboratory. Much of the work of the Lincoln Laboratory lay in the development of electronic equipment and techniques, but in the summer of 1952 the laboratory's steering committee invited a study panel, called the Summer Study Group, to take a look at air defense problems which might be encountered in the period 1960-70. The Summer Study Group included a number of scientists who had been on the staff of Project Vista. In its report, which was presented simultaneously to the

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National Security Resources Board and the Department of Defense in late August 1952, the Summer Study Group foresaw no effective defense against intercontinental missiles, but it believed that the establishment of an air defense "of a kind and scale not hitherto required" could result in the interception and destruction of 85 to 95 percent of such hostile aircraft as might attempt to attack the United States. Such a defense required three to six hours of early warning of approaching jet aircraft, and the Summer Study Group called for the establishment of a northward defense in depth. Included would be a distant early warning line--or DEW line--of radars to be sited as far north as the 75th parallel. Behind this line would be the double perimeter warning and control network which was already being established. At first the Summer Study Group estimated that the DEW line would cost $370 million plus $106 million in annual maintenance costs, but it later placed a $20 billion price on a total project that would include computerized air direction centers. The group recommended an all-out program to make the expanded air defenses operational by the end of 1954.[215] During the summer of 1952, there was evidently some interchange of concepts between the Summer Study Group and the currently-active Project East River, a civil-defense oriented study jointly sponsored by the National Security Resources Board and the Air Force. This study project was administered by the Associated Universities, Incorporated, and was headed by Lloyd V. Berkner, a naval reserve captain who had been a member of the wartime Research and Development Board. Issued on 1 October 1952, the Project East River report concluded that the critical factor in civil defense would be to get enough advanced warning of an enemy air attack to permit civilian evacuation measures. Specifically, an hour or more of early warning was required if a civil defense program was to be effective.[216]

The net effect of Projects Vista and East River and of the Summer Study Group was to focus a substantial amount of attention upon the national defense strategy and inferentially upon the role to be played by the Strategic Air Command. The reports challenged the Strategic Air Command only indirectly. "We raise the question whether," stated Vista, "if the United States prepares to counter Soviet aggression <u>solely</u> through the use of strategic air power, we will not be weakening rather than strengthening the political and psychological positions of the free nations. The Western European nations surely fear that a strategic air attack on the USSR would result in a retaliatory attack on <u>their</u> cities--and would at the same time not stop the march of Soviet armies before they over-ran all of Europe. . . . On the other hand, if we plan also to use our air power (including strategic, tactical and naval units) to destroy the march of Russian armies, we can win the confidence of the NATO nations, stimulate their cooperative efforts on the political and economic fronts, increase their strength and thus discourage a Soviet attack."[217] Neither the Summer Study Group nor Project East River had any occasion to be concerned with the Strategic Air Command, but Berkner was critical of the strategic

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striking force. "The crux of our present danger," he stated, "is in our complete dependence upon the 'Strategic Striking Force' as the principal element in our defense. This Maginot-Line type of thinking can be out-maneuvered by an intelligent enemy by any one of a number of ways. Opposed to the Maginot-Line concept of 'putting all our eggs in one basket,' is the balanced and flexible force. Because a balanced force cannot be achieved at tolerable cost through conventional means, we have ignored both the vital need for such a force and the possibility of achieving it through new and unconventional measures."[213]

As has been seen, the Department of Defense and the Air Force had already implemented many of the concepts contained in the Vista report several months before the report was completed. Many of the ideas presented in Vista would continue to show up from time to time, but the report did not require any action on the part of the Department of Defense. The findings of the Summer Study Group, on the other hand, received immediate and intensive attention at the highest levels. On 24 September 1952, Chairman Jack Gorrie of the National Security Resources Board recommended that the National Security Council accept the requirement for the DEW line. Rather than acting immediately as Gorrie desired, the National Security Council remanded the problem to the Department of Defense and the Air Force for study. Asked for its opinion on the DEW line, the RAND Corporation pointed out the air defense system visualized by the Summer Study Group probably would cost far more than $20 billion and that the costs of air defense would have to come out of some other part of the Air Force. In its study, the Air Staff did not oppose the establishment of the DEW line but it questioned the cost estimates for it and invited attention to the fact that radar equipment which would be needed for the particular employment was not far enough developed to warrant a crash construction program. With the approval of the Department of Defense, the Air Force allocated $20 million to accelerate research and development of radar early warning equipment suited for employment in an arctic environment. Lovett and Finletter opposed Gorrie's repeated demands for a policy statement authorizing the DEW line. In view of the continuing disagreement, Lovett appointed a Citizens Advisory Committee early in December. He asked the committee, which was headed by Dr. Mervin J. Kelly, president of the Bell Telephone Laboratories, to make an independent evaluation of the possibilities of an improved warning system, of the relationship of the warning system to other major continental defense measures, and of the over-all policies and programs needed to achieve a more effective defense of North America against airborne attacks. Without awaiting the additional study, President Truman accepted the National Security Resources Board recommendations on 31 December 1952 and thereby ruled that a continental defense system capable of withstanding any eventuality should be ready for service by the end of 1955. Following this declaration of presidential policy, Lovett informed all concerned

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in the Department of Defense that the distant early warning line would be built.[219]

After taking office on 20 January 1953, the new administration of President Dwight D. Eisenhower wished to make a full appreciation of air defense requirements. It accordingly authorized the continuation of the Kelly study and named two other study committees, one under retired Lieutenant General Harold Bull and another headed by Lieutenant General Idwal Edwards, Air Force Deputy Chief of Staff for Operations. While these high-level studies were progressing, Air Force thinkers gave close attention to the theoretical aspects of air defense. The chief question troubling the Air Force was to attain a proper relationship of money allocations between offense and defense within the "resources envelope" available to the Air Force. General Benjamin W. Chidlaw, commander of the Air Defense Command, asserted that "true air defense is not . . . confined solely to the erection of a fortress-type weapons system around a critical area. . . The tremendous countering power represented by our strategic air arm is . . . a most powerful element of our national defensive structure and warrants continuing high priority consideration." Based on this assessment, Chidlaw reasoned: "Atomic and hydrogen bombs plus a means of delivering them to a target add up to an overriding need for insuring national survival as to the first step in any nation's military strategy. . . . This being so, it seems to me that the number one task--chronologically--of each service is to make certain that after the initial attack there remains the means and the reason to accomplish its assigned missions. . . . We must, with accuracy and timeliness, make a true estimate of the threat facing us, then build sufficient defense to insure that our counteroffensive can be launched with crushing impact."[220]

Speaking from retirement about his old air defense specialty, Major General Saville cautioned that a proper defense of the nation required a system designed to ensure the detection, identification, interception and destruction of attacking air vehicles well before these vehicles reached a bomb-release line. "We dare not," Saville said, "concentrate our air defense on merely warning the population to take shelter to save their lives from direct attack." As he had done before, Saville continued to emphasize that air defense was in the language of the poker player "an ante-raising operation." "Only a fool would run into a hornet's nest of opposition," he went on to say, "with aircraft too slow or so poorly armed that they would be shot down before they reached their objective. . . . So the first and greatest dividend of air defense is its ability to keep a war from starting by making an attack a difficult and unattractive venture."[221] Unlike other Air Force thinkers, who assumed that there was a diminishing utility in expenditures for air defense, Major General Federic H. Smith, now the Air Defense Command's vice commander, asserted: "There appears to be no leveling off of the curve of cost versus capability which would require the expenditure

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of enormous sums of money for a small increase in kill. The curve seems to be a relatively straight line, with air defense capability increasing proportionately as additional money is used." As an absolute minimum, Smith urged that sufficient funds should be allocated to provide "that defense necessary to ensure survival of our retaliatory air arm, our industrial potential, and our people's will to fight. . . . It will be fatal if we rationalize ourselves out of providing a defense which will assure survival of our offensive forces and the nation's will to fight."[222]

After five months of study in close association with Army, Navy, Air Force and Weapons Systems Evaluation Group representatives, Dr. Kelly's Citizens Advisory Committee completed a report in May 1953 that proposed an orderly development of an integrated air defense system for the North American continent. The report emphasized that the principal element of the air defense of the United States, both as a deterrent to war and as a counter to Soviet long-range air power, was the Air Force strategic air arm. It held that an air defense system could best be created by steady technological development supported by a stable and sustained research and development program. It warned that the technical resources for a near-perfect air defense were not yet at hand. "So far as can now be foreseen," the Kelly committee reported, "any such level of protection is unattainable and in any case is completely impractical, economically and technically." Even though no system could provide a complete air defense that would destroy all attacking aircraft, the committee found an urgent need for a system "much better than that which is assured under present programs." It specifically recommended that a distant early warning line should be built. Early warning of the approach of hostile aircraft was declared to be the "first essential of an effective active air defense and of a civil defense capable of avoiding a large loss of life." The estimated cost for the full implementation of the Kelly report recommendations ranged from $20 to $25 billions over a period of six years. As a result of the Kelly committee's recommendations, the DEW line would be built but not as a crash project. The electronic fence would also be sited along the 70th parallel, not as far north as the expensive location recommended by the Summer Study Group.[223]

* * * *

Spurred on by the Soviet atomic explosion and the local war in Korea, the United States made progress in rebuilding a worldwide air force, but as Secretary Finletter went out of office in January 1953 he was uneasy as to whether the United States would face up to defense requirements which would exist in about 1955, when the Soviets would possess an "absolute air atomic capability." To counter this threat, he urged that "the first and cardinal job of military planning must be to create a strategic air arm capable of accepting a sneak and devastating attack by assault and sabotage

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and to have enough left over to go back and utterly devastate Russia. When he spoke of the strategic air arm, Finletter had in mind both the Strategic Air Command and the atomic air units of the Tactical Air Command. Following this concept, he would soon advocate the consolidation of the whole atomic air potential under a single command which he proposed to call the Strategic-Tactical Air Command (STAC), and, in place of the old counter-industry concept for strategic air power, he urged acceptance of a front-to-rear attack concept that would make all targets from the enemy's front lines, through his communications and supply lines, his airfields and storage, back to the sources of his production and governmental direction the objective of atomic air strikes. In November 1953, Finletter tentatively suggested that Navy atomic aircraft might be included in the nation's strategic air arm, but by August 1954 he had decided that "the whole responsibility for the Atomic-Air mission should be placed on the Air Force's STAC." He reasoned that aircraft carriers would be an increasingly vulnerable and expensive weapon system in a time of plentiful hydrogen bombs. Finletter also opposed the assignment of any "super-priority" to air defense, and because it lacked "powerful deterrent value" he recommended that air defense be put in a second priority immediately after the Strategic-Tactical Air Command.[224]

In his valedictory thoughts Finletter attached priority importance to strategic air and air defense, but he charged that "the truth of the matter is that . . . both strategic air and air defense are being treated in the same fashion--namely they are both being neglected in favor of lower priority forces." While the requirements for air defense had been extensively studied, no similar attention had been focused on the future requirements of the Strategic Air Command. "My main point about the strategic air arm," he said, "is this: it is neglected." Looking to 1955, when the Soviets would have an absolute air atomic capability, the Strategic Air Command would need to be widely dispersed at many operational bases and it would require a high-speed refueling capability superior to the conventional KC-97 tankers. Although the Air Force had awarded a development contract for a B-58 supersonic-dash "Hustler" jet bomber in 1952, Finletter felt that the nation was "failing to move as rapidly as we should into the successors of the B-52." There were indications that the Russians might be "leapfrogging" bomber development from subsonic aircraft equivalent to B-47's and B-52's to a force composed of bombers equivalent to B-58's. If this were true, the United States would lose its quality advantage over the Soviets in bomber aircraft.[225] In summary, Finletter recommended that the number one and number two national priorities for defense funds should be assigned to strategic air and air defense. He proposed that the third priority should be given to Army, Navy, and Air Force units needed to provide a force-in-being in NATO and in the "Gray Areas," the latter being his definition for the Asiatic perimeter running from Turkey to the Aleutians. He recommended that the last priority should be given to

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other general purpose forces which would not be needed for A-day tasks but which would be useful during the course of a general war or a limited war.[226]

5. Global Air Power and the Korean Armistice

At the beginning of the Korean conflict in June 1950, General Vandenberg ordered that the Air Force would do its best to meet the requirements of the Far East Air Forces, but he insisted that the Korean war be viewed as a part of a global problem rather than as an isolated situation. From the very beginning, the Korean war was fought under the shadow of the global atomic air capabilities of the Air Force, particularly those of the Strategic Air Command. Making their moves in the early weeks of the war before Military Air Transport Service planes were fully committed to the trans-Pacific airlift, two Strategic Air Command medium bomber groups joined another already in England in July 1950. Early in August, an atomic-capable B-29 group went to Guam and another group augmented by two aerial refueling squadrons deployed to Northeast Air Command bases in Labrador and Newfoundland. At Vandenberg's request, the Joint Chiefs of Staff authorized the temporary movement of four B-29 groups to the Far East to augment firepower in Korea in July and August 1950. In September and October, SAC fighter pilots delivered 180 F-84E aircraft to American air units in Germany.[227]

According to Lieutenant General LeMay the dispatch of the four Strategic Air Command B-29 groups to participate in the Korean conflict represented a severe reduction in general war deterrent capabilities. LeMay explained that his supply support--particularly aircraft engines--had been so severely limited by Air Force decisions to invest in modern aircraft rather than supply stocks had made the Strategic Air Command "a one shot outfit, incapable of sustained operations."[228] Following the completion of the strategic bombing campaign against North Korea, two of the SAC B-29 groups returned to the United States in October 1950, but the sudden appearance of Communist MIG-15 jet fighters demanded the hurried movement of a SAC F-84 jet fighter-escort wing and an Eastern Air Defense Force F-86 fighter-interceptor wing to Korea in November 1950. Once again, this emergency deployment reduced SAC's global combat capability, and it badly depleted the air defense of the United States. Early in December 1950, when the Chinese Communists were attacking, General MacArthur requested the Joint Chiefs of Staff to return the two SAC B-29 groups to the Far East, but the Joint Chiefs proved unwilling to risk the groups on forward airfields which might be hazarded by an all-out Communist air attack.[229] As the war conditions darkened, however, the Strategic Air Command dispatched a fighter-escort group to England in December. On 15 January 1951, six new B-36's took off from Limestone Air Force Base in Maine, bombed targets on a range on Helgoland Island in the North Sea, and then landed at a post-strike recovery base in England.[230]

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The flexing of these global air capabilities did not escape the notice of the Soviet Union and the Chinese Communists. After an extended tour in North Korea and a trip to Moscow, a Special Aviation Inspection Group from Red China's General Staff described the reasons why the Chinese Communist Air Force was unable to gain air superiority in the months between March and September 1951. "The U.S. has repeatedly declared that any attempt by the Red Air Force to bomb the U.S. troops," stated the Inspection Group, "would be retaliated with relentless bombing of the Northeastern Provinces by the USAF. For this reason, the Red Chinese air force has not dared to make such an attempt in the past and may not make it in the future. The conservative policy adopted by Red China has apparently ensued from the high-handed policy of threats of the enemy." In this same report, the Inspection Group was openly critical of the Soviet decision to equip the Chinese Communist Air Force with MIG-15 defensive fighters. It noted that this action was doubtless the result of the mistaken Soviet policy of giving first production priorities to fighter aircraft. "With regard to the air defense of the homeland," the group stated, "the strategy of using intercepting fighters has become a thing of the past. The homeland cannot be adequately defended without long-range attacking air power."[231] The Red Chinese assumed that the Soviets outfitted them with MIG-15's out of necessity, but the decision might well have been based upon Soviet desires to prevent the expansion of the Korean conflict. Speaking frankly at a later date, Soviet Foreign Minister V. M. Molotov inferred that the Soviet Union had made determined efforts to prevent the Korean conflagration from spreading. "When all facts are known," Molotov said, "you will realize that we acted as a restraining influence."[232]

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"The beginning of the Korean truce negotiations between United Nations and Communist delegates at Kaesong in July 1951," General Weyland observed, "ushered in a new phase of the war. . . . Both the enemy and we had abandoned our identical political objectives of unifying all of Korea by force, and both had given up the military objectives of capture and control. The political and military objectives of each side became the same--the accomplishment of an armistice on favorable terms."[233] When he assumed command of the Far East Air Forces in June 1951, Weyland noted that his command, employing a "minimum force which, for the most part, has been equipped and manned below authorized levels" had already "clearly indicated that air operations have been one of the most decisive elements in stopping the enemy's offensives and reducing his capacity to wage ground warfare." Making another strategic estimate on 12 July, Weyland pointed out in a message to Vandenberg that the Communists might well take advantage of the armistice negotiations and attempt to seize control of the air. In this

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event, he argued that Vandenberg should provide the Far East Air Forces with "the capability to absorb initial Chinese Communist Air Force attacks and immediately launch effective counter-attacks." "The Korean war," Weyland concluded, "has demonstrated that air superiority is essential and the key to the success of military operations regardless of the numerical strengths of opposing surface forces and that air power is the most efficient weapon for the destruction of opposing ground forces."[234]

Back in Washington, the Air Staff received Weyland's requirements for additional forces sympathetically, but it had to continue to spread limited Air Force capabilities across a global spectrum. The rapid build-up of Chinese Communist Air Force strength to 1,050 aircraft including 415 MIG-15's posed an admitted threat to United Nations air superiority, but this force appeared to be intended for defense rather than for offense.[235] On the other hand, the build-up of NATO forces was going to be in a crucial stage early in 1952 since the forces would be getting large enough to threaten the Soviet Union without being large enough to defend against a Soviet attack. The only way in which the Air Force could provide Weyland with the four additional fighter wings he required would be to take them from the Air Defense Command, the Strategic Air Command, or projected deployments to the U.S. Air Forces in Europe. Weyland could not be given the additional B-26 light bombers that he needed to build his two light bombardment groups to war strength without robbing the night tactical reconnaissance wing and the light bombardment wing that were being readied for deployment to Europe. After studying the competing requirements, the Air Staff made its decisions. In order to augment NATO, the Tactical Air Command was directed to have the 49th Air Division with its atomic-capable B-45 light bomber and F-84 fighter-bomber wings in place in Great Britain by April 1952. On 17 July, Twining informed Weyland that Japan's air defense would be augmented by the movement there of one F-84 wing that had been preparing to go to Europe. This was all that the Air Force could do to meet Weyland's requirements. "The vital object under the present conditions," Twining wrote Weyland, "is to maintain air superiority over Korea."[236]

Unable to secure additional air forces that he needed and faced with the prospect of continuing to wage an air war during the ground stalemate, Weyland could see only two potential employments for United Nations air power: it could either be committed to close support strikes along the front lines where the enemy had dug in and was relatively invulnerable or it could be concentrated against interdiction targets in the enemy's rear areas. Weyland favored the latter employment and he obtained agreement from General Matthew B. Ridgway, the Commander-in-Chief United Nations Command, who was apprehensive that the Communists might take advantage of the respite in ground fighting during the truce negotiations to build up front line stocks of supplies to be used in launching and sustaining a renewed ground offensive. Lieutenant General James A. Van Fleet agreed to the interdiction campaign, provided his Eighth Army would

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receive 96 close support air sorties each day. At their headquarters in Korea, the Fifth Air Force and the Eighth Army collaborated in planning a comprehensive air interdiction campaign against North Korea's railways. Now commanded by Lieutenant General Frank F. Everest, the Fifth Air Force undertook to neutralize the greatest portion of the rail lines supporting the Communist ground force, but Everest requested the Naval Forces Far East to employ its carrier aircraft against sections of Korea's east coast railways and the FEAF Bomber Command to maintain a continuing interdiction of four key railway bridges. Begun suddenly on 18 August 1951, the United Nations Command comprehensive railway interdiction campaign evidently took the Reds completely by surprise and was initially very successful. Fighter-bombers destroyed railway track much faster than the Reds could repair it, and night-flying B-26 intruders took a respectable toll of the motor truck convoys that jammed the roads in a desperate effort to supply front-line Communist divisions.[237]

During the summer of 1951, the Communists had been busily expanding their Manchurian airfield complex around Antung, and the Communist air forces were apparently galvanized into action by the initial success of the United Nations railway interdiction campaign. Displaying flying skill that left no doubt in Weyland's mind that they were Russians,[238] MIG flight leaders led their formations in determined assaults against F-86 Sabre barrier patrols south of the Yalu. Enjoying superior numbers, other MIG formations evaded the Sabres and penetrated well southward into Korea to pounce on rail-cutting fighter-bombers. On 15 September, Weyland warned Vandenberg that the Communist air forces were getting out of control. "If the present trend continues," he said, "there is a definite possibility that the enemy will be able to establish bases in Korea and threaten our supremacy over the front lines." Near the end of September, Fifth Air Force reconnaissance pilots discovered that the Communists had begun to build three major jet airfields within North Korea. Supported by F-86 barrier patrols and escorted by F-84's, FEAF Bomber Command B-29's began a series of daylight strikes against these airfields on 22 October. Up until this time, Bomber Command had lost only six B-29's in combat over Korea, but over the Communist airfields in late October the Reds destroyed five B-29's and inflicted major damages on eight others. Escorting at 20,000-foot altitudes, the straight-wing F-84 Thunderjets could not maneuver to fend off attacking MIG's without losing flight control. And the MIG's appeared in too great numbers to be handled by the few available Sabres.[239]

"Almost overnight," Vandenberg stated after making a fast trip to the Far East, "Communist China has become one of the major air powers of the world." In terms of the damage that they could do with iron bombs, the old B-29's had taken prohibitive losses. But the pessimistic predictions that the old B-29's would not be able to operate any longer did not reckon with the operational versatility of the FEAF Bomber Command. The Command already possessed a small

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shoran bombing capability, and it soon converted all of its aircraft to operate only at night with this electronics guidance. Safe from Communist interception, the night-flying B-29's successfully neutralized the Communist airfields during November. Earlier in the summer Vandenberg had refused to convert one of the Fifth Air Force's fighter-bomber wings to F-86 fighter interceptors on the grounds that the Air Defense Command ought not to be weakened and that the Air Force did not have enough supply support to maintain two F-86 wings in active combat in Korea. On 22 October, however, Vandenberg directed the Air Defense Command to send 75 F-86's to Korea, and on 1 December the Fifth Air Force's second F-86 wing went into action. In mid-December, the Communists abruptly abandoned their air-superiority campaign. The United Nations Command received reports that the Chinese Reds were moving their experienced air divisions from Antung and replacing them with new air divisions. The Reds had apparently decided to rotate new "classes" of MIG pilots through limited air operations over North Korea in order to give them training in active air combat.[240]

After two months of success, the United Nations Command comprehensive railway interdiction campaign became less successful. The Reds emplaced a growing amount of automatic weapons along their rail lines and exacted an increasing rate of losses and damages on attacking aircraft. Forced to fly at night and to give their attention to the enemy airfields, the B-29's were unable to keep their bridge targets interdicted. The conversion of the F-80 fighter-bomber wing into an F-86 interceptor wing reduced attack capability. On the ground Communist rail repair crews impressed local workers and began to be able to repair damaged rail track virtually as fast as the fighter-bombers could cut it. On instructions from Washington, the United Nations truce negotiators agreed to a proposition whereby the existing battleline would become the line of demarcation in any armistice agreement signed within thirty days after 27 November. Not wishing to lose lives taking territory which would be given up, Ridgway directed the Eighth Army on 15 November to cease local offensives and begin an active defense. Confident that they had little to fear on the ground, the Reds withdrew troops to rearward positions where they could be supplied more easily, while along the inactive ground front they were able to regulate their supply requirements by varying their expenditures.[241]

By the end of December 1951 the Fifth Air Force recognized that the comprehensive railway interdiction program was reaching a point of diminishing returns, and on 5 January 1952 Brigadier General James Ferguson, Vice Commander of the Fifth Air Force, requested authority to attack North Korea's extensive hydroelectic power generating plants--facilities which had gone virtually undamaged and which were providing power to factories in both Manchuria and North Korea. On 4 January, however, Ridgway had informed the Joint Chiefs that he did not want to discontinue or

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reduce the air interdiction activity, since in such an event the Reds would be able to accumulate sufficient front-line supply stocks to launch and sustain a major offensive. During this same month, Brigadier General Jacob E. Smart came to Tokyo as Deputy for Operations of the Far East Air Forces and soon accepted a concept that air power ought to be employed in a manner that would maintain effective and positive pressure upon the Communists to compel them to agree to desirable armistice terms. Given the task of determinining how an air pressure campaign should be conducted, Colonel Richard L. Randolph and Lieutenant Colonel Ben I. Mayo proposed that the Far East Air Forces should give first priority to maintaining air superiority and should then use its remaining effort to accomplish "the maximum amount of selected destruction, thus making the Korean conflict as costly as possible to the enemy in terms of equipment, supplies, and personnel." Weyland liked this concept of waging air pressure through selective destruction. As long as United Nations air power had been limited to strikes against the usual tactical targets in North Korea, the Reds had been willing to stall the truce negotiations, but, through selective attack against Communist economic and military property in North Korea, the Far East Air Forces would possess an opportunity to make the effect of a local air campaign felt as far away as the seats of power in Moscow and Peking. Whether such a vigorous air campaign could be authorized, however, would depend upon the state of the armistice negotiations, the inclinations of General Ridgway, and an augmentation of the Far East Air Forces' capabilities, which had suffered unreplaced losses during the ten months of comprehensive railway interdiction.[242]

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Beginning in the early summer of 1952, the United States possessed the worldwide air force that was needed to back-up more forceful measures in Korea. Serving as forward deployment stations for Strategic Air Command medium bombers, Nouasseur and Sidi Slimane Air Bases in Morocco had become operational in July 1951, while Thule Air Base, in northwestern Greenland only about 900 miles from the North Pole, was considered operational in November 1952.[243] Following a schedule which allowed it to expand and modernize while simultaneously maintaining combat readiness, the Strategic Air Command would possess 5 heavy bomber, 18 medium bomber, 3 heavy reconnaissance, 4 medium reconnaissance, and 3 strategic fighter wings at the end of 1952. The three heavy reconnaissance and four of the heavy bomber wings were equipped with intercontinental B-36's, and, although they were not yet operational, two of the medium bomber wings were converting to B-47 jet bombers.[244] Although the NATO air forces had not reached levels specified as necessary by General Dwight D. Eisenhower as Supreme Allied Commander Europe, the arrival of the atomic-capable 49th Air Division in England on 5 June 1952 added realism to the SHAPE

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mission. "We now had," said Major General Dean C. Strother, Commander of the 4th Allied Tactical Air Force in Central Europe, "the beginnings of a real tactical offensive capability. Employed with SAC's growing potential in one indivisible air effort, sense could now be made of the tactical situation."[245] The successful detonation of a thermonuclear test device in "Operation Ivy" on 1 November 1952 promised an almost incalculable increase in strategic bombing power. "We need no longer to argue," pointed out Bernard Brodie, "Whether the conduct of war is an art or a science--in the future it will be neither. The art or science will come only in finding out . . . what not to hit."[246]

In Korea on 28 April 1952, United Nations truce negotiators offered a package proposal for the resolution of all disputed questions on the agenda, and, when the Communists refused the solutions, the truce negotiations were at a complete impasse. On this same day in Washington, President Truman announced the appointment of General Mark W. Clark as Commander-in-Chief, United Nations Command/Far East Command, in place of General Ridgway who became Supreme Allied Commander Europe. When he reached Tokyo on 12 May 1952, Clark already believed that "only through forceful action could the Communists be made to agree to an armistice the United States considered honorable." With approval from Clark and from the Joint Chiefs, the Far East Air Forces and the Naval Forces Far East launched an air pressure campaign which successfully neutralized North Korea's hydroelectric generating plants in a four-day action beginning on 23 June. Beginning in July 1952, the United Nations air pressure operations were closely related to the state of the truce negotiations at Panmunjom and, when these were suspended, to diplomatic soundings of Sino-Soviet relations. With Weyland serving as "coordinating agent," Far East Air Forces and Naval Forces Far East aircraft made a massive 1,254-sortie day-long attack against military targets in the North Korean capital city of Pyongyang on 11 July. For several months after this, Far East Air Forces planes attacked a number of industrial plants which had either been overlooked or had recuperated since the strategic air attacks of 1950. In a change of tactics, Fifth Air Force B-26's flew incendiary-laden night-bomber streams against Communist towns and villages which served as storage or transshipment points on the Red main supply routes. Coinciding with Sino-Soviet talks in Moscow in late August and early September, United Nations air units prosecuted a series of air attacks against targets near the Manchurian and Siberian borders and on 29 August teamed up for another massive assault against military targets in Pyongyang. When the conclusion of the Moscow talks brought no apparent change in Communist attitudes at Panmunjom, the United Nations delegates suspended further negotiations on 8 October. Seeking to increase military pressure as the truce-talks recessed, Clark directed the United Nations Command to intensify air operations, to begin limited ground offensives, and to undertake simulated airborne

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and amphibious operations against the east coast of North Korea. Begun on 15 October the intensified United Nations operations failed to provoke a reaction from the Communists. The Eighth Army's limited objective attacks against Triangle Hill and Sniper Ridge, moreover, touched off a bloody see-saw battle which saw these terrain objectives change hands several times. As a result of these experiences, Clark judged that an amphibious operation against North Korea's eastern coast "would have been most difficult." "We should not unless absolutely necessary," he told Lieutenant General Van Fleet, "initiate another action which may be a repetition of the bloody battle for Triangle Hill and Sniper Ridge."[247]

"I concur in the concept," Clark informed the Joint Chiefs of Staff, "that maximum pressure, within the capability of my means and which can be justified by results, should be applied and maintained against the Communists. The capability for such pressure without unacceptable cost, lies in the air arm."[248] As Commander of the Army Field Forces, Clark had insisted that an Army field commander should have operational control of the tactical air elements which were provided for the execution of a ground campaign. Looking toward such an organization on 1 July 1952, Lieutenant General Van Fleet proposed that three squadrons of Marine fighter-bombers should be placed under the operational control of the Eighth Army and that these squadrons would be further controlled by the three corps commanders, each of whom would thus have an attached squadron to provide close air support.[249] Despite his earlier arguments, Clark turned down Van Fleet's proposal. "With a specific job to do," he would explain, "I had to maintain an air-ground team working as efficiently as possible."[250] After making a mature study, Clark made his views on air-ground operations in Korea known on 11 August 1952. He concluded that "the theater commander, rather than any single service, bears over-all responsibility for successfully prosecuting the Korean war. Each component contributes its own specialized capabilities to the attainment of the theater commander's over-all mission and in so doing assists the other components; however, no single service exists solely or primarily for the support of another." Generally endorsing existing Army-Air Force doctrine, Clark did not wish to see any far-reaching or drastic changes made, based solely on the often unusual conditions prevailing in Korea.[251]

Although Weyland and Air Force evaluation boards had long argued that United Nations Command air power could not be effectively employed as a unitary strength in the absence of a proper joint headquarters staff in the United Nations Command/Far East Command, Generals MacArthur and Ridgway had preferred to depend upon a staff that was predominantly Army. The UNC/FEC headquarters staff also doubled in duty as the theater Army headquarters. General Clark held a different opinion that his staff "should be a joint tri-service operation, rather than an Army project," and on 20 August 1952 he announced that he intended to organize a joint

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staff and to establish the long-lacking Headquarters, Army Forces Far East. According to plan, the Army Forces Far East was activated on 1 October 1952, and the reorganized Headquarters, UNC/FEC began to function on 1 January 1953. "A truly integrated staff of the three services, in which men were picked for their ability rather than the color of their uniforms," Clark later observed, "is the answer to combined operations."[252] As the theater air commander, Weyland also established a new means of integrating the capabilities of the Fifth Air Force and the FEAF Bomber Command. Including representatives of the Far East Air Forces, the Fifth Air Force, and the Bomber Command, the FEAF Formal Target Committee began to meet biweekly in July 1952 to study target opportunities and to recommend operational employments. After Weyland approved them, the Formal Target Committee's recommendations were distributed within the Far East Air Forces as directives and to the Naval Forces Far East for information. Weyland would have liked to have had a Navy representative on the Formal Target Committee but he felt that he had no authority to order it. Very late in the war, a Navy air officer was nevertheless invited to attend the Committee's meetings. Except for its lack of authority over Naval air operations, the FEAF Formal Target Committee became the basic theater agency for target selection and the medium through with basic air tasks outlined by Clark and Weyland were translated into planned air campaigns.[253]

In terms of numerical capabilities, the Communist air forces in the Far East posed a continuing obstacle to the success of the United Nations air pressure strategy and also a threat to the safety of the United Nations Command. In June 1952 these forces reached their apparently authorized strength. The Communist Chinese possessed some 1,830 aircraft, including 1,000 jet fighters, and some 1,115 of the Chinese planes were based in Manchuria. The Soviet air units possessed approximately 5,360 aircraft, and the reconstituted North Korean air force had about 270 planes. This Communist air order of battle not only dwarfed the United Nations air forces, but the Reds conducted a vigorous modernization program. By November 1952 the Red Chinese obtained 100 latest-model Il-28 light jet bombers and based them in Manchuria. An extensive radar network fed information to a Red aircraft control center at Antung. In defense of fixed installations within North Korea, the Reds employed some 786 antiaircraft artillery guns and 1,672 automatic weapons and 500 mobile searchlights during the winter of 1952-53.[254] Several factors nevertheless continued to work in favor of the United Nations Command. The Fifteenth Air Force maintained an atomic-capable medium bomber squadron and tanker detachment on continuous alert at Andersen Air Base on Guam, and, in December 1952 following the arrival of the hostile Il-28's in Manchuria, one of the Fifth Air Force's most proficient fighter-bomber squadrons was pulled back to Japan to be equipped and trained for the delivery of tactical atomic weapons.[255] Early in 1953, moreover, the Fifth Air Force was able to reequip two of its

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fighter-bomber wings with F-86F fighter-bombers (which could double as fighter-interceptors if needed), thus doubling its air fighting potential.[256] In spite of their numerical superiority, the Red air forces continued to operate under restrictions, and although MIG flight leaders--many of whom were believed to be Russians--were frequently proficient, the majority of MIG pilots were poorly skilled in air combat. Only in the night skies over northwestern Korea during the winter months of 1952-53 did the Reds seriously challenge the operation of Far East Air Forces planes--once again the old B-29's. In November 1952, two Soviet night fighter squadrons operated over northwestern Korea, and the FEAF Bomber Command lost five B-29's between 18 November 1952 and 30 January 1953. Vigorous mission study and analysis enabled Bomber Command to keep operating. The Fifth Air Force also provided F-94C and F3D-2 all weather fighters to fly cooperative barrier and overhead cover for the B-29's. Had the Reds seen fit to employ electronic-equipped all-weather fighters they probably could have terminated B-29 operations, but, as it was, Bomber Command's countermeasures were effective and no more medium bombers were lost to hostile night defenses after 30 January 1953.[257]

When the truce negotiations were indefinitely recessed in Korea on 8 October 1952, the arena or armistice discussion shifted to the United Nations General Assembly and to diplomatic discourse. In the autumn of 1952 Ambassador Chester Bowles warned India's foreign office that an extension of hostilities would be inevitable unless some satisfactory cease-fire was soon reached. The only substantial point that blocked the cease-fire was the Communist position that all prisoners of war should be forcibly repatriated at the armistice, which would mean that many Koreans and Chinese who wished freedom would be returned to bondage.[258] In his successful campaign for the presidency in the autumn of 1952, General Eisenhower expressed his determination to seek an honorable end to the war in Korea. In his state of the union message on 2 February 1953, he indicated that the United States was ready to act more forcefully, and he specifically announced that American naval forces would no longer shield Red China from attacks which might be launched by Chinese Nationalist forces from Taiwan. During a visit to New Delhi in May 1953, Secretary of State John Foster Dulles told Prime Minister Jawaharlal Nehru that the United States wanted an honorable peace in Korea, but that the United States had decided to attack Communist bases in Manchuria if an agreement on a truce was not soon reached. Dulles hoped that this warning would reach Peking and it doubtless did.[259]

Benefiting from new force capabilities, Lieutenant General Glenn O. Barcus, who commanded the Fifth Air Force in the last year of the Korean hostilities, made efforts to provoke reluctant MIG's into air battles. Toward this end, General Clark offered a reward of $50,000 and political asylum on 26 April to any Communist pilot who would deliver his MIG to an airfield in South Korea. Possibly to avoid defections, the Soviets seem to have withdrawn their

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pilots from combat, and the Chinese and Korean airmen who swarmed out of Manchuria proved pitifully incompetent. In May and June 1953, the Sabres shot down 133 MIG's at a cost of only one F-86.[260] Finding special targets in North Korea became more difficult as the air pressure operations continued, but as standard fare Bomber Command attacked and destroyed 30 to 40 Red supply centers each month. In April 1953, moreover, air targets planners discovered that impounded irrigation water was the key to North Korea's substantial rice production. On 13 and 16 May, United Nations fighter-bombers released swirling floodwaters as they cut irrigation dams at Toksan and Chasan. "The breaching of the Toksan dam," Clark informed the Joint Chiefs, "has been as effective as weeks of rail interdiction." The Communist forces also were subjected to attack, since Red personnel encampments and logistical dumps back of the front lines proved to be small but collectively profitable targets for air attack.[261]

At the same time that he was willing to entertain stronger actions to attain an honorable truce, Eisenhower also took steps to renew truce negotiations. Following the new administration policy, the Joint Chiefs instructed Clark on 19 February to propose an immediate exchange of all sick and wounded prisoners of war. While the Reds were considering this proposal, the whole Communist bloc was shaken by the death of Joseph Stalin, and, at Stalin's bier, Soviet Premier Georgi Malenkov spoke of the need for peaceful co-existence between communist and capitalist nations. On 28 March the Communists agreed to the repatriation of sick and wounded prisoners, but when the Panmunjom talks began again on 26 April the Reds were still determined to haggle, particularly over the length of time that prisoners would be held in custody by a neutral nations repatriation commission. On 4 June, following presentation of final United Nations terms and the execution of the irrigation dam attacks, the Reds capitulated and accepted the proposal that prisoners who did not willingly accept repatriation within 120 days would be released as civilians. All outstanding truce issued were now resolved, but the Communists continued to stall for time. They were going to mount last-gasp ground offensives in mid-June and mid-July, probably in order to lend credence to a claim that the truce was signed while the Reds were winning and to dampen the ardor of South Korea's President Syngman Rhee, who still wanted to get the unification of Korea by military force. Employed all-out, United Nations air power contributed in full measure to the exceedingly high casualties inflicted on the attacking Red ground armies. After trading casualties for a few miles of worthless terrain, the Reds signed the armistice agreement on 27 July 1953, thus ending active hostilities in Korea.[262]

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In view of the importance of the Korean conflict to American military thought, it would have been helpful if the Communists had seen fit to disclose the factors which led to their capitulation. Members of President Eisenhower's administration took a global view of the matter. Secretary of State Dulles stated that hostilities ended in Korea "because the aggressor, already thrown back to and behind his place of beginning, was faced with the possibility that the fighting might, to his own great peril, soon spread beyond the limits and methods he had selected."[263] Secretary of Defense Charles E. Wilson held much the same view: "I will always think," he said, "we got an armistice because they thought if they did not really do something, after all of the talking for a couple of years, something was going to happen. In other words, the war was either going to toughen and we were going to dive in and win it, or there was going to be an armistice."[264] Writing in 1955, Colonel Ephraim M. Hampton, the Air War College's Deputy for Evaluation, demonstrated that the global activities of American air power had had profound effects upon almost every aspect of the war in Korea. "It would be almost impossible to pinpoint," he wrote, "the precise degree to which our global air base system, with its substantial elements of our national air power in position in the NATO area and the Far East and with its facilities for swift and massive redeployment of our air power, had on the course of events in Korea. Certainly the Soviets had to weigh these factors, and certainly they must have been the compelling consideration in their decision as to just how far and in what ways they dared support their junior partner in the Korean war."[265]

Other American military men attached greater significance to the local circumstances in Korea. Clark suggested that the Communists yielded "only because the military pressure on them was so great that they had to yield. . . . In the end we got the cease-fire only because the enemy had been hurt so badly on the field of battle."[266] Speaking in January 1954, Brigadier General Don Z. Zimmerman, Deputy for Intelligence of the Far East Air Forces, said: "We established a pattern of destruction by air which was unacceptable to the enemy. The degree of destruction suffered by North Korea, in relation to its resources, was greater than that which the Japanese islands suffered in World War II. These pressures brought the enemy to terms."[267] Tersely summing up his views in February 1954, Weyland stated: "We are pretty sure now that the Communists wanted peace, not because of a two-year stalemate on the ground, but to get air power off their back."[268] After a conversation with Molotov at Geneva in the spring of 1954, Under Secretary of State Walter Bedell Smith suggested that the Soviets eventually gave up in Korea because the hostilities there were forcing them to "send more materiel into China than they wanted to send" and because "there was too great a drain on the Soviet economy." "The terrain in Korea," Smith added, "was against them and it was the one place in Asia where we were able to fight at an

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advantage because we controlled the sea and most of the air. They wanted to stop there and they will probably want it to start elsewhere a little later on."[269]

In the autumn of 1950 Lieutenant General Stratemeyer warned that the Korean conflict presented so many unusual aspects as to make it a very poor model for planning future operational requirements. Issued under Weyland's authority on 26 March 1954, the FEAF Report on the Korean War repeated Stratemeyer's earlier conclusion that lessons drawn from Korea had of necessity to comprehend many unusual factors.[270] In his personal writings, Weyland agreed that the Korean air war had been very complex, but he nevertheless considered that it had been "a laboratory study of limited military action in support of a very difficult political situation" and that it provided the Air Force with 'an opportunity to develop concepts of employment beyond the World War II concepts of tactical and strategic operations."[271]

"One thing that should be clear to everyone by now," Weyland stated as he recorded the major lessons of Korea, "is that air power is indivisible. It can put at risk all important elements of a national structure. Attempts to classify it by types of aircraft, types of operations, or types of targets have led to confusion and misunderstandings. For that reason I have tried to think of it in terms of objectives, threats, and opportunities. The results desired, balanced against threats and opportunites, determine the weight, timing, and phasing of air attacks."[272] In the FEAF Report Weyland attributed most interservice problems affecting the employment of air power in Korea to the long-continuing lack of a properly established joint headquarters at the United Nations Command/Far East Command level.[273] On 9 April 1951, however, Weyland had been more critical of the lack of an over-all theater control for available air power, and he had recommended that the final FEAF war report would carry the lesson that "all aircraft operating in a theater, except those performing Naval missions, be placed uner the command of the air commander."[274] While carrier-based air forces represented an important theater air force potential, Navy commanders in the Far East were slow to commit themselves postively to the collateral missions which they believed might hinder their ability to maintain control of the seas. Thus the agreement for air coordination in defense of the Far East Theater signed on 26 March 1951 gave the Far East Air Forces air defense commander operational control over all shore-based Navy and Marine fighter aircraft in an air defense emergency, but it provided that carrier-based fighter aircraft were an integral part of the fleet and could not normally be pre-committed to any emergency operational control of the air defense commander. Marine land-based aircraft were successfully integrated into the Fifth Air Force-Eighth Army air-ground system, but Seventh Fleet aircraft could not be positively committed to ground support as long as the Naval Forces Far East had a mission in the Taiwan Straits. When relieved of this mission, the Seventh Fleet established a naval

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member in the Joint Operations Center in Korea in June 1953 and thereafter participated integrally in the support of the ground forces in Korea.[275]

The same concern that organizational diffusion might lead to a loss in air power's inherent flexibility caused Air Force thinkers to question the division of the Air Force into strategic and tactical air arms and to reexamine the mission of tactical air forces. As engrossed in the Joint Training Directive for Air-Ground Operations, issued jointly by the Tactical Air Command and the Army Field Forces in September 1950, the mission of tactical air power was related to the strategy and maneuver of ground forces. Late in 1950, however, a study prepared by the Office of Assistant for Evaluation of the Air Force Deputy Chief of Staff for Development suggested that tactical air power need not be related directly to the maneuver of friendly ground troops. Tactical air power might be employed directly against enemy forces in the field without any friendly ground forces being present. "In this new concept," stated the study, "tactical air power will be entering into direct combat with enemy ground forces--not only supporting our ground forces in their fight against the enemy ground forces. . . . Clearly, it is not acceptable to relegate tactical air to only a supporting role. It is no longer sufficient even to declare that tactical air and ground forces cooperate equally. Rather, tactical air must now be conceived as having a role in the battle against enemy ground forces at times completely on its own."[276] The Air Force officially accepted the concept on 29 June 1953 when it issued a revised regulation governing the organization of the Tactical Air Command. This regulation defined tactical air operations "as the application of all air power, under the command or operational control of a theater or area commander, against an enemy's military potential and capabilities in being, normally only within the theater area of responsibility. Restricted only by limitations of equipment and capabilities of designated units, tactical air operations may encompass any task necessary in the furtherance of the theater mission."[277] In explaining the change in tactical air doctrine, Brigadier General Ferguson noted that tactical air power "was considered a supporting arm until recently when new weapons were introduced which in themselves produce decisive results. . . . The formidable nature of this new source of firepower, in fact, reverses the orthodox relationships of air and ground forces. Specifically, it is quite reasonable to say that we should look for a modification in our tactics and in our concepts of war . . .which would point toward the exploitation of tactical air atomic attacks by highly mobile ground forces."[278]

Many Army officers who served in Korea insisted that the ground forces ought to possess their own organic close-support aviation, but the several joint evaluation boards that met in the Far East Command during and at the end of the Korean hostilities generally endorsed the organizational concepts of extant Army-Air Force doctrine. A Joint Eighth Army-Fifth Air Force air-ground

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operations board which reported on 26 March 1951 found that "the Joint Training Directive for Air-Ground Operations . . . is sound and adequate and is applicable to the Korean theater of operations."[279] In his study on air-ground operations issued in August 1952, General Clark held that any comparison between the Army-Air Force and Marine systems of close air support was faulty because the two systems were designed for completely different types of functions and had different allocations of forces.[280] A conference of Fifth Air Force, Eighth Army, Seventh Fleet, and 1st Marine Aircraft Wing representatives which met in August 1953 for the war's end review of air-ground operations stated: "Little attempt has been made . . . to reiterate previously published doctrines and techniques which have been found fundamentally sound and workable."[281] "I don't think we ought to be in tactical air support. I don't know anybody at the top of the Army who is pressing for it," stated Under Secretary of the Army Earl D. Johnson in October 1953.[282]

While the Department of the Army did not seek to undertake its own close air support, it nevertheless vastly expanded the Army's organic aviation. According to a joint readjustment agreement of 20 May 1949, Army aviation was categorized as fixed-wing aircraft not exceeding 2,500 pounds in weight and rotary-wing aircraft (helicopters) weighing no more than 4,000 pounds. Such organic aircraft were to be used to expedite and improve ground combat procedures in forward areas of the battlefield. In addition to these planes, the Air Force would continue to provide liaison squadrons to support Army units. Based upon combat experience in Korea, both the Army and the Air Force effected new plans and ordered helicopters in larger numbers. Most Army helicopters were committed as organic aviation, but the Army also planned to establish helicopter transport companies, each able to lift an infantry rifle company. Responsible for air-assault airlift, the Air Force planned to organize assault transport wings, each to include one conventional troop carrier group and one rotary-wing aircraft group; when not employed in air assault work, the helicopter group would accomplish front-line air transport functions. Early in 1951 the Army wanted to secure larger aircraft and helicopters, but the Air Force believed that such planes would infringe upon the Air Force's air transport mission. Seeking to settle this controversy, Secretaries Frank Pace of the Army and Finletter of the Air Force signed an agreement on 2 October 1951 that omitted references to the weight of Army aircraft and stated that the Army would possess organic aircraft required "as an integral part of its components for the purpose of expediting and improving ground combat and logistical procedures within the combat zone." The combat zone was understood to be an area from 60 to 75 miles deep behind the battle line.[283]

In view of the Pace-Finletter agreement as well as a demonstrated need for increased army mobility in Korea, General Ridgway

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recommended in November 1951 that the Department of the Army should procure enough cargo helicopters to allocate 10 helicopter battalions, each with three companies, to a typical field army. The Department of the Army was favorable to Ridgway's proposal, but it approved a lesser allotment order by which four helicopter battalions, each with three companies, would be assigned to each field army. The Air Force, however, was skeptical of such an allotment of Army helicopters since it would obviously duplicate the helicopter services that could be provided by the rotary-wing groups of assault transport wings. General John E. Hull, Deputy Chief of Staff of the Army, pointed out on the other hand that the Army had never made any requirement for support by Air Force rotary-wing aircraft within the combat zone against which the Air Force was justified in programming units.[284] This jurisdictional controversy remained deadlocked until 4 November 1952 when, after intervention by Secretary Lovett, a second memorandum of understanding was jointly approved by the Army and Air Force. This understanding fixed the maximum weight of Army fixed-wing aircraft at 5,000 pounds but prescribed no weight limit for helicopters. It specifically recognized that Army aviation would have the function of transporting Army supplies, equipment, personnel, and small units within the combat zone, an area precisely defined as extending 50 to 100 miles deep behind the front lines. The Air Force remained responsible for airlifting Army supplies, equipment, personnel, and units between points outside the combat zone to points within the combat zone and also for the air movement of Army troops, supplies, and equipment in the assault and subsequent phases of airborne operations.[285]

At the same time that the Korean hostilities provided new lessons looking toward a future employment of theater air forces, they also reemphasized old air power lessons. The applicability of some of these old lessons, however, tended to be obscured by the peculiar circumstances prevailing in Korea.. The Strategic Air Command well demonstrated the flexibility and versatility of its force by employing medium bomber wings as a tactical bomber force, by committing one of its escort fighter wings for a time to an air-ground attack role, and by providing rotational fighter wings for the air defense of Japan, but the local peculiarities of the limited war did not permit a full exploitation of the strategic bombing function. Because of the artificial boundaries of the conflict most of the production facilities that the Communists used to support their war effort could not be attacked. In the early months of the war the few war-supporting industries of North Korea were easily destroyed and after this very few targets could be found that would warrant a medium bomber formation large enough in size to provide the old B-29's with mutual self protection. Early in the war many Air Force officers chafed at the employment of so-called "strategic" bombers in tactical air roles and vexed themselves with discussions as to whether or not "strategic" targets even existed in Korea. Lieutenant General Stratemeyer had occasion

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to remark that strategic bombers could be freely diverted to ground-support purposes because the B-29's were available and because the ground situation was threatening, but he warned that it should not be assumed that such diversions superseded the real purpose of strategic aircraft. This same admonition held true throughout the war.[286]

"There is little doubt in my mind," wrote General Weyland, "that the outcome of the conflict would have been vastly different had enemy domination of the air reversed the positions of the Communists and the United Nations Command."[287] At least one Navy officer concluded that the Korean war "clearly demonstrated that land battles can continue to be waged successfully in the face of complete air control,"[288] but few authorities questioned the Air Force assertion that "the first and most important lesson" of the Korean conflict was that "control of the air is a prerequisite for any large-scale military operation."[289] Free from the danger of hostile air attack, outnumbered United Nations ground forces were able to maneuver at will during daylight hours, while the Communists were compelled to move and to fight at night. Although the Communist armies proved able to exist in a battle zone covered by conventionally-armed United Nations air power, these forces were unable to use their superior strength to accomplish their military objectives. In the autumn of 1950, Lieutenant General Stratemeyer feared that the relative ease with which the Far East Air Forces gained air superiority might lead to an erroneous conclusion that such a feat could be duplicated at will in a future conflict. In the course of the war, a small band of Sabre pilots successfully shielded the United Nations Command against much larger numbers of Communist aircraft. In the course of their barrier patrols, the Sabres met and destroyed 810 enemy aircraft (including 792 MIG's) at a cost of a combat loss of 78 of their own number. But the fact that this smaller Sabre force was able to maintain air superiority had to take into consideration a recognition that the Communists were unable to use their superior air capabilities effectively.[290] "At any time since possibly the middle of 1951," stated Colonel James B. Tipton, an experienced Fifth Air Force wing commander, "I have seen no cogent reason why the Red Air Force Commander did not wipe out the United Nations Air Forces opposing him."[291] Some part of the inability of the Communists to employ their superior numbers in all-out air battles was attributable to a lack of skilled aircrews, but the controlling circumstance of air superiority in Korea was better summed up by Colonel Hampton, when he concluded: "The Communists feared to use their local air forces decisively because the United States had warned that any extension of the Korean war might bring down upon the aggressor the awesome force of the U.S. Global air-atomic power."[292]

"The second lesson," Brigadier General Ferguson said in a discussion of the employment of tactical air power in Korea, "was the most profitable attacks were those made deep in enemy territory

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where supplies, materiel, and personnel are fairly well concentrated. As supplies and men are moved closer to the line of contact, dispersal greatly reduces the effectiveness of air attacks. Consequently, where it is operationally feasible, tactical air should place the major emphasis for its interdiction program against those lucrative and concentrated targets which necessarily lie deeper in enemy territory."[293] Few of the United Nations air actions in Korea drew more criticism than the comprehensive railway interdiction attacks prosecuted between August 1951 and May 1952, the air campaign which was popularly described as "Operation Strangle." General Lemuel C. Shepherd, Commandant of the Marine Corps, stated that Operation Strangle was "recognized as a fizzle," and Vice Admiral J. J. Clark, the Seventh Fleet's commander, observed: "The interdiction program was a failure. It did not interdict."[294] In retrospect, Weyland admitted that "Strangle" was a poorly conceived name because it gave critics who did not understand the real objective of the railway interdiction effort a vehicle for proclaiming its failure, but he insisted that the railway interdiction campaign "was an unqualified success in achieving its stated purpose, which was to deny the enemy the capability to launch and sustain an offensive."[295] "No one can be foolish enough," stated Colonel Titson, "to claim 100 percent effectiveness for any interdiction effort; to freeze all movement within complex areas of thousands of square miles is impossible." He nevertheless observed: "We can conclude that the unique features of the Korean operation have not changed the concept of air operations in the interdiction task."[296]

With regard to close support by the Air Force of Army troops," stated General Maxwell D. Taylor, "I would first say that dissatisfaction would not apply to the attitude shown by the Air Force in Korea. I was never more loyally supported by anyone, even by my own people, than by the Fifth Air Force when I commanded the Eighth Army."[297] Recognizing that the outnumbered United Nations ground forces in Korea never possessed a proper amount of organic artillery, Weyland noted that "FEAF and Fifth Air Force leaned over backward to provide more than adequate close air support."[298] But the final report of the Far East Air Forces nevertheless warned: "Because FEAF provided UNC ground forces lavish close air support in Korea is no reason to assume this condition will exist in future wars." In a future conflict the fighter-bomber forces would be hard put to attain air superiority, and the attainment of such air superiority would be more vital to the success of the mission of all forces than close support would be.[299] Speaking of his experience in Korea, Brigadier General Ferguson outlined the potential worth of close air support under various battle conditions. "In my opinion," he wrote, "close air support is of little use unless the associated army is . . . on the offensive. When the army is holding along a riverline, or waiting for a supply build-up, or for strategic or political decisions to be

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taken, close air support does little more than keep the state of the art alive. . . . It should and must be used under such conditions as we faced in April and May 1951 when great hordes of Communist Chinese poured in against soft points in our lines. But, given relatively static conditions along a line of resistance, the most effective employment of tactical air is to range forward and seal off the projected battle zone, while maintaining control of the air and conducting long-range interdiction. . . . When the day does come for the all-out attack by our troops, every airplane of every category would participate in breaking the initial line of resistance and getting the offensive underway. From then on close support, close-in interdiction, and airfield sweeps all combine to keep the enemy off balance and to make the offensive an ultimate success."[300]

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CHAPTER 7

THE AIR FORCE WRITES ITS DOCTRINE, 1947-1955

1. Early Efforts to Identify Air Force Doctrine

"Where in the Air Force," asked Major General Lauris Norstad, the Assistant Chief of Air Staff for Plans in 1946, "will there be assembled more of what it takes to study, discuss, devise, develop, test and formulate than at the Air University? Here, in an atmosphere dedicated to instruction, thinking, study, and discussion, there will of necessity be a constant evaluation of any current combat and an immediate application of its lessons to existing tactical doctrines. 'Shall we change; is our doctrine sound?' will be daily questions in the minds of hundreds of instructors, spurred on by the sharp analysis and questions of thousands of highly-experienced students. Why not give these men the job of evaluating combat and formulating tactical doctrine for the entire Air Force?. . . They can probably do a better job, resolve a greater amount of sound thinking into useable doctrine than any group of men anywhere. And they will do it whether or not they are charged with it."[1]

As a result of Norstad's recommendations and of the favorable reputation enjoyed by the old Air Corps Tactical School, the Air University was charged with a mission statement in June 1946 which noted that it: "Reviews, revises, and prepares publication of AAF basic doctrine. . . . Develops basic doctrines and concepts for the employment of air power. . . . Maintains continuing research into the strategic, tactical, and defensive concepts of air power, both manned and unmanned aircraft and guided missiles. . . . Maintains close liaison with the Headquarters of the Strategic Air Command, the Tactical Air Command and the Air Defense Command with regard to matters of policy and doctrine."[2] During 1946 the Air University established the Air War College at Maxwell Field, the Air Command and Staff School at Craig Field, Selma, Alabama, and the Air Tactical School at Tyndall Field, Panama City, Florida. Believing that the Air University ought to furnish officers with facts, skills, and technical information and also to guide the future thinking of the Air Force, the Air University's Faculty Board stated that the new educational institution would not be bound to accept official policies without question but only to present official policies for study. Regardless of existing policies, students could be told of the Air University's beliefs. The Faculty Board stated that all curricula would accept a basic school doctrine, namely: "That the ultimate objective of air power is to force the capitulation of an enemy nation by air action applied directly against the vital points of its national structure. This may not at any given time be primary in importance, but it is the ultimate objective."[3]

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The Air University's broad responsibility for the development of concepts and doctrines and for tactical testing rested upon an initial planning assumption that the institution would be assigned typical combat air units that could be employed for test purposes. As has been seen, General Spaatz found it impossible to assign such units to the Air University and ordered that the Air University would depend upon other commands for the conduct of tactical tests and developmental work. Spaatz also stated that the "doctrines taught at the Air University will be those current in the various commands, approved as necessary" by Air Force headquarters.[4] Seeking to bridge the conflict in orders, Major General David M. Schlatter, the Air University's Deputy Commander, announced that in the accomplishment of research, evaluation, and doctrinal functions the Air University would "act in the capacity of a monitoring agency or steering committee utilizing the expert knowledge available in all of the commands of the Air Force."[5] Recognizing that its mission was one of evaluation rather than research, the Air University redesignated its Research Division as the Evaluation Division on 29 August 1947.[6]

Except for announcing the basic doctrine that would govern its instructors, the Air University made little progress in preparing statements of basic Air Force doctrine. In Washington on 13 May 1946, Brigadier General Francis H. Griswold, Deputy Chief of Air Staff for Operations, urged that the Air Force ought to begin to formulate its doctrine. "There is a requirement for a field manual," Griswold wrote, "which will establish the place of air power in the armed forces and define our policies, doctrines, strategy and tactics . . . . The theory or strategy of air power, particularly strategic bombing, has never been adequately put on paper. . . . A strong and logical framework must be developed from which can be provided appropriate manuals for the several service schools, material for the provisional education of officers of all ranks in all of the armed forces, and policies to guide our public relations and dealings with Congress." While War Department Field Manual 100-20, Command and Employment of Air Power, had been "a declaration of independence of air power," Griswold urged that it was already "obsolete and entirely inadequate." As written in 1943 this manual had emphasized the coequality of air power and ground power. "Land power and air power," Griswold thought, "are not always interdependent forces. There are times when air power at least may be an independent force." At the time of Griswold's recommendation, however, Major General Muir S. Fairchild, the Air University Commander, was reluctant to commit his personnel to a doctrinal problem until the new institution was firmly established. Major General C. C. Chauncey, Chief of the Air Staff, additionally feared that any revision of Field Manual 100-20 might stir up a political controversy which might hinder the cause of armed service unification.[7] Unlike the Air Force, the Navy moved boldly to provide a basic doctrine to its forces. In the closing months of World War II it

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assembled a full-time panel of officers whose duties had involved combat command or important staff work and directed them to prepare a series of "U.S. Fleet" publications. The key USF-1, "Principles and Instructions of Naval Warfare," went through a number of drafts within the panel, was circulated for comments by naval commanders, and was published on 1 May 1947 with the notation that it represented "the best service opinion and best knowledge that obtains in 1946."[8]

With armed services unification assured by the National Security Act of 1947, Brigadier General Thomas S. Power, now Deputy Assistant Chief of Air Staff for Operations, directed the Air University to undertake its doctrinal responsibility without further delay. "There is a requirement for an Air Force publication of field manual scope," he wrote, "that will establish the doctrine and command of air power in the Armed Forces and define our policies and strategies. . . . It is visualized that this manual will be the top level Air Force document from which will be derived all other Air Force publications relative to air power and joint operations." Power directed the Air University to revise Field Manual 100-20 and to provide recommendations for the type of Air Force publication that would be employed to disseminate doctrine.[9] Without awaiting action on this problem, the Air Force in August 1947 summoned representatives of the Air University, the Air Defense Command, the Tactical Air Command, and the Strategic Air Command to form two panels to provide guidance for an Air Force position in regard to air defense procedures, doctrine, and organization. Headed by Colonel Richard H. Carmichael, Chief of the Air Power Employment Section of the Air University's Evaluation Division, the Air Defense Policy Panel held meetings during the winter of 1947-48 and made its final written report to the Air Force Chief of Staff on 2 February 1948. The report concluded: "The security of the nation from air attack rests primarily upon our strategic air offensive capabilities, but air defense is necessary and can achieve a degree of effectiveness which may mean the difference between victory and defeat." It recommended that a unified continental theater of operations, comprising Army, Navy, and Air Force forces operating under a unified command structure with a single commander, would provide the most effective and economical organization which could ensure the security of the United States against air attack.[10]

When the Air University was directed to revise Field Manual 100-20 and to recommend a system of doctrinal publications, Major General Schlatter took account of the fact that the Air University's Evaluation Division had only 18 officers and that not all of them could be assigned to a manuals project. He therefore directed that the Evaluation Division would monitor and evaluate projects which would be carried out in the Air University's schools and colleges. He specifically directed the Air War College to revise the field manual and to recommend a system of doctrinal publications.[11] During

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his tenure as founding commandant of the Air War College, Major General Orvil Anderson frequently employed student seminars to study and report on major air problems, and he would use this procedure to handle the doctrinal projects.

On 16 September 1947 two Air War College seminars addressed themselves to the assigned problems, and the seminar headed by Colonel W. M. Garland sought to make recommendations on a system of Air Force publications. In its report on 19 December, Colonel Garland's seminar recommended that the Air Force ought to develop a single integrated publications system under the central control of a Publications Board in the office of the Vice Chief of Staff. The seminar suggested that the old Army system of disseminating doctrine in field manuals and technical manuals had been too rigid and had never provided a comprehensive coverage. The Navy's USF series appeared more acceptable as a model for the Air Force. The seminar therefore proposed that the Air Force ought to use a series of Air Employment Instructions which would promulgate concepts of the roles and objectives of air power in national security, the principles and doctrines of command and employment of the Air Force in peace and war, and the strategy, tactics, and techniques of Air Force operations. Published under the authority of the Chief of Staff, these air employment instructions would "constitute essential guides" and would "reflect the most logical current thought in the employment of air power," but they would not seek "to suppress initiative or to establish a set formula for air warfare." The air employment instructions should be divided into three general categories. Category I would comprise a basic book on air power. Category II would outline in general terms the application of fundamental principles and basic doctrines of employment to specific operational fields of Air Force endeavor--for example, strategic air operations. Category III would deal with the operations, tactics, and techniques of type units of the Air Force, such as the tactics and techniques of fighter escort. Immediate responsibility for stating requirements for air employment instructions and for ensuring that they were properly revised would rest with the Air Force Deputy Chief of Staff for Operations. The seminar recommended that the air employment instructions should be issued in looseleaf binders so that they might be easily revised.[12]

The Air University accepted the requirement for the air employment instructions series of doctrinal publications, but it was not willing to limit the series to purely operational matters since it believed that the Air Force would need to express doctrine in administrative, logistics, communications, intelligence, and related special staff fields. On 5 February 1948, the Air University accordingly recommended that the air employment instructions should include three somewhat different categories from those proposed by the Air War College. Category I would continue to be the basic volume entitled "Air Power." Category II would be called "The Commander's Guide," and its single volume of seven books would include statements on Air

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Force operations in general, in strategic applications, in joint endeavors, in air defense, in air transport, in air reconnaissance, and in special activities. Category III would be "The Group and Squadron Commander's Handbook," and its single volume of six books would concern the tactical group and squadron and the tactics and techniques of bombardment, fighters, reconnaissance, air transport, and special air units. The Air University noted that "the interested agency on the highest level should be responsible for the doctrine promulgated in a given field."[13]

Both the Air War College and the Air University emphasized that the number and type of publications within the Air Force ought to be greatly reduced. The Air Staff also endorsed this objective on 5 March, when it directed the Air University to proceed with the preparation of the recommended air employment and administrative instructions, which quite likely would be issued as a series of Air Force manuals rather than as a separate publications series.[14] Although the Air Staff appeared to have approved the Air University's planning, an Air Force Publications Board which assembled in Washington early in 1948 refused to accept it. The Air Force regulation issued on the subject of publications on 26 April described ten types of publications, including manuals. Manuals would include the types of material which had been called field and technical manuals, training standards, guides, handbooks, pamphlets, textbooks, and workbooks. Any Air Force command would be authorized to issue local command manuals on subjects peculiar to the command. Air Force manuals would normally be prepared by responsible functional Air Staff agencies, but, in certain instances, Headquarters USAF would delegate the preparation of the texts of manuals to a subordinate command. In this case the manuscript of the manual would be reviewed and approved by the Air Staff. The Air Adjutant General was charged to edit and authenticate all Air Force manuals.[15]

While Garland's seminar was surveying the Air Force publications system, another Air War College seminar headed by Colonel C. P. Lessig was assigned the task of revising Field Manual 100-20. Because of Garland's recommendations, Lessig's seminar undertook to draft the "Air Power" volume of the air employment instructions series, and it completed this project in February 1948.[16] Meanwhile another seminar, headed by Colonel R. A. Grussendorf and including Colonels Noel F. Parrish, Arno Leuhman, E. L. Sykes, and G. P. Disosway, was given the problem of determining how the Air University ought to proceed in order to produce "The Commander's Guide." In a study completed on 16 March, this seminar suggested that the Air Force had been "organized and operated as a result of ideas existing in the minds of a very few men" which had "never been well stated" and had "never been brought together and organized into a complete and logical form" nor "explained in suitable terms bearing the sanction of official approval." It recommended that a permanent group of qualified Air Force officers and military or civilian writers, working under direct authority of the Vice Chief of Staff,

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should be assigned the task of writing and of continuously revising the text of the air employment instructions. It also recommended that the collection of source material for this permanent group should be as comprehensive as possible, that the sources should encompass the best thoughts of all available experts on air power employment, and that personal interviews should be used to the maximum. Since few air leaders had written clearly on the fundamentals of air warfare, the seminar suggested that any complete and official statement of the meaning of air power could "be derived from only one source, the minds of leading military airmen." While they were brief and incomplete, the statements of Air Force leaders during the Finletter and Compton investigations were judged to represent Air Force principles and purposes better than anything to be found in official publications. Air power doctrine would thus come largely from living men but this was understandable, for the seminar concluded with a flourish: "The principles of Air Warfare stem from Mitchell, Arnold, and Knerr more notably than from Frederick or Napoleon, and Air Force thinking needs no Old Testament text for justification."[17]

Having received authorization to proceed with the preparation of the air employment and administrative instructions, Air University officers assumed that the Air Force Publications Board would accept the planning which had originally been done in the Air War College. On 5 April 1948, the Air University accordingly established a board of officers from the Evaluation Division and the Air Command and Staff School to draft "The Commander's Guide" and on 16 April it directed the Air Tactical School to prepare "The Group and Squadron Commander's Handbook."[18] Expressing a desire that the publications should have a high quality of styling, illustrations, content, and format, the Air University asked the Air Force to make available to it personnel "with literary or artistic experience and talent."[19] While on a visit to Fort Monroe and Washington to survey Army and Navy publications activities early in May, Colonel Carmichael, who would shortly become chief of the Air University Evaluation Division, was startled to learn that the Air Force regulation on publications had "rejected the Air War College plan completely." He pointed out that the new Air Force regulation placed responsibility for doctrinal manuals with Air Staff agencies and thus conflicted with the assignment of doctrinal responsibilities to the Air University. Under the new regulation no single Air Force agency was empowered to pass judgment on the content of manuals or to review the whole field to ensure that manuals provided a comprehensive coverage. At no point in the new system was there a stated requirement for professional editors, writers, or illustrators. "The quality of USAF publications, particularly manuals which will become the media for the enunciation of USAF employment and training doctrine," Carmichael noted, "is not assured of being superior or even excellent."[20]

Although the Air Force regulation of 26 April made Air Staff agencies responsible for manuals on doctrine, the Air Force

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nevertheless stated on 25 June 1948 that the Air University planning represented "an advance in simplification and condensation of Air Force manuals." It therefore directed the Air University to continue with the preparation of the Category I, II, and III instructions and also suggested subjects for a number of specialized administrative manuals which the Air Force would require.[21] At this juncture, Colonel Carmichael again asserted the requirement for a single Air Force agency, either under the Vice Chief of Staff or able to speak with his authority, to provide a central direction for the planning, preparation, and revision of Air Force manuals. "It is completely unrealistic," he thought, "to believe that Headquarters staff agencies will 'normally prepare' all manuals." He thought that the three principal deficiencies in the Air Force publications system--divided responsibility at the top, lack of a master plan, and insufficient professional assistance--sprang from a "lack of appreciation for the prodigious amount of thought and labor required to produce a good manual." "A manual," he said, "must first express sound doctrine. This requires careful research and evaluation of everything that has been written or spoken about the subject. Once the ideas have been assembled they must be arranged in a logical and orderly manner. Then the writing phase of the process begins, the most laborious part of the task. When ideas are expressed in such a way that the reader can readily grasp their meaning, the manual is readable as well as intelligible. There is more to readability than merely making the meaning clear to the reader, it is measured also by the use of illustrative materials within the text. . . . A well written and illustrated manual is the result of the ideas and work of many people. This fact must first be recognized before any effective manual system can be established." Carmichael also urged that "manual writing cannot be effectively and efficiently accomplished as a part time, 'in addition to other duties' measure" and urged that the Air University ought to establish a production unit "which will take the writing load off of the instructors in the schools and place it upon qualified civilians under the direction of competent officer personnel."[22]

Anticipating that it would become "the 'Bible' of the Air Force and the keystone from which all other Air Force doctrinal publications will stem," the Air University expedited the preparation of the Category I volume now titled "Air Power and the U.S. Air Force." The initial draft prepared by the Air War College seminar in February 1948 was reviewed and revised by the Evaluation Division in March and April and was circulated through the Air University's schools and staff during May. Believing that the principal purpose of a manual was to teach, the Air University sought to ensure that the air power manual was "written in sufficient detail and with such clarity so as to be intelligible and attractive to the average junior officer." Although it did not consider its draft to be a final product, the Air University submitted "Air Power and the U.S.

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Air Force" to the Air Force Director of Training and Requirements on 2 July 1948, with a request that the Air Staff review its "scope, tenor, and general form."[23]

When the Air Staff had completed its review of "Air Power and the U.S. Air Force," Major General Frank F. Everest, Assistant Deputy Chief of Staff for Operations, informed the Air University on 21 September 1948 that the manual did not fulfill the purposes for which it was intended. The Air Staff found the draft manual to be discursive and defensive rather than positive, to be written in a narrative form rather than concisely worded for reference purposes, to be lengthy and cumbersome, to contain much inessential detail such as references to World War II experiences, to include controversial statements which did not contribute to an enunciation of doctrine, and to have other bits and pieces of information which were much too obvious for a high level publication. The Air Staff actually disagreed with the reasoning of the manual only in a few particulars. It criticized as being unnecessarily controversial the manual's statement: "Because air forces can be used in so many ways in the attack and because of the difficulties of protecting against such air attacks, the requirements for air defense measures are so great as to approach the unacceptable." It believed that the description of an air mobilization phase at a war's beginning weakened the Air Force's emphasis on an air force in being. The strong assertion in the manual that "strategic bombing operations are normally conducted independently of ground and naval forces" was said to be contrary to the more moderate Air Force position that Army and Navy forces were essential for the defense of oversea air bases required for a strategic air campaign. "In the preparation of this high level doctrinal publication," the Air Staff advised, "it is necessary that it be as timeless and far thinking as possible. . . . This publication on air employment is of such importance, covering high level doctrine and the principles of aerial warfare, that it should not be burdened with detailed instructional and procedural methods which are constantly changing. On the other hand, this type publication should cover general overplans for doctrine and strategy which would stimulate flexibility of thought and action at all levels of command."[24]

In the spring of 1948 the Air University assigned responsibility for preparing the Category II "Commander's Guide" to the Air Command and Staff School at Craig Field and for drafting the Category III "Commander's Handbook" to the Air Tactical School at Tyndall Field, and each of these institutions assigned the responsibilities for drafting the various books in the volumes to specific instructors under their control. These instructors were unable to begin any serious attempts to write before the summer vacation period, and even then they could do little more than to prepare some highly tentative drafts on their assigned contributions. On 22 December, the Air Force Director of Training and Requirements nevertheless asked that the drafts of the Category II and III manuals should be

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delivered to him in order that they might provide guidance to the Air Staff in negotiations which were getting underway with the Navy. Although the Air University was reluctant to allow imperfect work to go to Washington, it complied with the Air Force request with misgivings but with some expectation that it might also begin to get some comments on the work.[25] After surveying the manuscripts, however, the Training and Requirements Division returned then with the notation that it had not considered them ready to be submitted to the Air Staff.[26]

During the spring and summer of 1949, the Air University Evaluation Division worked upon revisions of the Category II and III volumes, giving priority to the Category II "Commander's Guide" which it intended to publish first. In the autumn of 1949 the Air University forwarded printed copies of the five books of the "Commander's Guide" to the Air Staff and to the major Air Force commands with a request that they be reviewed for content, style, format, and suitability for Air Force usage. As had been the case with the "Air Power" volume, Air Staff comments on the "Commander's Guide" were highly critical. One reviewer stated: "I don't believe a Commander would read it more than once--he might even stop after the first page." Other comments indicated that the volume contained information that was out of date, was too elementary to meet the purpose for which it was intended, was incomplete in scope, and generally did not measure up to standards required of an Air Force publication. The Air Staff directed on 25 July 1950 that the volume should be rewritten and it further suggested that the Air University seek assistance from the Air Force's operating commands. "Only then," stated Colonel Dorr E. Newton of the Directorate of Requirements, "will be get the latest tactical doctrine, tactics, and techniques incorporated."[27]

"I guess I personally am responsible for having sent out some poor tentative manuals," admitted Major General John DeForest Barker, who had become the Air University's Deputy Commander in August 1949. "I decided to let them go out 'as is' for comment, and then rewrite them in manual form, rather than to write them in manual form, send them out for comment, and then again rewrite them according to the comments. I think we saved time by this method, but we certainly didn't improve our standing in the community."[28] Barker was free to admit that the Air University's manuals had been couched in "Adjutant General's language" which was "stilted, expressionless, and to a considerable extent meaningless." "They are the kind of a book which a man reads because he has to," he said, "not because he wants to. I would like very much to have them written in such a style that people enjoy reading them and hence will get more out of them."[29] Highly motivated to complete the doctrinal manuals project, Barker proved able to exercise some economies within the Air University and to secure spaces for four military and three civilian editors for assignment to an Air University Publications Office. In June 1950, the Publications Office took over the

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responsibility for completing the "Air Power," "Commander's Guide," and "Commander's Handbook" manuals. The work of revising these books appeared to be going well, perhaps because of the fact that the Air University had secured many indications of the sort of material that was not believed to be appropriate in a doctrinal publication. On 26 September 1950, however, Barker received word that a project was underway in Washington to prepare and publish joint armed forces doctrinal publications. Since the joint-force doctrines might well supersede the air employment instructions, Barker reasoned that the Air University must suspend its doctrinal work pending the maturity of the higher level discussions on doctrine.[30]

2. Air Force Activities in the Field of Joint Doctrine

At the end of World War II senior Air Force officers hoped and expected that the Army and Navy Staff College--which would become the National War College--would be able to provide joint-force doctrine in much the same manner in which it was expected that the new Air University would prepare air doctrine.[31] Under a directive from the Joint Chiefs, a Joint Operations Review Board of approximately 50 Army and Navy officers was convened at the Army and Navy Staff College early in 1946 to study the joint operations of World War II and to revise joint doctrine as necessary.[32] Passing in the meanwhile under the guidance of the National War College, the Joint Operations Review Board submitted a draft manual entitled "Joint Overseas Operations" to the Joint Chiefs on 15 August 1946, which the Joint Chiefs promptly transmitted to the Army and Navy for comment.[33] Although General Spaatz acknowledged the need for a new publication to replace prewar Army-Navy agreements, he was unwilling to accept the draft of the "Joint Overseas Operations" manual. The proposed text envisaged some unity of command with an integrated tri-service joint staff, but it failed to develop this doctrine in any precise detail. The text did not consider the possibility that a hostile nation might be defeated by air attack, and it was chiefly concerned with amphibious landings of ground troops at an oversea objective.[34]

Thinking it mandatory that the Armed Services have an agreement on future oversea operations but being unwilling to accept the jointly prepared manual, Major General O. P. Weyland, Assistant Chief of Air Staff for Plans, proposed on 29 August 1946 that the Army Air Forces should propose to extend the same type of cooperative arrangements accepted in War Department Field Manual 31-35, Air-Ground Operations, to the field of amphibious operations. Following this line of reasoning, the Assistant Chief of Air Staff for Operations prepared a paper entitled "Joint Procedures for Tactical Control of Aircraft in Joint Amphibious Operations," which the Army Air Forces promptly submitted to the Joint Chiefs as its

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concept of the command and control of air power in joint operations. This paper stated: "The Joint Task Force is normally divided into air, ground, and naval components, each under its own commander. All components of the team are under the Joint Task Force commander who is responsible for the joint effort." In brief, the Air Force paper sought to secure a unity of air action by expanding the joint operations center already being used as the instrument of Army-Air Force cooperation to include a Navy operations section as well as the Army air-ground operations section and the Air Force combat operations section.[35]

The Army informally concurred with the Air Force position, but the Navy preferred to look upon amphibious operations as a two phase endeavor in which a fleet commander would command forces afloat and would pass command to the landing force commander when troops were set ashore. The Navy had already published its views in USF-6, Amphibious Warfare Instructions, and it looked upon the Air Force paper as containing "information which is contrary in many points to standard Navy doctrine and to experience gained in World War II."[36] The Navy opposition made it evident that the paper could not be approved by the Joint Chiefs, but Major General Earle E. Partridge, Director of Training and Requirements of the Air Force, nevertheless believed that it could be issued as a revision of Field Manual 31-5, Landing Operations on Hostile Shores. Seeking comments and recommendations, Partridge submitted the Air Force position to the Air University and the Tactical Air Command. The Tactical Air Command responded with a vigorous demand that the Air Force would not "compromise or appease," and it suggested that the wording on command structure should be stated even more strongly. "The Air Force should advocate and persist as a basic principle that there should be a unified command for an amphibious operation; that there will be appointed an overall commander who commands the operation from the time of inception until completion; that the overall commander will not concurrently command one of the major subordinate forces involved; that the overall commander will have a joint staff consisting of Air, Ground and Naval personnel; that the amphibious force will be composed of a Naval Force responsible for all naval activities as such, a Ground Force responsible for the conduct of all ground action, and an Air Force responsible for the conduct of all air action." The Air University concurred in the Tactical Air Command's recommendations. It assumed that the proposed statement on command would "certainly be violently opposed by the Navy," but it thought that the manual might be issued as Army-Air Force doctrine. On 28 October 1948, however, the Army agreed that "a manual of this type would be desirable as an interim statement of doctrine," but it believed that such a manual ought to be processed through the Joint Chiefs and was unwilling to consider its issuance as an Army-Air Force publication.[37]

Still seeking to secure a means for the development of joint doctrines and procedures that would replace unilateral service

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publications, the Joint Chiefs of Staff established an Ad Hoc Committee for Joint Policies and Procedures in the autumn of 1948 and assigned it the task of preparing a revision of the 1935 edition of the "Joint Action of the Army and Navy" publication. The deputies for operations of the Navy and Air Force and the deputy for administration of the Army served as the members of the Ad Hoc Committee.[38] Since one of the sections in the proposed publication was to concern tactical air support, the Committee requested the Tactical Air Command and the Army Field Forces to prepare a joint statement on the matter. To the surprise of the Tactical Air Command, which saw no reason why the organizational lessons tested during World War II and incorporated in Field Manual 31-35 should be so soon out of date, the Army Field Forces indicated that the manual was already obsolete and should be revised. With this and other matters in dispute, the Army member of the Committee proposed that the Joint Chiefs of Staff should establish at least four joint centers--airborne, tactical air support, air defense, and amphibious--which would be charged with the development of joint doctrines, tactics and techniques, joint training, and joint testing of equipment. Some Marine officers interpreted this proposal as an Army attempt to deprive the Marine Corps of its responsibilities in the amphibious field. The Air Force did not like the proposal since it believed that it would be as inappropriate for ground officers to evaluate air tactics, techniques, and equipment as for air officers to attempt to do the same for similar ground activities. In the end, the Navy and Air Force members voted against the joint center proposal because it involved the transfer of legally established primary service responsibilities to new agencies.[39]

Although the Air Force did not agree with the Army's joint center proposal, Lieutenant General Norstad, the Air Force Deputy Chief of Staff for Operations, agreed with the proposal of Major General Robert M. Lee, commander of the Tactical Air Command, that a board of the Air Force's most experienced tactical air commanders ought to review current doctrine, tactics, procedures, and equipment; to draw conclusions as to their suitability in the light of new developments; and to make appropriate recommendations. General Fairchild established the USAF Board of Review for Tactical Air Operations on 10 June 1949 with a membership including Lieutenant General Quesada, Major Generals Richard E. Nugent, Schlatter, and Weyland, and Brigadier General David W. Hutchison. Appearing before the Review Board on 14 July, General Collins argued that Field Manuals 100-20 and 31-35 should be rewritten. Field Manual 100-20, for example, stated that missions against hostile forces at the front lines were "most difficult to control, are most expensive, and are in general least effective." Collins did not believe that this statement was necessarily true. He urged that Field Manual 31-35 should be revised in order to define tactical air support of ground forces as being "the application of tactical air power in the

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furtherance of a ground campaign as required by the ground force commander to achieve his mission." He also proposed that a Joint Tactical Air Support Center be established in the Fort Bragg-Pope Air Force Base area. After holding six formal sessions, each of several days' duration, the Board reported in October 1949. Its major recommendation was the Air Force concept of tactical air power was in need of positive reaffirmation and ought to embrace three major concepts: (1) tactical air operations in concert with a major surface campaign designed to exploit the strategic air offensive by engaging in combat the military forces of an enemy nation; (2) tactical air operations in concert with a limited surface campaign to defend or to expand certain important base areas; and (3) tactical air operations in concert with the strategic air offensive within the capabilities of tactical air power to attrite the enemy air force, to destroy the mobile transportation facilities of the enemy nation, and to isolate deployed enemy forces from their source of sustenance. The Board of Review agreed that Field Manuals 100-20 and 31-35 required revision, but it asserted that the Air Force must be its own judge of tactics, techniques, and equipment.[40]

As early as 1 July 1948, General Spaatz informally indicated that the broad mission of the Tactical Air Command required it to develop and test tactical doctrines and techniques.[41] In the headquarters reorganization of January 1949, the Tactical Air Command accordingly established a Deputy for Plans, headed at first by Colonel William W. Momyer and later by Colonel Henry Viccellio, and included within it a Directorate of Doctrine, which was charged to represent the Tactical Air Command on joint agencies, boards, and committees that might be constituted to examine and evaluate doctrine, tactics, techniques, and procedures related to tactical air operations.[42] Beginning in February 1949, the Tactical Air Command's Deputy for Plans worked closely with representatives of the Army Field Forces in the preparation of a joint paper for the Ad Hoc Committee for Joint Policies and procedures which delineated the areas of agreement and disagreement on the tactical air support of ground forces.[43] The planned reorganization of the Tactical Air Command also authorized the establishment of a Headquarters, Tactical Air Force (Provisional). Effective on 16 July 1949, the Tactical Air Force (Provisional) was established at Pope Air Force Base where it would work closely with Headquarters, V Corps, at nearby Fort Bragg, in planning and conducting joint maneuvers and exercises.[44]

In the spring of 1949 the Tactical Air Command and the Army Field Forces had been unable to agree on a joint paper for submission to the Ad Hoc Committee sitting in Washington, but another project looking toward the preparation of a joint training directive for the Tactical Air Force-V Corps went more smoothly when it was begun in early August 1949. Working from an agreed outline of proposed chapters, Tactical Air Command representatives prepared drafts

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which went to the Office of the Chief of Army Field Forces. With concurrence from the Army Field Forces, the draft chapters were sent to the Tactical Air Force-V Corps for field tests.[45] Army officers were enthusiastic about the Tactical Air Force-V Corps arrangement and General Collins speaking with a degree of hyperbole, described it as an organization which was able "to work full time not only in training but also in the development of tactical doctrine of air-borne and close support operations, as well as in the development and testing of proper equipment."[46]

Before the end of March 1950, drafts of most of the chapters of a joint training directive had been forwarded to the Tactical Air Force-V Corps for consideration and test. According to the plan, the organization and equipment specified in the draft training directive were to be tested in the course of regular joint maneuvers and field exercises, and, based on these field tests, the Tactical Air Command expected to prepare a publication which could replace Field Manual 31-35.[47] The beginning of the Korean war, however, forced the cancellation of most planned field exercises and maneuvers and also increased the need for revisions in joint air-ground doctrine. Because of the urgency of the matter, Brigadier General Homer L. Sanders, Vice Commander of the Tactical Air Command, and Brigadier General William S. Lawton, Chief of Staff of the Army Field Forces, went ahead with the publication of the Joint Training Directive for Air-Ground Operations on 1 September 1950. In a preface, they described the directive's purpose as being to establish "the urgently needed amplification and revision of the principles, means, and procedures" set forth in Field Manual 31-35. They noted that much of the organization and technique specified in the directive had not been adequately field tested, but they conceived that the directive's provisions would be incorporated in a joint departmental level publication after adequate field testing.[48] In Washington, Lieutenant General Idwal H. Edwards, Air Force Deputy Chief of Staff for Operations, expressed pleasure that the Tactical Air Command and Army Field Forces had prepared "an excellent working doctrine for units of the field armies and tactical air force." "In my opinion," Edwards wrote on 2 November 1950, "this is the best available document on air-ground operations and it is one which will provide proper guidance and training in a vital phase of joint operations."[49]

The expansion of the Tactical Air Command in the late summer of 1950, together with the establishment of the Ninth Air Force (Tactical) at Pope Air Force Base on 1 August 1950, represented an Air Force effort to provide a proper parallel organization with the Army at a working level. According to Major General W. R. Wolfinbarger, who assumed command of the Ninth Air Force, this "lack of parallel organization for both the Air Force and Army at a common working level has been a serious handicap in the promulgation of Joint Doctrine and in the supervision of Joint Operations to insure adherence to Joint Doctrine." But Wolfinbarger did not think that the new organizational pattern established the Tactical Air Command in a

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coordinate status with the Army Field Forces. The Army Field Forces was the primary Army agency for the supervision of operations and training within the zone of interior, and as a consequence it was able to present the Joint Training Directive to service schools and armies as approved joint doctrine that would be taught and practiced. On the other hand, the Tactical Air Command could only present the Joint Training Directive as joint doctrine approved by the command with an expression of "hope that other activities will accept it as such until it can be properly coordinated and made official."[50]

According to all reports the association between the Tactical Air Force (Provisional) and the V Corps as field agencies of the Tactical Air Command and Army Field Forces was generally harmonious, and General Collins apparently hoped that the establishments in the Pope Air Force Base-Fort Bragg area might grow into a joint center. Obviously moving toward this end in the autumn of 1950, the Army established the Army Airborne Center and the Army Air Support Center at Fort Bragg. These centers were parts of the Office of Chief of Army Field Forces, and each was headed by an Army major general. Going along with the plan a part of the way, Major General Wolfinbarger, who was now temporarily commanding the Tactical Air Command, established a Tactical Air Command Airborne Liaison Office at the Army Airborne Center on 14 November. But when the Army Field Forces additionally requested on 13 December that three other Tactical Air Command liaison officers should be assigned to the Army Air Support Center, Wolfinbarger declined to comply. He recalled that the Headquarters, Tactical Air Command, had been located at Langley Air Force Base in order that its personnel would enjoy close daily liaison with the people in the Headquarters, Army Field Forces, at nearby Fort Monroe. He pointed out that the location of the Army centers at Fort Bragg had already lessened the desirable daily contact between staffmen. "I feel," he concluded, "that the assignment of liaison officers to the Army Air Support Center would decentralize and undermine to an unacceptable degree Tactical Air Command's responsibility for establishing and revising the doctrine, tactics, and techniques of tactical aviation which, obviously, must be accomplished at Army Field Forces-Tactical Air Command level."[51]

In view of the differences in service viewpoints which had to be reconciled, the Ad Hoc Committee for Joint Policies and Procedures of the Joint Chiefs of Staff made slow progress in its efforts to define principles and procedures for the joint action of the armed forces. One of the main points of contention continued to be the Army's position that major areas of interservice responsibility ought to be made the province of joint centers constituted under the principle of unified command and operated under the immediate jurisdiction of the Joint Chiefs of Staff. Named by the Joint Chiefs, the commander of a joint center would have a joint staff, and one of the Chiefs of Staff would be designated as the executive agent for each joint center. The Navy and the Air Force did not agree that such joint centers should be established.[52] By

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the spring of 1951 the Ad Hoc Committee found some successful compromises, and on 26 April the Joint Chiefs of Staff approved the first two chapters of a "Joint Action Armed Forces" paper. Entitled "Principles Governing the Functions of the Armed Forces" and "Functions of the Individual Services," these chapters discussed the principles, responsibilities, and functions of the Armed Services which had been set forth in the Key West agreement and which had been issued in 1948 as "Functions of the Armed Forces and the Joint Chiefs of Staff." During the summer of 1951, the Joint Chiefs also reached agreement on the last two chapters concerning "Principles Governing Joint Operations of the Armed Forces" and "Principles and Doctrines Governing Joint Aspects of Special Operations of the Armed Forces." In September 1951 the Joint Action Armed Forces paper was published as Army Field Manual 110-5, Navy JAAF, and Air Force Manual 1-1.[53]

An Air Force critique of the Joint Action Armed Forces would point out that the three separate service identifications of the same document appeared to violate the principle of "maximum practicable integration of policies and procedures" which was the announced goal of the publication. The same critique found the JAAF to be filled with "semantics compromises" which left "gray areas" of meanings, the interpretations of which in times of crisis "could prove costly in delay and indecisiveness in military action."[54] Among its other provisions, the JAAF authorized the establishment of six joint service boards, each to be under the direction of the Service that had a primary interest in the particular field of endeavor. These joint boards were to develop joint doctrines and procedures; to evaluate joint tactics and techniques, the adequacy of equipment, and the adequacy of joint training; and to review publications covering the conduct of joint training. When the boards were established early in August 1951, the Air Force Chief of Staff was made responsible for the Joint Air Defense Board at Ent Air Force Base, Colorado, and for the Joint Tactical Air Support Board and the Joint Air Transportation Board, both at Pope Air Force Base. The Chief of Staff of the Army was responsible for the Joint Airborne Troop Board at Fort Bragg; the Commandant of the Marine Corps for the Joint Landing Force Board at Quantico, Virginia; and the Chief of Naval Operations for the Joint Amphibious Board at Little Creek, Virginia. Each of the boards responsible to the Air Force would be headed by an Air Force major general who would be directly responsible to the Air Force Chief of Staff but who would forward all reports on air defense, air support, or air transport matters through the commanders of the Air Defense Command or the Tactical Air Command as the case might be.[55] The responsible Service was charged to provide logistical support to each of its boards, and the directors or chairmen of the boards were instructed to draft basic charters and to prepare their requirements for representatives from the three Armed Services.[56] The joint boards were empowered to draft joint doctrine within their spheres of

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authority that after approval by the Joint Chiefs of Staff would supersede service doctrines. As they began work, however, each of the service representatives on the joint boards found that they required formal statements of the individual positions and doctrines of their services.

3. The Air University as a Doctrinal Center

"Since I have been here," wrote Major General Barker, who had become Deputy Commander of the Air University in August 1949, "we've been in a constant struggle to get out to our people a valid and clear-cut statement of operational doctrine. It's needed badly; not only in our schools but in the various joint boards on which the Air Force is represented, and throughout the entire Air Force." Barker was convinced that the Air University was the best qualified agency in the Air Force to prepare and publish doctrinal manuals. "To begin with," he argued, "we have more qualified senior officers than any one place in the Air Force except the Pentagon. Their everyday work involves the preparation of matter appropriate to operational manuals. Of greatest importance is that they can and do devote many long hours to this preparation, to the complete exclusion of all other matters. This cannot be done in the Pentagon. Secondly, our people are unbiased as far as loyalty to strategic, tactical, air defense, etc., are concerned. They are able to view operational doctrine from the viewpoint of the whole Air Force--no compartmentation. This, to my mind, is of the utmost importance if we are going to develop proper air power employment."[57]

While attending an Air Force Educational Conference chaired by General Fairchild in February 1950, Major General Barker advanced a proposal that the Commander of the Air University ought to be authorized to approve and publish operational Air Force manuals under an authority from the Chief of Staff. He explained that the Air University would coordinate the subject matter of all proposed manuals with appropriate Air Force commands and would refer points of difference to the Air Staff for decision. He demonstrated that the Air Materiel Command already possessed a similar authority to approve and publish technical orders and manuals. General Fairchild felt that Barker's proposal had some merit, but he nevertheless ruled that the doctrinal manuals would have to be approved by the Air Staff, with the Deputy Chief of Staff for Operations acting as the approving officer for all operational manuals.[58]

In the summer of 1950 the immediate impact of the Korean war and the subsequent expansion of the Air Force had important effects upon the Air University's organization for the production of doctrinal manuals. The Air Force at once suspended all of the Air University's schools but indicated that many of the instructors would continue to be available to the Air University. Some of the instructors might be used to complete the "Commander's Guide."[59] Within a few weeks the Air Force decided that the Air War College ought to conduct

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accelerated classes and that the Air Command and Staff College would be moved from Craig to Maxwell where it would also conduct short school sessions. The Air Tactical School at Tyndall, however, would be inactivated, and on 24 July Barker proposed that the surplus instructors from this school ought to be brought to Maxwell and assigned to the Air University Evaluation Division. Under former planning, the Air University had intended that manuals should be drafted in its several schools, but Barker now wished to concentrate the function in the Evaluation Division, which should be established as a separate entity in the Air War College. This proposal did not please the Air War College inasmuch as the evaluation function was not believed to be germane to the college's educational function, but an Air University study committee pointed out that the War College's mission already required it "to promote sound concepts of the broad aspects of air power in order to assure the most effective development and employment of the air arm." Effective on 9 October 1950, the Evaluation Division was accordingly transferred from the Academic Staff to the Air War College where it was redesignated as the Evaluation Staff.[60] As has been noted, however, the Air Force directed on 26 September that the production of doctrinal manuals should be held up pending the completion of the JAAF publication.[61]

Even though the Air University had not completed a basic doctrinal manual on air power before it was directed to suspend work on the project, it had begun to have a number of ideas as to what the doctrine ought to be. In the summer of 1950, Vandenberg had stated: "Tactical and strategic air power is part of the same ball of wax." Finletter had said: "Tactical air and strategic air are merely handles which have been developed to identify different functions, each of which is indispensable and each of which fits into the overall integrated structure of air power." While attending the weapons orientation course at Sandia, New Mexico, however, Barker was distressed to hear an Air Force instructor present a concept that the Tactical Air Command had functions distinct from those of the rest of the Air Force. Barker observed that the Air Force had revolted at the idea of assigning aviation in small packages to corps and armies, but he wondered if the Air Force might not be violating this same principle "by tying up, within the Air Force, pieces of aviation, each designed for a particular job." In the autumn of 1950 Barker collaborated with Colonel Dale O. Smith in the publication of an article entitled "Air Power Indivisible," and on 21 December Barker asked Lieutenant General Edwards, Air Force Deputy Chief of Staff for Operations, to approve a memorandum on Air Force doctrine which emphasized the fact that all elements of the Air Force had to be prepared to perform any operational function of the Air Force. The paper asserted: "A clear-cut differentiation between strategic missions and tactical missions is neither desirable nor possible." By demonstrating that air power was indivisible Barker hoped to "break down the feeling on the part of the Army that unless

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we have huge forces set up under the label 'Tactical Air Force' they are not getting tactical support."[62]

Much to the surprise of Barker and also of General Kenney, the Air University commander, Lieutenant General Edwards was unwilling to approve the proposed Air University statement of air doctrine. Edwards concurred "wholeheartedly" with the principle of the flexibility of air power and of the lack of clear differentiation between strategic and tactical air missions, but he insisted that the Strategic Air Command ought not to be diverted from its primary missions to perform tasks of lesser importance. "In view of the capability of the long-range bomber," Edwards wrote, "I feel that from an organizational point of view the authority for the higher direction of the war should retain direct control over some units which they can employ in a sustained drive against the war-making capacity of an enemy nation or which they can divert, if necessary, to the more direct support of any theater in overwhelming need." In order to safeguard the integrity of the Strategic Air Command, the Air Staff drafted an insertion to be placed in the Air University statement of air doctrine, the key portion of the insertion reading:

> Although the labels "Strategic" and "Tactical" have been applied to two of our major commands, those titles were arbitrarily chosen and are not intended to connote strict compartmentation of functions. The Strategic Air Command as it exists today merely represents the one segment of air power reserved to the specific control of the authority for the higher direction of the war; it is an organization which can be used either independently or in conjunction with one or more theater commands to achieve the result desired. It not only represents a potent offensive weapon capable of obtaining a decisive result through the progressive destruction of an enemy's warmaking capacity, but represents as well a mobile reserve of air power that can be turned by the authority for the higher direction of the war to the immediate support of any theater overwhelmingly in need of help. In this light its organizational integrity, of course, must be preserved; however, whether allocated to the Strategic Air Command as we know it or to some other Air Force unit, heavy and medium bombardment aircraft like all other combat aircraft are flexible. Their flexibility is a vital part of air power.

Accepting the Air staff changes, General Kenney on 3 February 1951 forwarded copies of the "Air University Doctrine on the Employment of Air Force Combat Units" to the commandants of the Air University's schools and to Air Force instructors at non-Air Force schools, with the added notation that the doctrine had been approved by Air Force headquarters.[63]

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When he received the "Air University Doctrine" at Norfolk where he was Deputy Commandant of the Armed Forces Staff College, Brigadier General R. C. Candee said that it was "like a shot of fresh air and sunshine after all the heresy and 'hooey' that has hung like a pall over the subject."[64] In Washington in December 1950, a staff study on air-ground operations prepared within the Air Force Office of Deputy Chief of Staff for Development had already noted that the Joint Training Directive for Air-Ground Operations continued to relate tactical air operations to the maneuver of ground forces and thereby to limit tactical air power to a narrow supporting role.[65] In the autumn of 1950 the Chief of Army Field Forces directed the commandants of all Army schools to use the Joint Training Directive as the basis for all instruction on the subject, but on 19 January 1951 Major General Barker took advantage of the fact that all Air Force instructors in Army schools were assigned to the Air University's 3894th School Squadron (Non-Air Force Schools) and directed them to continue to base their lectures on the Air Force doctrine contained in Field Manual 31-35. "The manual, Joint Training Directive for Air-Ground Operations," Barker directed, "cannot be accepted at this time by the Air Force inasmuch as there are areas in which basic concepts and terminology depart from those expressed in FM 31-35."[66] This directive placed the Air University in opposition to the Tactical Air Command, and, on 2 February, Major General Barcus, Deputy Commander of the Tactical Air Command, requested the Air Force to approve the Joint Training Directive as "working doctrine" and asked the Air University to offer constructive criticisms looking toward the revision of the joint directive.[67] Resolution of the controversy apparently gave the Air Staff some difficulty since it had previously approved the "Air University Doctrine," but on 9 March 1951 the Air Force directed that the Joint Training Directive would be used in order to provide uniformity in all air-ground training and instruction throughout the Air Force. The Air University was instructed to provide "constructive comments and recommendations" which would be useful in the revision of this still-tentative doctrinal directive.[68]

The work that they had just completed on the "Air University Doctrine" had convinced Kenney and Barker that the Air Force ought to place emphasis on the "tactical employment of air force" rather than "the employment of tactical air force,"[69] and the controversy over the Joint Training Directive required the Air University to intensify its thinking on the subject. Basically the Air University's concept for the command and employment of air power was that air forces were grouped logically by objectives in various echelons of command. Some air forces were under the immediate direction of the Joint Chiefs of Staff in order that they might carry out objectives lying beyond the immediate interests of any one theater commander or which supported more than one theater. Some air forces were assigned to a theater commander in order to conduct air operations required by the theater mission. Some air forces were assigned to the air

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defense of the continental United States. All wars could be considered to consist of campaigns--some defensive in purpose and some offensive but each satisfying the national war objectives in whole or in part. Theater commanders conducted local campaigns necessary to achieve objectives assigned by the Joint Chiefs of Staff. Air Forces committed to a theater should be prepared (1) to conduct air campaigns in order to satisfy theater requirements for security against the enemy air force or for security against any unacceptable build-up or deployment of enemy ground forces; (2) to participate in such sea and ground campaigns as were conducted by the theater; and (3) to participate according to opportunity in air or sea campaigns charged to forces from outside the theater. Army and Navy forces were also committed to a theater to conduct ground and sea campaigns and to participate in the air campaigns. Any doctrine for command and control of the Air Force--especially the theater air force--had to recognize that the lower the echelon of assignment the more limited would be the objective, hence the more limited the flexibility and usefulness of the air unit to accomplish multiple obligations. Decentralization in the command and control of air power could cause hazards within a theater. "Objection to this decentralization," Barker urged, "should not be considered just a fetish of the Air Force."[70]

After stating the Air University's concept of the relationship of theater air forces--it preferred the term "theater air forces" to "tactical air forces" because the latter term had incurred adverse connotations--to the whole Air Force, Barker made specific objections to the Joint Training Directive. "Basically, our objection to the doctrinal implications of the joint training directive," he explained, "is that it over-simplifies the problem of theater air forces. It leaves the impression that support of ground campaigns is the only reason for being of theater air forces. It implies that the gaining of air superiority is general support to the ground campaign without revealing the thought that the enemy air force is a matter of theater concern regardless of surface campaigns being conducted or contemplated." Making specific reference to a number of allusions in the Joint Training Directive to the supporting attributes of the tactical air force, Barker observed: "We feel that the narrowness of the doctrinal implications of the subject directive make it unacceptable for use as uniform air-ground doctrine." He requested that the Air University be authorized to present its concepts of air power in resident and non-resident instruction and to use the Joint Training Directive for presenting the operational methods of conducting close tactical air support.[71]

The Tactical Air Command, which apparently feared that the Air University emphasis upon the lack of difference between "strategic" and "tactical" missions might lead to a decision that the only tactical air mission was the close support of ground troops, was initially quite skeptical about accepting the Air University's proposal to use the terms "theater aviation" or "theater air forces"

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to indicate those air forces that were assigned either permanently or temporarily to a theater commander to assist him in carrying out his mission. The Air Force also had some doubts about the new term.[72] At the Air University on 1 June 1951, Barker explained the theater air force concept to Secretary Finletter. Three weeks later, after making a trip to Korea, Finletter wrote Barker that what he had seen in the combat theater convinced him that the Air University's concept ought to be properly defined and understood within the Air Force.[73]

While the doctrinal differences between the Air University and the Tactical Air Command were under discussion, the Tactical Air Command and the Army Field Forces had also begun to take steps to ensure that the tentative doctrine in the Joint Training Directive would be field tested and revised as appropriate. Meeting initially on 29 March, a "Steering Committee" of representatives from the Tactical Air Command and the Army Field Forces undertook studies looking toward the directive's revision. Before very long, however, the representatives of the Army Field Forces began to advance the proposition that a theater commander must be authorized to allocate some portion of tactical air power to the support of ground troops and that this air power should not be withdrawn from such support except with the approval of the ground commander. The two sides of the Steering Committee now began to write unilateral positions for submission to the Joint Tactical Air Support Board. Seeking to perfect a manual that would meet Air Force requirements, representatives of the Tactical Air Command and the Air University met together early in September 1951 and prepared a paper entitled "Tactical Air Operations." This paper was approved by Lieutenant General Cannon and forwarded to the Air Staff on 10 September. On 19 October, another conference at Air Force headquarters recommended that the Tactical Air Command should continue to adhere to the details of the Joint Training Directive in its relationships with the Army Field Forces but that the Air University should prepare an Air Force manual on theater air operations which would fully develop the Air Force view of tactical air doctrine.[74]

* * * *

Contrary to some expectations the concentration of the Air University's schools and colleges at Maxwell Air Force Base during the spring of 1951 resulted in the development of closer coordination of effort and of thinking, and for several years the Air University would serve as the Air Force's doctrinal center. At the Air University command level, General Kenney had already given strong support to doctrinal studies and the tradition was continued by Lieutenant General Idwal H. Edwards, who became Air University commander on 1 August 1951, and by Lieutenant General Laurence S. Kuter, who took the position on 1 March 1953. Major General Barker continued as Air University deputy commander until his retirement in August 1953. In October 1951 Major General Roscoe C. Wilson became commandant of the Air War College, and Brigadier General

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Lloyd P. Hopwood brought a pervasive interest in doctrine into the Air Command and Staff College when he became its commandant on 18 June 1953. Marking the beginning of the augmentation of the Air War College Evaluation Staff, Colonel William W. Momyer was named as its director on 16 June 1951.[75] Something of the new esprit of the Air University was manifest in a statement by Colonel James W. Chapman, the Assistant Chief of Staff for Plans and Operations of the Air University on 22 June 1951. "I believe," Chapman recommended, "that the Air University should strive to become the brains of Headquarters, USAF. It is the one place in the Air Force system in which unbiased, reflective thinking can be accomplished. The atmosphere which prevails in Headquarters USAF is not conducive to productivity which is based on realistic, honest evaluations and appraisals."[76]

Even though the long-awaited JAAF publication had not been issued, Major General Barker's appraisal of Air Force doctrinal requirements in the late spring of 1951 led him to believe that the Air University could not delay any longer in beginning to exercise its doctrinal mission. New thinking in the Air War College Evaluation Staff gave a fresh approach to the problem: the Evaluation Staff began to prepare a basic doctrine brief and a series of other briefs on such subjects as tactical air operations which it proposed would be issued as Air University doctrine. On 14 July, Barker forwarded a proposed Air Force manual on basic doctrine to Washington, which he asked the Air Force Council to approve and distribute at the earliest possible date.[77] In personal negotiations during July, Colonel Momyer worked out a procedure for the preparation of doctrinal manuals which seemed likely to speed the work. In meetings with Tactical Air Command representatives, Momyer prepared an itemization of basic factors affecting theater air operations and got TAC's concurrence with them. In Washington, where he was serving as Deputy Chief of Staff for Operations, Lieutenant General Edwards promised that he would get a prompt decision on any specific points of difference that might arise between the Air University and a major air command. Based upon indications of Air Force approval, the Air University on 31 August cancelled its plans to produce Air University doctrine and established an Air Force manuals project which called for the preparation of a basic Air Force manual and a series of manuals on such subjects as theater air operations, strategic air operations, and counter-air operations.[78]

Early in September 1951, the Air Force Council gave formal consideration to the Air University's plan for producing basic doctrine manuals and "expressed concern that we have no organization or group in the Air Force making a continuing effort toward development of concept or doctrine." "While individuals or staff agencies develop pieces of the problem," the Air Force Council noted, "no single agency has the over-all job as its primary duty." The Council believed that older Air Force officers had an understanding of Air Force doctrine and concepts, but it pointed out that the great

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majority of the Air Force officer corps did not possess the "'base line' of doctrine and concept upon which to build judgment commensurate with the importance of the jobs to which they must be assigned." Since 25,000 additional rated Air Force officers had come to active duty in the year preceding September 1951, the Air Force Council believed that it was particularly important that doctrine and concept should be clearly enunciated and widely distributed without delay.[79]

When he informed Lieutenant General Edwards, now the Air University's new commander, of the decisions of the Air Force Council, General Twining observed that the Air University was already charged with "developing doctrine in the fields of strategy and employment of air power," but that he believed that the Air Force Council felt a need for something "of a more comprehensive, fundamental nature, and basic to such treatment of strategy and employment." Twining remembered that the Air War College had previously proposed that it ought to be allowed to continue a small, highly-selective group of students through two additional years of resident post-graduate study and that the principal objective of this group would be "the formulation, establishment, review, compilation, and distribution of dynamic doctrine and concept."[80]

Although General Twining did not elaborate upon the matter, the Air Force Council apparently saw some difference between the old realm of "doctrine" and something newer which would be "dynamic doctrine" or "concept." Since its establishment, the Air War College had been responsible for "promoting sound concepts on the broad aspects of air power in order to assure the most effective development and employment of the air arm." Air War College students, however, had often been confused by an almost synonymous usage of the words "concept," "doctrine," "strategy," and "policy." Because of this confusion, an Air War College seminar group in January 1948 had established its own definitions: "Military concept" was defined as "a mental image of the application of military science to future wars;" the word "strategy" was considered to be "the science and art of employing the strength of a nation to secure its objectives, or the science and art of military command, exercised to meet the enemy in combat under advantageous conditions;" and "policy" was believed to be " a settled course adopted and followed by a government, institution, body, or individual."[81] Air War College students subsequently accepted the definition of "doctrine" appearing in the Dictionary of United States Military Terms for Joint Usage, published by the Joint Chiefs in June 1948. This dictionary defined "doctrine" as: "A compilation of principles and policies, applicable to a subject, which have been developed through experience or by theory, that represent the best available thought, and indicate and guide but do not bind in practice. Its purpose is to provide that understanding within a force which generates mutual confidence between the commander and his subordinates in order that timely and effective action will be taken by all concerned in the absence of instruction."[82]

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Considering these same semantic problems in September and October 1951, however, another Air War College seminar observed: "There appears to be a fine line of demarcation between concepts and doctrines on the one hand, and doctrines and principles on the other hand. It is difficult to differentiate between concepts which existed in the minds of some far-sighted individuals in the Air Force and the doctrine which was accepted as official by the War Department . . . . In the field of ideas there is evidently a degree of general acceptance ranging from the first nebulous ideas of an individual, up successively through concepts, doctrines, and principles. The point at which an idea becomes a concept, a concept a doctrine, and a doctrine a principle, is not always clear. Thus at any one time our Air Force doctrine may be said to be partly concept, partly doctrine, and partly principle."[83]

Something of all of these thoughts went into the Air War College study of the actions necessary to secure the results desired by the Air Force Council, which was approved by Lieutenant General Edwards and sent to Washington on 26 September 1951. Edwards recommended that a post-graduate study group would be established in the Air War College "to provide a single Air Force agency whose principal objective is to formulate, establish, review, compile and distribute concept and doctrine and to develop officers highly qualified in the study of National Defense needs." The study of concept would "include future USAF positions in and responsibilities for national security and the determination of future USAF objectives." Edwards stated: "Operational doctrine . . . must derive from one common Air Force concept. . . . The work of producing and maintaining current Air Force operational doctrine must be kept in harmony with the concept developed and appropriately both tasks should be assigned to the same agency." He noted that the Air University's failure to produce and distribute operational doctrine in the form of manuals was "due to a failure to assign the responsibility of producing and distributing manuals to this one agency of the Air Force." "We do not look upon this as a task," he continued, "which is to be performed solely here at the Air University. Rather, our idea is that the Air War College, charged with the study of concept, will be designated by the Chief of Staff, USAF, as the Air Force agency responsible for production of doctrinal manuals; that the work will be carried out in close partnership with appropriate commands; and that controversial issues will be submitted to Headquarters USAF for decisions." Edwards requested that up to 25 officers of broad experience should be assigned to the Air War College Post-Graduate Study Group. Its success would hinge on two factors: "First, officers of the highest caliber must be detailed to this work with assurance that they will remain for the entire tour. Second, this group must not be used as a 'catch-all' to which are sent the day to day problems which should be solved by regularly established staffs."[84]

Acting on earlier recommendations, the Air Force on 3 August 1951 issued a new regulation that charged the Air University to

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"function as an Air Force doctrinal, educational, and research center." Recognizing that the new Air Research and Development Command was becoming effective, the Air Force relieved the Air University on 4 September of its old responsibility for initiating and reviewing studies and tests in the field of tactics and for the tactical testing of organization and equipment. Marking a partial acceptance of the plan for the Post-Graduate Study Group, the Air Force on 18 October charged the Air University to: "a. Conduct two-year post-graduate study to develop Air Force officers exceptionally well qualified to treat with and solve the military aspects of national security problems. b. Foster and encourage the development of doctrine and concept within the Air Force. c. Formulate, review, compile and recommend military air doctrine, to include: (1) USAF responsibilities for national security; (2) Future USAF objectives, including weapon systems; (3) Special studies bearing on the above as directed by Headquarters USAF." While the Air Force broadened the scope of the Air University's authority to study and recommend, it was unwilling to charge the Air University with any sole responsibility to produce and promulgate Air Force concepts and doctrines. As a result of discussions of the Air University's recommendations within the Air Force Council, Twining informed Edwards that "the Council noted that the development of doctrine and concept is a dynamic process involving all Air Force commands and activities."[85] When he became commandant of the Air War College in October 1951 Major General Wilson attempted to sell "the idea of a graduate study program to generate new thinking in the fields of concept and doctrine." In response to a letter asking for clarification of the exact intent of the Air Force Council in regard to the Post-Graduate Study Group, however, Twining informed Edwards on 18 December 1951: "The primary emphasis for the study group is one of training, i.e., development of a high degree of skill in sound problem solution. A portion of the vehicle for achieving the desired level of training shall be the development and maintenance of a sound philosophy--or concept--of air power and military air force. Solutions to specific problems confronting the Air Staff will be assigned to this group only in rare circumstances."[86]

Even though the Air Force Council expressed its desire that Air Force doctrine should be promptly produced and disseminated, the Air Staff--which alleged that "these manuals are of extreme importance and must receive every consideration"--moved very slowly. On 2 October 1951, the Air Staff approved the projected titles in a family of operational manuals which the Air University proposed to prepare,[87] but on 25 October it returned the Air University's draft of the basic Air Force manual without approval. "Some of the statements in the draft," explained Major General Robert W. Burns, Acting Deputy Chief of Staff for Operations, "although self-evident truths in substance, are stated in a form which makes them generalizations and in a sequence which is lacking in continuity." In order to get on with the job, Burns directed that a committee of two officers from

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the Air Staff and three from the Air University would assemble at Maxwell Air Force Base early in 1952 and redraft the text.[88] In the months that the draft manual had been under consideration in the Air Staff, the Air University had meanwhile prepared and printed in October a somewhat rearranged version of it as Air University Manual-1, USAF Basic Doctrine. In order to get comments for the consideration of the review committee, Barker now circulated this manual to major Air Force commands and to key Air Force officers.[89] "I believe," wrote Major General James A. Samford, Air Force Director of Intelligence, to Barker, "your 'theater air force' instead of 'tactical air force' is one of the biggest strides yet made."[90] Lieutenant General H. A. Craig, the Air Force Inspector General, thought that the pamphlet had "much merit and enunciates quite clearly basic doctrine for the use of U.S. Air Force personnel and is needed." Craig nevertheless questioned the Air University's statement of the national objectives, especially one which stated that the United States would "prevent any unacceptably dangerous increase in strength by a probable enemy." Craig pointed out that this objective, if it were true, would justify preventive war.[91] The Tactical Air Command's USAF Air-Ground Operations School found AUM-1 to be "a Doctrinaire statement rather than Doctrine." The faculty of this new school suggested: "Each of the three major combat commands presently operate under specific command doctrines, which guide all activities leading to Operational Readiness to fulfill their respective missions. These respective doctrines, which have evolved principally from battle experience, are comparable to basic religious tenets in each command. It is not believed any command would surrender its basic doctrine willingly, or shift from a major to a subordinate role, unless it is consulted beforehand and is prepared to accept as an emergency measure such overriding doctrine."[92]

When it assembled on 8 February 1952, the Air Staff-Air University committee included Colonels William B. Keese and Robert Orr from the Air Force Directorate of Plans and Colonels Momyer, Dale O. Smith, and Douglas Williams from the Air University. This committee took cognizance of all of the recommendations made by the Air Staff and by the major commands and completed a draft manual on 7 March which Edwards described as "the best of all previous efforts over the past five years." Edwards nevertheless believed that the draft did not meet manual requirements: it was too long, included too much discussion rather than concise statements of doctrine, and included current decisions on organization and roles of the military services which Edwards did not consider to be basic doctrine. Accordingly, Edwards, Barker, and Wilson personally rewrote the draft manual, and, on 25 June 1952, Edwards submitted it to the Air Force. "I feel that nothing will be gained," he recommended, "by giving this current proposal any general distribution to obtain further remarks and recommendations. Any further refinement should be limited to the Air Staff and the final review of the Air Council."[93]

While the preparation of the basic air doctrinal manual was proceeding at higher levels, the Air War College Evaluation Staff began

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work on the plan to produce four manuals deriving from the basic manual (theater air operations, air defense operations, air transport operations, and strategic air operations) and five manuals expanding the theater air operations manual (counter air operations, close air support operations, air interdiction operations, theater airlift operations, and theater air reconnaissance operations). At the request of the Senior Air Force representative on the Joint Amphibious Board, who found himself unable to obtain guidance concerning Air Force positions with respect to joint amphibious operations, the Air University agreed early in 1952 to prepare an additional manual on the subject of air operations in conjunction with amphibious operations.[94] The series of manuals was a much less ambitious undertaking than the old air employment instructions had been, but the Air University now planned that the Evaluation Staff would produce these operational manuals by working in coordination with the responsible Air Force commands. After nearly a year's work on the operational manuals, Colonel Momyer reported some of the difficulties which the Evaluation Staff had encountered:

> We have found from this past year of research that the writing of manuals is perhaps one of the most difficult tasks in the field of military writing. It is creative and yet it must be exact. These requirements dictate thorough research and imagination on the part of the author in translating the research into a manuscript that is easily understood and yet is complete in context. Unfortunately, there are very few individuals who possess this particular talent. . . . For the most part our greatest difficulty has been a lack of precedent in this field of writing. . . . The manuals we are attempting to produce have little similarity to the stereotyped and somewhat stultified type manual produced by the Army. In this attempt to strike out on our own, we have encountered many obstacles that were certainly anticipated, and others that could not be foreseen. Of course, we have encountered the additional prejudice in respect to what constitutes doctrine, tactics, techniques, and procedures. Thus, we have been seeking for a level of writing that has no definition and is not always apparent when one thinks it has been obtained. . . . Our experience to date reveals general acceptance of the fundamentals presented but non-concurrence in the manner in which those fundamentals have been expressed; not only non-concurrence in the expression but in some measure the degree of detail subscribed to those expressions and fundamentals. The only method by which we can strike a balance as to detail and scope is by trial and error. I recognize this to be a long and laborious task but all short cuts to date have failed. . . . We find ourselves constantly in a dilemma as to whether too much detail has been presented or whether we have become so terse that the meaning is clouded and darkness descends upon the reader.[95]

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In addition to the problem of delimiting the characteristics of the operational manuals, the Evaluation Staff had difficulties getting assistance from the Air Force operating commands and in procuring the assignment of officers needed to maintain its strength. As a working procedure, the Evaluation Staff undertook to prepare a draft of a manual, to submit it to the operational command for review, and then to form a committee including representatives from the operating command to revise the draft. The Strategic Air Command participated enthusiastically in the review of the manual on strategic air operations and sent officers to the Air University to work with a review committee. The Air Defense Command was willing to work in this same fashion. The Military Air Transport Service found so little wrong with the draft of the global air transport manual that it did not want a review committee; in fact, MATS so readily concurred with the proposed draft that Momyer was not satisfied that it had been given "the detailed review necessary for expressing sound doctrinal matters." In view of the number of manuals projected in the theater air warfare field, Momyer regretted that the Tactical Air Command "has not been able to participate to the extent that I believe is necessary."[96] In his annual Air War College report filed on 1 July 1952, Major General Wilson pointed out that the Evaluation Staff had not only suffered from a lack of technically qualified personnel but from a shortage in its authorized strength. Authorized 20 officers--18 of whom were to be qualified in doctrinal areas--the Evaluation Staff had only 12 officers assigned in the doctrinal area in November 1952. As a result of this demonstration of deficiency, the Air Force brought the Evaluation Staff up to its assigned strength and desired experience capabilities early in 1953.[97] Unfortunately, however, the Tactical Air Command still found it difficult to participate with the Air University in doctrinal endeavors. "As you probably know," Lieutenant General Cannon wrote Edwards on 29 December 1952, "my personal attitude toward the Air University is that it should confine its efforts to teaching, and leave such matters as the development of tactics and doctrine, and the preparation of Air Force manuals to appropriate field commands and Headquarters USAF."[98]

Both because of the unusual amount of contemporary interest in the field of tactical air warfare and because of lingering controversies with the Tactical Air Command, the Air University encountered exceptional difficulty in preparing and teaching a doctrine of theater air operations The Air University's contention that the term "theater air forces" should replace "tactical air forces" continued to draw opposition. Barker insisted that the use of the term "tactical air operations" resulted in erroneous student learning outcomes since it focused attention on the tactical air force-field army level. In an extension of the meaning of the term "theater air forces," moreover, Momyer considered that "theater air forces" could include Air Force tactical air units as well as Marine and Navy air units which might be assigned to a theater: Momyer saw the "theater air forces" as a more inclusive term, and he believed that the

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commander of the theater air forces ought to have a centralized command authority over all air units assigned to a theater. The Air University also emphasized that a numbered tactical air force associated with a field army not only provided close combat air support to that particular field army but also participated in the counter air force and large scale air interdiction operations under orders from the theater air force commander.[99] Early in June 1952, Barker's explanation of the matter resulted in the withdrawal of an Air Force recommendation that the Air University return to the use of "tactical air force" instead of "theater air force."[100] In a conversation with Barker in February 1953, however, Lieutenant General Kuter, who was then Air Force Deputy Chief of Staff for Personnel, once again brought up the subject of theater air operations, which the Air University conceived would be conducted under the central command of an area or a theater commander. Kuter was concerned lest the term "area commander" might be construed to mean an infantry division, corps, or army commander, and he argued in favor of continuing the use of "strategic," "tactical," and "air defense" terminology. Barker was willing to delete references to the "area commander" but he insisted: "The use of the words 'strategic' and 'tactical' hereinafter referred to as 'them words' has tended to compartment our operations." "The basic difficulty," he continued, "is the impossibility of finely defining 'them words.' We try to stress the need for unity of effort, singleness of purpose of all air forces, and find it difficult to do so if we divide operations into classes which are designated by undefinable words."[101]

The Tactical Air Command did not like the term "theater air force" and was skeptical of the Air University's emphasis upon the unity of air power, but Cannon and Barker nevertheless achieved a meeting of minds on some other basic concepts. As written in July 1948, the Air University's draft of the air employment instructions manual entitled "Air Power and the U.S. Air Force," had defined "air superiority" as "that degree of capability of one force over another which permits the conduct of air operations by the former at a given time and place without prohibitive interference by the opposing air force. Air superiority is local and possibly temporary."[102] Early in 1952, however, Cannon and Barker drafted a paper which pointed out that "local air superiority" could no longer be accepted as a concept in an era in which the high speeds and long ranges of modern aircraft permitted an enemy to shift air forces quickly and over considerable distances to any target without necessarily changing bases. In view of modern air capabilities, Cannon and Barker agreed: "Offensive operations designed to defeat the enemy air force and insure an adequate degree of security from hostile attack should not be limited to restricted areas, nor can they be planned or carried out profitably in an uncoordinated fashion by commanders having limited jurisdiction such as those at numbered air force-field army level."[103]

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Although the Dictionary of United States Military Terms for Joint Usage specified that the Joint Operations Center manned by the numbered tactical air force and field army was a joint establishment, Major General Barker vigorously resisted a Department of Army position taken in December 1952 that the Joint Operations Center "would retain over-all control of aircraft for air superiority, deep interdiction, and air defense." He had already made the case that the tactical air force received a part of its mission from the theater air force commander, and he now questioned whether the joint operations center was a joint establishment. Brigadier General Reuben C. Hood, who was Commandant, Air Command and Staff School, at the time, pointed out, for example, that the Joint Operations Center had no responsibility for planning ground operations and was actually an Air Force operations center with Army personnel present in what amounted to a liaison capacity. "The view," said Hood, "that close support missions are jointly planned and ordered is not believed consistent with practice. Army participation in planning consists of designating targets and times plus providing information. The decision to order a strike is an Air Force rather than a joint decision, and the planning of the strike to include strength, armament, route, and method of attack is by the Air Force combat operations section."[104]

By the end of 1952 the Evaluation Staff had substantially completed the four principal operational manuals that were designed to elaborate the basic air doctrine manual, but, after nearly six months in coordination, the Air Staff was still reviewing the draft of the basic manual that Lieutenant General Edwards had sent to Washington on 25 June. Seeking to pry the manual loose, Edwards on 1 January 1953 reported that the lack of a basic doctrine manual was a major deficiency hampering the Air University's accomplishment of its mission. This report of deficiency apparently got results for the Air Force Director of Plans was directed to turn out the manual as a matter of priority, and an ad hoc committee within the Plans Directorate composed of Colonels Harvey T. Alness, William B. Keese, and S. L. Fisher was named to revise the manual for final consideration by the Air Force Council. When stationed at the Air University a few years earlier, Alness had worked on drafts of this same document, and he now described his committee's work as being one of assembling parts of previous draft efforts into a new format. The committee nevertheless included a new section discussing air forces and the principles of war--subject matter which had been included in the Air University's earliest draft of the Category I "Air Power" manual but which had been subsequently omitted in later drafts because of a feeling that these principles were not a part of basic air doctrine. On 9 March, Alness presented the new draft to the Air Force Council, which, except for a few minor changes, accepted the manual practically as it was written. Acting in General Vandenberg's absence, Twining approved the draft on 13 March, but he directed that comments would be collected on the manual for six months to a year

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and that it would be revised if the comments so warranted. Upon returning to Washington, Vandenberg also approved the manual. As published on 1 April 1953, Air Force Manual 1-2, United States Air Force Basic Doctrine, carried Vandenberg's comment: "Basic air doctrine evolves from experience gained in war and from analysis of the continuing impact of new weapon systems on warfare. The dynamic and constant changes in new weapons makes periodic substantive review of this doctrine necessary."[105]

"I am disappointed with it," Major General Barker stated on 23 March after he had received and studied an advance copy of Air Force Manual 1-2. Barker considered that the Air University draft manual submitted on 25 June 1951 had presented "more clearly and more distinctly the why and wherefores of our doctrine" than did the approved manual, and he thought in terms of whether the Air University ought not to publish its own version of basic doctrine for the guidance of its personnel. Barker's main complaint, however, was the amount of time that had been required to publish the basic doctrine manual. "It has taken the Air Force five tedious years," he pointed out to Lieutenant General Thomas D. White, Air Force Deputy Chief of Staff for Operations, on 27 March, "to get an approved manual on basic air force doctrine." The many rewritings of the manual had resulted "in no change of importance in the doctrine. The changes were in what to include or exclude, how to express an idea, arrangement of subject matter." At such a rate of progress, Barker estimated that fifteen to twenty years would be required to publish the remaining doctrinal manuals. He again recommended that the Air University commander be authorized to approve and publish Air Force manuals on operational doctrine.[106]

After giving serious thought to Barker's proposal and informally discussing them with members of the Air Force Council, Lieutenant General White replied on 22 April that there "can be no question about the compelling need within the Air Force for clear-cut and succinct statements of operational doctrine or the fact that the Air University is the best qualified Air Force agency to prepare such manuals." White nevertheless insisted that Air Force Headquarters was the only agency in the Air Force which was always conversant with Department of Defense policies and interservice negotiations, and, for this reason, Headquarters would have to review all operational doctrine manuals. But he agreed that "far too much time was spent in seeking a document that would be palatable to all," and he promised that future Air Staff review of operational manuals would be limited to "substance only." Matters of arrangement, expression, and illustration would be left to the Air University.[107] On 22 May General Twining directed that the Air University would be charged with receiving comments from the major air commanders regarding Air Force Manual 1-2 and for revision of the manual in context with these comments and with developing air weapon technology.[108]

On 12 March 1953, the same day Barker received word that the Air Council had approved Air Force Manual 1-2, the Air University sent

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forward the four basic operations manuals that were designed to expand the basic doctrine manual: these concerned strategic air operations, air defense operations, theater air operations, and air transport operations. To meet the needs of the Air Force representative on the Joint Amphibious Board, the Air War College Evaluation Staff sponsored a conference of representatives from the Air Staff, the Joint Amphibious Board, and the Tactical Air Command, and on 4 June this group completed the draft of an Air Force manual concerned with air operations in conjunction with amphibious operations. For a time it appeared that Tactical Air Command proposals for language changes would delay Air Staff review of the theater air operations manual, but Lieutenant General Kuter, after assuming command of the Air University, offered the acceptable compromise that the manual should be printed as written and that it and other manuals would be kept under constant study and revised at one year intervals.[109] On 1 September 1953, the Air Force released printed copies of Air Force Manuals 1-3, Theater Air Operations; 1-4, Air Defense Operations; and 1-5, Air Operations in Conjunction with Amphibious Operations. Dispute over corollary tasks to be specified for the strategic air forces--which were ultimately specified as being aerial mining, antisubmarine warfare, and interdiction of enemy surface forces--delayed publication of Air Force Manual 1-8, Strategic Air Operations, until 1 May 1954.[110] The manual on air transport operations would never be published.

In view of the dissension that had accompanied the preparation of the Theater Air Operations manual and of the Air University's plan further to expand the subject with additional manuals, the Air Force assembled a wide-ranging conference on theater air forces during September 1953. This meeting included Evaluation Staff project officers and representatives of the Tactical Air Command, the Far East Air Forces, U.S. Air Forces in Europe, and of the Air Staff. Where the Evaluation Staff had prepared draft manuals on counter air, interdiction, and close air support, the conferees decided that a single inclusive manual would suffice. The group also reviewed the manuscripts and agreed upon desired language changes. With all commands represented in one room, one of the participants in the conference later recalled that coordination of the subject matter for the manual was surprisingly easy to accomplish. Completed in draft on 28 February, this single manual was printed on 1 March 1954 as Air Force Manual 1-7, Theater Air Forces in Counterair, Interdiction, and Close Air Support Operations. The Air Force subsequently printed Air Force Manual 1-9, Theater Airlift Operations, on 1 July 1954, and Air Force Manual 1-11, Theater Air Reconnaissance, on 1 December 1954.[111]

Viewed as a series, Air Force Manuals 1-3 through 1-11 represented the greatly refined results of more than thirty years of intermittent research, study, analysis, and codification. While the Air War College Evaluation Staff served as a project agency for their preparation, the Evaluation Staff described them as "products of the entire Air

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Force." They had not been written in an "ivory tower" atmosphere but in close collaboration with representatives of the Air Staff and of the major commands. The Air University considered that the manuals contained basic operational doctrine expressed in broad terms to provide foundation material to commanders and their staffs. They attempted to express essentially what was to be done, and it was expected that the major commands would prepare command manuals describing how things were to be done.[112] As a matter of fact, however, the Air Force Directorate of Operations was not entirely satisfied with the operational manuals. Various officers pointed out that the manuals contained "background material . . . superfluous for doctrinal purposes," as well as material pertaining to "procedures and tactics rather than strictly doctrine." The doctrine on the command and control authority incumbent upon a theater air commander was more rigid than the Directorate of Operations believed to be justified. Air Force Manual 1-5, for example, specified that all theater air forces (Air Force, Navy, Marine Corps, Allied) would be under the operational control of the theater air commander. The Directorate of Operations believed that the theater air commander should have operational control of Navy, Marine Corps, Allied, and Army air forces only when they were conducting operations in futherance of the theater air mission. Both Air Force Manuals 1-3 and 1-5 adamantly opposed the allocation of the control of aircraft to a surface commander. In the Far East in July 1952, however, Brigadier General Jacob E. Smart had proposed that the Fifth Air Force could allocate "mission control" over specific air units for a specific length of time to a surface commander (in this case an Army corps commander) who could exercise this control through an air operations officer. After returning from the Far East to become commander of the Tactical Air Command, General Weyland described this concept in a lecture during the summer of 1954. Weyland urged that this "last phase control" concept could give a surface commander the prerogative of designating tasks for specific air units for a specific time in furtherance of his surface campaign. The concept did not piecemeal air power since the theater air commander would have allocated air units for such a purpose only after he had viewed all theater air requirements. The Air Force Directorate of Operations was willing to accept the concept of "last phase control." But even though the Directorate of Operations was thus not entirely satisfied with the operational doctrine manuals, it was reluctant to see any immediate revision of documents which generally met Air Force requirements and which had been so excruciatingly difficult to get prepared and coordinated. The best solution appeared to be a long-term project that would result in the incorporation of all basic doctrinal material into a single Air Force Manual 1-2.[113]

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"In jet-atomic warfare," wrote Lieutenant General Kuter, after taking command of the Air University, "there will be no room for gross errors of judgment. There will be no time, should hostilities start, to correct mistakes in the types of forces that we have provided, the manner in which they have been organized and trained, or the way we fight." In order that the United States would be prepared for a future war, Kuter submitted that it would have to have proper doctrine and the doctrine would have to be accepted. In this same article, Kuter also suggested that the Air Force's doctrine had always stressed war and had failed to stress "the capabilities of our air forces to influence the behavior of other nations by actions short of war in support of national policy."[114] In a statement of command policy, Kuter observed: "The Air University's mission of education has coupled with it the responsibility to function and to produce as the doctrinal and related research center of the Air Force." Since as many as 2,000 man-hours of Air Force service could be contained in one class of Air War College students, he expected to reap great dividends from the accumulated talents available "in our obligation to keep our Air Force doctrine current and valid and to provide as a by-product of our learning activities, policies, concepts and plans of importance to our Air Force today and in the future."[115]

At first in order to review the activities of the Air War College Graduate Study Group, Kuter began to hold regular meetings with Major Generals Barker and Wilson and with Brigadier Generals Hopwood and Dale O. Smith, the latter being the Air University Director of Education. These meetings became more and more worthwhile and were soon "guiding, monitoring, and coordinating the Air Force talent available at Maxwell in the faculties and great student bodies of the schools." Kuter hoped that the Air University would be able to do "really productive long-range thinking and planning with regard to subjects such as the size, general nature and organization of the USAF in an era of pilotless airplanes and ballistic missiles." He suggested that with the passing of time the Air University general officers might justify their designation "as a General Board of the Air Force and recognition as a supplement or adjunct of the Air Council."[116]

Because of his interest in projecting Air Force doctrine forward, Kuter gave close attention to the Air War College Graduate Study Group, and, while he considered that the individual research efforts of the members of the group "have been excellent--in some cases brilliant--" he suggested that the group had not met expectations, chiefly because it was not large enough to form an effective discussion unit or to attract important lecturers or consultants.[117] The final Air Staff directive that had established the Post-Graduate Study Group on 26 June 1952 had authorized the Air University to retain a few graduates from each Air War College class for an additional two years of advanced military study. Instituted on 21 July 1952 under the direction of Dr. Eugene M. Emme, the Graduate

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Study Group included only three officers, who, after introductory seminars on research techniques, launched into major research topics of their own selection. After a year's residency, Colonel E. B. Miller, Jr., whose research report on "Guided Missiles and Pilotless Aircraft in Theater Air Operations" attracted attention in the Air Staff, became the group's first graduate in June 1953, when two additional officers were assigned from the graduating Air War College class.[118]

As an instructor in the Air War College, Colonel Raymond S. Sleeper had become convinced that "the objective of air power is not to destroy the enemy people, not to destroy the enemy cities if it can be avoided, not to produce panic, not to destroy morale, but 'to change the temper' of the enemy, or, specifically, to produce behavior in the opposing government that is acceptable to us." In an article published in the winter of 1951-52 Sleeper suggested that a further study of the British experience in the use of the persuasive effect and the pressure of air power to quell revolts in Iraq and Aden during the 1920's might have applicability to the Cold War.[119] In order to permit him to test his thesis, Major General Wilson nominally assigned him to the Graduate Study Group in August 1953. Borrowing Air University professional civilians and securing selected students from the Air Command and Staff College, Sleeper organized and directed "Project Control," which sought to determine whether the Royal Air Force techniques might have been used to advantage by the United States so as to have affected the course of historical events from the 1930's through 1945. When it was engrossed in 21 large volumes in July 1954, Project Control had possibly not fully demonstrated that the project thesis was completely applicable to contemporary national problems but it nevertheless contributed to an understanding of the effect of air power on international relations both in times of peace and of war.[120]

By 27 March 1954 Lieutenant General Kuter believed that the Air War College Evaluation Staff ought to be made the center of doctrine and concept development, and he accordingly asked permission of the Air Force to disband the Graduate Study Group and to use its ten colonel spaces to establish a Long-Range Planning Staff parallel to the Evaluation Staff within the Air War College. At first the Air Staff was unwilling to agree that a field agency should have any responsibility for the preparation of Air Force plans, but Kuter explained that the Air University did not intend to impinge on the Air Staff's business but rather to prepare "very long range studies in the field of strategy and doctrine." Evidently reassured, the Graduate Study Group was dissolved and its personnel allotments (which had never been filled) were transferred to the Air War College Evaluation Staff where a Long Range Planning Division was established.[121] Among the officers of the Graduate Study Group so reassigned was Colonel Richard P. Klocko, whose research study entitled "Air Power in Limited Military Actions" published in August 1954 outlined a requirement for a combat ready air task force which would eventually

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be developed as the Tactical Air Command's Composite Air Strike Force. At the same time that these changes were in the offing, the Air War College took another step originally proposed by Major General Wilson in July 1952. "An organization such as the Air War College," Wilson had reasoned, "should develop over a period of years a library of its own military writings." Activated in May 1954, the Air War College Studies Group became responsible for editing and preparing for publication at the newly-established Air University Press the best of the student theses, lecturer's manuscripts, and writings of the Air War College staff.[122]

As soon as the Air Force issued Air Force Manual 1-2, United States Air Force Basic Doctrine on 1 April 1953, General Twining sent out a personal letter to each major air commander requesting that they send their comments and suggested changes in the manual to the Air University, which would be responsible for making periodic substantive review of the doctrine. The major air commanders generally welcomed the manual and had few changes in mind. Only General Weyland, then commanding the Far East Air Forces, recommended substantial changes and he merely desired an elaboration of the principles of war as they pertained to the employment of air forces. After the comments were received, neither the Air Staff nor the Air University believed that any substantial revision was in order, and the new edition of Air Force Manual 1-2 published on 1 April 1954 contained only a few minor editorial changes.[123]

Within a few months, however, the new doctrinal thinking at the Air University indicated that Air Force Manual 1-2 ought to be broadened in scope. The work would be undertaken by a new group of Air Force thinkers since a rotation of personnel and the internal reorganization of the Air War College Evaluation Staff in July 1954 was marked by the assignment of Colonel Ephraim M. Hampton as Air War College Deputy for Evaluation and of Colonel Jerry D. Page as chief of the Doctrine Division. Assisted by Colonel Royal H. Roussel as project officer, Page promptly undertook the work of revising Air Force Manual 1-2 without delay. "Our own experiences in the doctrinal field," Page and Roussel subsequently reported, "lead us to believe that the total war capabilities of air forces--their capability to destroy in total war--are the most clearly understood of all their capabilities. Their great potential in times other than war is less clearly understood."[124] Lieutenant General Kuter also agreed that Air Force doctrine had not sufficiently stressed the capabilities of air power throughout the entire spectrum of international conflict. As a basic purpose of their work, Page and Roussel accordingly sought to expand the basic doctrinal manual so that it would take greater cognizance of the capabilities of air power in periods other than general war. Incorporating ideas received from Kuter, Hopwood, and Sleeper, Page and Roussel prepared a draft of a revised manual in August 1954 which they coordinated with key individuals at the Air University, in the Pentagon, and in Europe. After this coordination, Page and Roussel redrafted the manual in "Joint Chiefs of Staff style"

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and had it printed at the Air University preparatory to final review in Washington. On 4 January 1955, Kuter forwarded copies of the proposed manual to General Thomas D. White, now Air Force Vice Chief of Staff, together with a chart that explained how the manual had been changed and the reason for the changes.[125]

Following Air Staff and Air Force Council review of the new edition of Air Force Manual 1-2, General White notified Kuter on 1 February 1955 that the Air Force liked the new statement of basic doctrine, which had retained the basic doctrine of the original manual but had nevertheless managed a "clear discussion of the area between the two extremes of conflict (general war and full peace) so as to permit emphasis on the broad potentialities of air forces as a persuasive instrument in combating the international tension brought about by 'cold war' conditions."[126] At White's request, the Air University readily agreed to make changes in the draft designed to emphasize that the United States Air Force was a term inclusive of both the active military forces and the reserve air forces, but it was less able to cope with another Air Staff comment that the manual was difficult to understand and ought to be rewritten in "readable writing." After making a "fog count"--which followed an Air Force procedure of assigning arithmetical values to such things as long and strange words and involved sentences--Brigadier General S. F. Giffin, Air War College Vice Commander, figured that the draft of Air Force Manual 1-2 fell into the range of comprehension of a college sophomore. Giffin thus concluded that many of the persons who said they did not understand the writing in the draft manual were actually saying that they did not understand the doctrine. Page and Roussel also took note of the fact that the 4,100 words in the manual could be read in twenty minutes, but they suggested that informed readers would have to spend much more time in thinking about the manual than in merely reading it.[127] Based upon such analyses, the Air University declined to make changes in the style in which the manual was written.

When it was officially published on 1 April 1955, Air Force Manual 1-2, United States Air Force Basic Doctrine, represented a codification of experience bearing on the subject of air power and air warfare. It accepted the old definition of air power: "The term 'air power' embraces the entire aviation capacity of the United States." It asserted that air power had radically changed the conduct of war" "With air forces and modern weapons available, it is no longer necessary to defeat opposing armed forces as a prerequisite to conducting major operations directly against an opponent either in his sovereign territory or in any other locality." The key to the new doctrine was the statement: "United States air forces are employed to gain and exploit a dominant position in the air both in peace and in war. The desired dominant position is control of the air." Older Air Force doctrinal statements had defined control of the air in terms of the attainment of air superiority in a time of war. The new manual stated: "Control is achieved when air forces

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can effect planned degrees of destruction while denying this opportunity to the enemy." It also pointed out that "control of the air is achieved when air forces, in peace or war, can affect the desired degrees of influence over other specific nations. Control of the air is gained and held by the appropriate employment of the nation's air potential. . . . Sometimes a dominant position can be obtained through the mere presence and passive use of air forces. At other times control of the air may require the active use of air forces to attain the desired dominant position. There will be occasions when a combination of passive-type dominance and active-type dominance may serve best in support of the national objectives."[128]

"Our doctrine states, in effect," Page and Roussel wrote in an independent explanation of Air Force Manual 1-2, "that control of the air can be exploited continuously, day and night, seven days a week, 365 days a year, under any conditions. This can be so because control of the air does not denote a continuous physical action against something." In an illustration, Page and Roussel drew from the lessons of Korea: "Our air forces in Korea were dropping bombs, fighting MIGs, attacking troops and gun positions, and a great number of other things actively. But these were not 'separate' air forces fighting a 'separate' war. They were part of our global air entity, and standing with them--although not used actively in Korea--was the tremendous additional power of this global entity. We must assume that much of the impact of our airpower in Korea--much of its influence--came from air forces that never dropped a bomb or fired a bullet in Korea." In addition to these wartime applications of air power, the Berlin Airlift, the employment of air transport planes to give relief from floods in Pakistan in 1954, the "Kinderlift" flights of underprivileged children out of encircled West Berlin for summer vacations in West Germany were illustrations of peaceful applications of air power. "A nation's influence in international negotiations," the new doctrine stated, "is strengthened or weakened by the state of its air forces. The capabilities of powerful air forces for achieving decision in major war are thus translated into a capacity for the maintenance of world peace."[129]

As soon as Air Force Manual 1-2 was released, Air Force magazine published the entire text and called it "one of the most important books in the world."[130] As Air Force Vice Chief of Staff, General White endorsed the new doctrinal statement because of its clear discussion of the role of air power throughout the entire spectrum of international conflict, because it established the worth of air forces without denigrating other forces, and because the emphasis of the inclusive nature of air power rebutted the charge that providing air forces put all of the nation's "eggs in one basket."[131] The new doctrine appeared to have a growth potential that could encompass new technological developments. While admitting that the Air Force seemed to be having difficulty in shifting its thoughts from a control of the air concept based upon actual combat operations,

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Colonel Jack N. Donohew, Air Force Deputy Assistant for Programming, pointed out in December 1956 that the doctrine of what he called "deterrent control of the air" would have applicability in an era when unmanned weapon systems would have to be maintained in constant readiness for instantaneous launchings. Although these weapons would not be physically present in the air they would nevertheless serve to preserve the control of the air.[132] Speaking as Air Force Chief of Staff in December 1957, General White again endorsed Air Force Manual 1-2. "Our doctrine," he said, "is published for all to read in a ten page, unclassified Air Force document. I believe this doctrine is wholly responsive to the primary aim of serving the national policy and is in step with the changing times."[133]

4. Failing Efforts to Produce Interservice Doctrine

Looking backward at the work of the Joint Air Transportation, Airborne Troop, Air Defense, Tactical Air Support, Landing Force, and Amphibious Boards which were formed in the autumn of 1951 in response to the Joint Action Armed Forces manual, Major General Barker did not think it remarkable that these joint boards had failed to accomplish their purposes. Referring to "the patent inability of a lower echelon of authority to resolve an interservice problem that could not be solved at the highest level of authority," Barker observed: "The same divergence of views at the highest level of authority which mitigated against a resolution of the problem are manifestly evident at the lower echelons because of disseminated service positions on such controversial matters."[134]

In accordance with the JAAF agreement, the Army, Navy, and Air Force moved promptly to establish the joint boards which were to be charged to develop joint doctrines and procedures; to evaluate joint tactics and techniques, the adequacy of equipment, and the adequacy of joint training; and to review publications covering the conduct of joint training. In August and September 1951, General Vandenberg named some of his best senior officers to head the joint boards for which the Air Force served as executive agent: Major General Grandison Gardner to the Joint Air Defense Board at Ent Air Force Base, Major General Willard R. Wolfinbarger to the Joint Tactical Air Support Board at Pope Air Force Base, and Major General Earl S. Hoag to the Joint Troop Carrier Board, which was soon redesignated as the Joint Air Transportation Board, also at Pope Air Force Base. The Army established the Joint Airborne Troop Board at Fort Bragg as a successor to the former Army Airborne Center, and Major General William M. Miley, who had commanded the center, now headed the board. The Marine Corps established the Joint Landing Board with the Marine Corps Schools in Quantico, Virginia, and this board was headed by the schools commandant--first Lieutenant General Franklin A. Hart and soon Lieutenant General Clifton B. Cates--as a collateral duty. The Navy established the Joint Amphibious Board at Little Creek, Virginia, under the chairmanship of Rear Admiral Lyman A. Thackerey.[135]

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With the exception of the Joint Air Transportation Board and the Joint Airborne Troop Board, whose membership served cross-duties on both boards, Army, Navy, Marine, and Air Force officers were assigned to full-time duty on the several joint boards.[136]

Even though the charters approved for these joint boards vested them with major responsibilities in fields of evaluation, the administrative guidance issued to the boards by the military services ensured that decision-making authority would remain in Washington. Senior Army members on the boards were directed to coordinate their actions with the Chief of the Army Field Forces; they were authorized to concur or non-concur in projects at the board level, but they could not approve or disapprove projects except in accordance with review of the projects by the Department of the Army.[137] The Commandant of the Marine Corps instructed the senior Marine officers who sat on the boards to act for the Marine Corps on board-level projects, but he provided that final approval of all projects would have to be referred to the Chief of Naval Operations.[138] Initial Air Force letters of instruction to the senior Air Force board members stated that they would "be acting as the direct representative of the Chief of Staff, USAF," and would be responsible for indicating "concurrence or non-concurrence on all completed Board reports." Quite shortly, however, these letters were elaborated to provide: "As the Senior Air Force Representative you will represent the U.S. Air Force at Board level and you are empowered to state your views as 'Air Force' views on all completed Board reports. However, as is customary in all joint functioning, your stated 'Air Force views' do not constitute a commitment of the Chief of Staff, USAF, to support these views at higher levels. Final approval or disapproval of 'Service Views' taken at any level or echelon of command is reserved to the head of the Service."[139]

The work of the Joint Air Defense Board was somewhat overshadowed by Project Lincoln, the Summer Study Group, and the Citizens Advisory Committee, but this joint board maintained harmonious relations with the Air Defense Command and Army Antiaircraft Command and accomplished a wide variety of projects ranging from the design of protective aircraft revetments to a statement of recommended air defense doctrine. When completed on 14 April 1954, the recommended air defense doctrine visualized that the air defense system ought to be able to accomplish a "continuous surveillance of the enemy from the time he departs his own territory until he is destroyed." It also stated that "active defense" ought to include: "A devastating attack against enemy aircraft on their home bases; continued attack during the enemy's departure from home bases, and while in foreign theaters; attack continuously throughout the enemy's journey to the United States and Canada; and a final assault against aircraft, which may survive until arrival within their objective areas, before their final approach to their targets."[140] Major General Gardner forwarded the proposed doctrine to General Twining with a personal letter. "I believe," Gardner wrote, "that we can maintain a defense through which penetration would be improbable if not impossible. I think that the cost

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of such a defense is not beyond what we can endure and I believe that such a defense should be our objective."[141] Gardner also recommended that the Strategic Air Command should be provided with bomb-proof facilities at bases near the outer boundaries of the United States and ought to make a maximum dispersal of its intercontinental bombers; other than these measures SAC should depend for its protection on an expanded warning time that would allow it to put its aircraft in the air and to evacuate its ground personnel in case of a hostile air attack.[142] The accomplishments of the Joint Air Defense Board were not inconsiderable, but the establishment of the Continental Air Defense Command on 1 September 1954 as a unified command directly responsible to the Joint Chiefs of Staff brought into being a more powerful organization which was also charged to establish the methods and procedures for the use of the forces available for the air defense of the continental United States. The Joint Air Defense Board nevertheless continued officially to exist, and, following the retirement of Major General Gardner in August 1954, Major General Frederic Smith, the CONAD Vice Commander, assumed the additional duty was chairman of the Joint Air Defense Board.[143]

The Joint Tactical Air Support, Joint Air Transportation, and Joint Airborne Troop Boards proved to be subjects and scenes of controversy. As the boards were being set up, an Army spokesman in Washington stated that they were "likely to become the focal point of procurement planning not only for troop and cargo carriers, but in many cases will also be the agency responsible for formulating requirements for virtually all tactical support aircraft." This statement indicated that the Army still hoped that the boards might become unified centers which would manage joint applications of forces.[144] During the JAAF negotiations and when the charters of the joint boards were being written, the Tactical Air Command persistently opposed the assignment of doctrinal responsibilities to the Joint Tactical Air Support and Joint Air Transportation Boards and argued that this would amount to an usurpation or duplication of the Tactical Air Command's mission responsibilities.[145] The assignment of Air Force officers to the boards revealed a flagging interest in them. Major General Wolfinbarger served as director of the Joint Tactical Air Support Board and when Major General Hoag retired in February 1953 Wolfinbarger served additionally as Director of the Joint Air Transportation Board. When Wolfinbarger retired in July 1953, Major General Robert L. Copsey was named director of the Joint Air Transportation Board but the other position remained vacant for several months before Major General Edward H. Underhill was named director of the Joint Tactical Air Support Board. While Copsey continued to direct the Joint Air Transportation Board, Underhill was transferred to other duties in August 1954, and at that time the Tactical Air Command strongly objected to the assignment of another general officer to the Joint Tactical Air Support Board and the director's position would remain vacant. In May and June 1953, both the Army and the Air Force reduced their personnel authorizations to

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the three joint boards in the Pope-Bragg area and directed that they would thereafter collectively employ the officers that they retained in order to accomplish their most urgent projects.[146]

When its charter was approved in May 1952 the Joint Air Transportation Board was designated as the principal agent of the Armed Forces responsible for the development of doctrines and procedures and for the evaluation of tactics, techniques, equipment, and training for all air transportation matters. Almost immediately Generals Collins and Twining agreed that the board would not be expected to consider any matters concerning the Military Air Transport Service. Quite soon, the Air Force ruled that responsibilities for aeromedical transport, war plans, and mobilization matters would also be outside the purview of the board. Other attempts of the board to pursue projects were stymied by competition from other commands and by conflicting service positions. The Tactical Air Command, for example, consistently out-paced the board in stating operational requirements for new equipment. A budding project looking toward the development of a doctrine for the employment of rotary-wing aircraft in joint operations was terminated when the Army ruled that it would use its own organic helicopters and had no requirements against which the Air Force should program units. After a long study, the Joint Air Transportation Board proved unable to agree on the subject of a command structure for a joint airborne operation.[147] The Joint Tactical Air Support Board received most of its significant projects by reference from the Joint Chiefs of Staff who, at the suggestion of the Chief of Naval Operations, directed the board "to establish joint doctrine and procedures of governing command, employment and control of tactical air forces in support of ground forces." The Tactical Air Command opposed this directive both because its wording implied that there was no extant doctrine on air-ground operations and because it believed that it could have secured an early agreement with the Army Field Forces for a revision of the Joint Training Directive if the problem had not been referred to the board. As it was directed to do, the Joint Tactical Air Support Board prepared a draft manual, which included basic agreement between the Army, Navy, and Marine Corps and a dissenting Air Force position. The point in contention was the Air Force demand that the existing system of "unified command at theater level only and co-equal status of component commanders at all echelons" should be retained, as opposed to the Army, Navy, and Marine Corps position which advocated decentralization of the command of air support aviation to the supported unit.[148]

The Joint Landing Board, established initially at Quantico and moved to Camp Lejeune, North Carolina, on 1 July 1952, handled highly specialized matters which were not of transcendent concern to the Air Force.[149] On the other hand, the Joint Amphibious Board was directed to resolve more complex matters regarding the doctrine and procedures of joint amphibious operations. When he was assigned to this board as an Air Force representative on 15 October 1951, Colonel Robert A. Erdin discovered that the Navy had a firmly fixed position, the Army

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had definite opinions, and that the Air Force had not given much thought to amphibious warfare. Since the board proposed to give its priority attention to a definition of doctrines and procedures to govern joint amphibious operations, Erdin devoted a substantial amount of his time during 1952-53 to the perfection of an Air Force position, which, as has been seen, was engrossed in Air Force Manual 1-5. When all service positions were taken, the Joint Amphibious Board on 15 January 1954 forwarded a three-way split paper to the Joint Chiefs of Staff. The Navy-Marine Corps position was that all joint amphibious operations should be conducted by a joint amphibious task force, commanded by a Navy admiral who would personally command both the joint task force and the supporting naval forces. Working through a staff officer designated as a tactical air commander, the joint amphibious task force commander would exercise operational control over all air operations in the amphibious objective area. When control of the air was passed ashore, operational control of air forces would be passed to the landing force commander. The Air Force position included the doctrine in Air Force Manual 1-5, namely that a theater command structure would normally be flexible enough to accommodate itself to all types of operations, including amphibious operations. Operational control of all theater air forces during amphibious operations should thus be retained by the theater air commander. In circumstances where the theater command structure might not be able to conduct an amphibious operation, the Air Force urged the establishment of a joint force with a single unified commander, a joint staff, and component commanders for air, naval, and ground forces. The Army position expressed the concept that an amphibious operation would be a preliminary portion of an extended surface campaign. It advocated the establishment of a supreme joint task force commander who would be superior to the amphibious task force commander. The joint task force commander would control an "Air Force long-range striking force," while other air forces would be controlled by the amphibious force commander while command was afloat and by the amphibious landing force commander when command went ashore. When the Joint Amphibious Board's recommendations were filed, the Joint Chiefs circulated them to the Air Force and the Army for comment; when no basic agreement could be reached the recommendations were apparently laid aside within the Joint Chiefs of Staff.[150]

Facing personnel shortages incident to the expansion of the Air Force, General Vandenberg directed that the Air Staff initiate action to eliminate the joint boards in the spring of 1953. At this time, Lieutenant General Kuter suggested that the Air Force members on the several boards should be assigned to the Air War College Evaluation Staff in order that it might assume greater responsibilities in the field of joint doctrine.[151] In a memorandum to the Chairman of the Committee for Joint Policies and Procedures of the Joint Chiefs of Staff, Lieutenant General Partridge, Air Force Deputy Chief of Staff for Operations, formally recommended on 1 February 1954 that the joint boards be discontinued. "Continuation of the Joint Boards,"

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Partridge urged, "represents Services' support of organizations which are expensive in manpower and dollars, unable to fulfill their purpose effectively, duplicate the capabilities of other existing agencies, and whose work, essentially, must be re-done by subsequent reviewing echelons."[152] Asked to comment on the proposal, Colonel Erdin estimated that the Joint Amphibious Board had cost more than $500,000 and had completed only one formal project and this with split views.[153] Major General Copsey believed that there was a great need for interservice doctrine, but he admitted that the Joint Air Transportation Board had failed to "accomplish the timely purposes of its charter."[154] The Tactical Air Command observed that the joint boards had accentuated interservice disagreements and recommended that they should be immediately discontinued.[155]

For more than a year the Air Force got no support for its demands that the joint boards be discontinued, but after a time the Marine Corps and the Navy came to this same opinion. The Army acceded last of all, and on 3 December 1954 the Joint Chiefs of Staff directed that the joint boards would be dissolved. In accordance with the Joint Chiefs directive, the Continental Air Defense Command assumed the responsibilities of the Joint Air Defense Board when it was dissolved on 1 February 1955. At the dissolution of the Joint Tactical Air Support Board on 15 February and the Joint Air Transportation Board on 1 March, the Tactical Air Command assumed the responsibilities of those boards as the sponsoring agency for the development of joint doctrine, procedures, tactics, techniques, training, publications, and equipment related to close combat support of ground forces and to joint airborne operations. The Air Force invited the Army, Navy, and Marine Corps to establish liaison with the Tactical Air Command to aid in the development of joint doctrinal matters. The Tactical Air Command was similarly charged to provide liaison officers to the Army Field Forces, the Amphibious Forces Atlantic Fleet, and to the Marine Corps Development Center in order to aid in their development of joint doctrinal recommendations concerning joint airborne troop and amphibious operations, effective with the dissolution of the Joint Airborne Troop, Joint Landing, and Joint Amphibious Boards.[156] In order to accomplish joint doctrinal concerns specified in the JAAF manual, the Joint Chiefs specified that the responsible commands would prepare working draft recommendations and circulate them to interested commands in other services before submitting them to the responsible service. The responsible service would submit completed projects to the other services for concurrence prior to their submission to the Joint Chiefs of Staff for consideration. Given Joint Chiefs approval, projects concerning basic doctrines, procedures, and command relations would be promulgated by the responsible service.[157]

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In the early 1950's thinkers in the Air Force and the other services as well held an optimistic belief that a better understanding

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and publication of sound air power doctrines would have a wholesome effect upon the national military effort. "Of all the people who desire a statement of Air Force doctrine," an Air War College seminar concluded in 1951, "none is more anxious to receive it than the Army and the Navy. Likewise statements of military doctrine by the other services would be helpful to the Air Force. For it is out of this welter of confusion that basic misunderstandings are created."[158] Writing in the United States Naval Institute Proceedings in April 1952, Colonel George C. Reinhardt, U.S. Army, charged: "Among the most radical enthusiasts of air power themselves, there exists today more divergent opinion on the composition of that power and of its optimum use in war than ever arose, between general and admiral, over the relative importance of land and sea combat." Reinhardt suggested: "Mahan, in his day, clarified not only the unification of the various functions of sea power into a cohesive force but also combined the strategy of sea and land combat into a practical, working entity." He therefore concluded: "Air power, American air power in particular, needs its Mahan."[159]

With the publication of Air Force Manual 1-2, United States Air Force Basic Doctrine, the Air Force possessed a codification of its fundamental ideas. "Of the various types of military forces," stated the April 1955 edition of the manual, "those which conduct air operations are most capable of decisive results. . . . With air forces and modern weapon systems available, it no longer is necessary to defeat opposing armed forces as a prerequisite to conducting major operations directly against an opponent either in his sovereign territory or in any other locality." Based upon a recognition that "the medium in which air forces operate--space--is an indivisible field of activity," the basic doctrine manual held: "All command arrangements must be in accord with the precept that neither air forces nor their field of activity can be segmented and partitioned among different interests. Because air forces possess the inherent ability to concentrate effort at decisive times and places, they can be employed in a variety of tasks for the purpose of accomplishing a variety of effects."[160]

The statement of basic Air Force doctrine differed markedly from that of the older surface forces. Department of the Army Field Manual 100-5 diametrically opposed the Air Force doctrine. "Army forces as land forces," stated this manual, "are the decisive component of the military structure. . . . During the course of military operations Army forces, because of their decisive capabilities, are supported from time to time by other military components. . . . In any case, the efforts of all components are directed toward insuring the success of the land operations." U.S. Naval Warfare Publication 10 presented a position closer to Air Force doctrine as it discussed military pressure against an enemy: "The mobility of attacking units and distances from which they can strike enemy targets are strong factors in increasing the effectiveness of pressure. Actual occupation or control of enemy territory is the optimum of

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pressure in that it has an overwhelming effect on the enemy's capacity to wage war. . . . Air strategy, designed to seek a decision primarily by air action. . . is in the process of historic development and. . . will become more clearly definable with the passage of time."[161]

"Everything depends upon air supremacy: everything else must take second place. With control of the air, control of the sea and land follows," reasoned Colonel Richard C. Weller, of the Air War College, in the spring of 1954. "Oddly enough," he continued, "military men agree that air power or the air element is dominant over the surface elements. But this has only stimulated them to seize for their own element all of the air support which eloquence permits."[162] In negotiations within the Joint Amphibious and Joint Tactical Air Support Boards, Army and Navy representatives argued in favor of what they described as a "unity of command at the scene of battle." Prior to the emergence of air power as a major component of war, Air Force officers were willing to admit that there had been a certain logic to a self-sufficient force concept, but, with the increased speed, range, and firepower and the resultant increased flexibility of aircraft, they were agreed that it was mandatory that control of available air power should be retained at the highest levels practicable. "All of the various proposals advanced in furtherance of the outdated 'unity of command at the scene of battle' concept. . .," stated the Tactical Air Command, "result in the segmentation and subordination of air power to the relatively localized surface battle despite the costly evolution of the proven centralized control concept."[163]

That the Army and Navy felt strongly in support of their desire to decentralize air power was also a matter of record. In June 1953 a Navy lecturer criticized the rigidity of Air Force doctrine. "Since local air superiority is temporary or harder to make effective because of greater destructive weapons," he said, "there is a tendency to ignore it. . . . Time and space factors are not yet instantaneous quantities, and by proper selection of opportunity and location, a force--air or sea--can argue or gain superiority for limited periods." Believing that the Air Force's constant emphasis upon centralization of control might arise from a lack of confidence that the other services might not employ air to its fullest advantages, this Navy lecturer expressed the hope: "As the Navy and Army demonstrate their awareness of air power and its best employment, operational control of air units can perhaps be centralized or decentralized as appropriate to the situation."[164] Speaking to the USAF Scientific Advisory Board on 22 March 1954, Lieutenant General John E. Dahlquist summed up his view of the local command and control concept favored by the Army. "It is my conviction," he said, "that the commander whom we hold responsible for the land battle must be provided with the means to accomplish his mission and the authority to control those means. In the area forward of the Army rear boundary, the ground force commander must have authority to direct the employment of ground and

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supporting air and naval weapons simultaneously against his targets. . . . Control must include the authority to assign and suspend air and naval support missions. . . . The tremendous increase in the potential mobility of combat forces. . . makes the requirement for command responsibility and decisive action more important today than ever before."[165] As the joint boards were breaking up, Army Chief of Staff General Matthew B. Ridgway announced on 31 January 1955 that the Joint Training Directive for Air-Ground Operations contained views on "command relationships and the responsibilities of supporting and supported forces" which the Army could not accept and that the directive accordingly "does not represent the views of the Department of the Army on doctrine for air-ground operations."[166] Instead of resulting in the production of harmonious interservice doctrine, the joint board negotiations appeared to have widened the doctrinal divergencies of the Army, Navy, and Air Force.

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CHAPTER 8

STRATEGIC IMPLICATIONS OF THE NEW LOOK, 1953-1957

1. Statements of Defense Policy: The New Look and Massive Retaliation

In the winter of 1950-51 Washington civil and military leadership seriously feared that the war in Korea was a Soviet ruse, designed to commit American forces to what General Bradley called "the wrong war in the wrong place" while the Russians prepared to attack in Europe. The Joint Chiefs of Staff believed that general war with Russia in Europe might be imminent. The Communist invasion of the Republic of Korea showed that the Soviets were willing to employ war as an instrument of aggression; and the Joint Chiefs of Staff looked upon mid-1954 as a time of maximum danger. By this time the Soviets would possess a stockpile of atomic weapons sufficient to mount a devastating attack on United States military installations, industry, and population centers. The Soviets had produced enormous quantities of military equipment in 1946-47, and if it were to be used this equipment would logically be used in 1954-55 before it became obsolescent. The rebuilding of Russian industry and the relocation of much of it beyond the Urals would be largely complete by 1954-55. After 1954, moreover, the military strength of the United States and its allies would get closer and closer to that of the Soviets.[1]

At the highest levels the image of war was of general war, and the nation's military leaders agreed that the Korean conflict--which had to be fought as a limited war--was abnormal. General Omar Bradley declared in October 1950: "We will refuse absolutely to allow local wars to divert us from our central task. They must not be allowed to consume so much of our manpower as to destroy our strength and imperil our victory in a world war." Speaking of Korea early in 1951, General Collins warned: "To prevent an invasion of western Europe, the area most coveted by the Communists, we would have to fight an altogether different war than we have been fighting."[2] Accepting the likelihood of an impending general war in December 1950, the National Security Council recommended an expanded military production program that was designed to create a production base capable of rapid expansion to full war mobilization. Looking toward 1 July 1954 as a time of maximum danger, the Joint Chiefs of Staff recommended in October 1951 that Army forces should be stabilized at 20 divisions, Navy forces at 409 major combat ships including 12 modern aircraft carriers plus 3 Marine divisions with their supporting air wings, and that the Air Force should be expanded to 143 wings (126 combat and 17 troop carrier). President Truman approved these force goals in December 1951, but his instruction that military budgets should be held below $60 billion a year stretched the earliest

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date of readiness for the 143-wing Air Force out to 30 June 1955. At a conference in Lisbon in February 1952, the North Atlantic Treaty Organization nations established a goal of 96 divisions by 1954, 40 of these divisions to be in a permanent state of readiness and 56 to be capable of becoming operational within 30 days. The American strategy was not completely agreeable to Great Britain. Prime Minister Winston Churchill had returned to power in 1951 at a time of national economic crisis, and in order to ease the financial strain on his government he had instructed his chiefs of staff to reappraise Britain's defense policy. After intense study, the British chiefs of staff prepared a paper demonstrating that the advent of nuclear weapons justified a primary reliance on atomic air power and substantial reductions in surface forces. On a visit to Washington in July 1952, Air Chief Marshal Sir John Slessor argued for the adoption of the British strategy. He urged that the Lisbon force goals placed too great a strain on fragile European economies and recommended a strategy of nuclear deterrence that would be based upon American and British nuclear air capabilities.[3]

During his successful campaign for the American presidency in the autumn of 1952, General Dwight D. Eisenhower promised economy in government, to concentrate on bringing an honorable end to the Korean war, and, if necessary, to make a personal trip to the war zone in order that he might learn how best to serve the interests of the American people. When he visited Korea early in December 1952 in the company of Admiral Arthur W. Radford, then Commander-in-Chief Pacific, Eisenhower was said to have been dissatisfied with "the dissipation of American resources in a remote, indecisive struggle." While returning homeward aboard the cruiser Helena, Eisenhower held talks with several of the men who would serve in his cabinet, including John Foster Dulles and Charles E. Wilson, who would become the Secretaries of State and of Defense.[4]

In his book War or Peace published in 1950 and in speeches and articles since that time, Dulles had already expressed his conviction that strong military forces could prevent war and that the wars of the past had begun because aggressors had miscalculated their opposition. "Many believe," Dulles had written, "that if the Kaiser had known in advance that his attack on France by way of Belgium would have brought England, and then the United States, into the fray he would never have made that attack. . . . Many also believe that if Hitler had known that his war would involve the United States he would not have started it."[5] Dulles also believed that "the original Korean attack would not have occurred if it had not been assumed either that we would not react at all, or if we did react only at the place and by the means that the aggressors chose."[6] Aboard the Helena and in additional conferences in Honolulu, Dulles held the position that the United States could not mount an adequate static defense everywhere around the Communist perimeter. Rather than spread its defenses thin, the United States should clearly manifest its intent to resist aggression and should concentrate its attention

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on deterring attack by maintaining a strong retaliatory power capable of striking swiftly at sources of aggression. Admiral Radford agreed that American military power was "spread-eagled." "The sooner we could gather some of these forces back into the palm of our hand, and turn them into truly ready forces for deployment anywhere," Radford later observed, "the better our strategic position would be."[7] While Radford and Wilson felt that Asia would continue to be a pivotal area in the Cold War, Eisenhower suggested that when Western Europe was strong enough to defend itself the Asian problem would come into manageable proportions.[8]

"It is difficult to be sure just what has prevented aggression against the free world," Secretary Wilson stated shortly after he took office. "I think there is a deep realization in Moscow that any major aggression against the free world will start a conflict in which all forces of the free world will be marshaled in a fight to crush such aggression, and that the forces of the free world include not merely our long-range bombers, or even all airplanes capable of carrying atomic bombs, but rather all of the military strength of the United States, which includes its industrial productive capacity and also the military strength and industrial capacity of all of our allies."[9] As submitted to Congress in January 1953, the Truman administration military budget for fiscal year 1954 recommended an appropriation of $41.3 billion, the amount of money that would permit the Army and Navy to hold at their established force levels and the Air Force to build toward the 143-wing objective. If this appropriation were voted, however, the Bureau of the Budget envisioned a national deficit of $9.9 billion in fiscal year 1954, and if the military force levels were to be attained there would be another $15 billion deficit in fiscal year 1955 and continuing deficits until fiscal year 1958. Since the Eisenhower administration had promised economy and a balanced federal budget, Wilson worked closely with the National Security Council in an effort to reduce military expenditures. As a preliminary measure in February 1953, he ordered a temporary halt to all new or barely-started military construction pending verification of real need for each project. Further study showed that the Army and Navy had about reached their programmed strength levels, but the Air Force need for new money reflected amounts necessary to move upward to the 143-wing level. Even without this new authority, however, the Air Force was expected to carry $28.5 billion in unexpended funds over into fiscal year 1954. Wilson regarded some carry-over funds as being inevitable in any build-up program, but he considered that production should have begun to catch up with authorizations. He was additionally critical of the emphasis given to mobilization-base expansion and pointed out that much of this base would have to be liquidated after the Air Force reached its programmed strength, provided no war had occurred. "If I had been doing it the last 3 years," Wilson observed, "I would have built more production and less mobilization base to begin with." One immediate way in which the government could reduce new money requirements would be

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to abandon preparations for a maximum year of danger. In April 1953 Eisenhower gave his approval to a new policy that the United States should not attempt to meet a major aggression by any particular date but should "get ourselves ready and stay ready." Eisenhower described the new policy as being that of "a floating D-day."[10]

Although the old Joint Chiefs of Staff headed by General Bradley were not asked for advice on proposed force changes, General Vandenberg formally protested Air Force reductions to the new Secretary of the Air Force Harold E. Talbott, on 7 May and on 8 May the Joint Chiefs warned Wilson that "any governmental decision to reduce force goals below those in approved programs . . . would increase the calculated risk, and that the years 1954-55 represent the beginning of a potentially dangerous period during which the U.S.S.R. would have a substantial stockpile of atomic weapons, and the improved ability to deliver such weapons."[11] Despite this admonition, the revised Department of Defense budget submitted for fiscal year 1954 was reduced by about $7.5 billion, of which $5.3 billion represented a cut in Air Force funds. Pending a new look at the entire defense picture which Wilson promised would be made in the autumn of 1953, the interim force goal of the Air Force was set at 120 wings, with 110 to 114 of these wings to be activated and substantially well equipped by 30 June 1954. Most of the units to be deferred were day fighter and fighter-bomber wings, and the new aircraft on order for them would be used to modernize Air Reserve and Air National Guard forces.[12] In spirited hearings before House and Senate appropriations subcommittees Generals Bradley and Vandenberg strongly defended the programmed requirement for 143 wings, to be achieved as soon as possible, desirably by 1954. "No sound military reason," Vandenberg stated, "has been advanced to explain why the Air Force build-up to the agreed force level is again to be delayed. Once again the growth of American air power is threatened with start-and-stop planning, and at a time when we face an enemy who has more modern jet fighters than we have and enough long-range bombers to attack this country in a sudden all-out atomic effort. Rather than reduce our efforts to attain air superiority over the Communists, we should now increase those efforts."[13]

The Wilson budget prevailed in Congress in spite of the eloquent pleas of General Vandenberg, who was obviously discouraged and would soon meet death from an incurable illness. At a conference with legislative leaders on 12 and 19 May, Eisenhower lent his support to the Wilson program, arguing that the Air Force had been operating on excessive lead-time, had too many paper wings, and needed to put itself in a situation of strength without reference to target dates. As it was finally enacted in August 1953 the appropriation act for fiscal year 1954 totalled $34.6 billion, representing a final cut of $6.7 billion from the amount originally requested by the Truman administration. Of this total amount of new obligational authority, $12.9 billion was allocated to the Army, $9.4 billion to the Navy, and $11.4 billion to the Air Force. Counting both new and carry-over

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funds, Wilson pointed out that $31.5 billion of Navy and Air Force funds were committed to the procurement of aircraft and related equipment. Such funding, he thought, would be sufficient to continue the build-up of America's defenses pending the determination of future force levels by the National Security Council and a new Joint Chiefs of Staff.[14] Ex-Secretary Finletter nevertheless observed that the Air Force had taken virtually all of the Department of Defense cuts and that the "arbitrary" cut-back in dollars had been such as "to restore the roughly equal division of the Defense dollar among the three Services." "This way of deciding on the forces to defend our country, in this most dangerous time of our history," he wrote, "cannot possibly be justified or excused."[15]

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As early as 1950, John Foster Dulles had suggested that the National Security Council ought to be made a "top policy-making body" that would unify foreign, military, and domestic policy, and in his State of the Union message to Congress on 2 February 1953 Eisenhower pledged himself to provide the National Security Council with "the vitality to perform effectively its statutory role."[16] In his presidential campaign, Eisenhower had also spoken of a need for restudying the operations and functions of the Department of Defense. Prior to leaving office, Secretary Lovett prepared a memorandum that outlined a number of defects in defense organization which had become apparent during the Korean emergency. In order to maintain civilian control within the department, Lovett recommended that the Secretary of Defense should be recognized as the President's deputy commander-in-chief of the Armed Services and that the unified commanders should be made responsible to designated secretaries of the military departments rather than to individual members of the Chiefs of Staff. He pointed out that the "two hat" status of the Joint Chiefs made it difficult for them to maintain broad non-service points of view. He further showed that the statutory Munitions Board and the Research and Development Board had "built-in-rigidity," since representatives of the military departments sat on these boards as judges and claimants of their own requests.[17]

Seeking a thorough review of the administrative problem of the Department of Defense, Secretary Wilson appointed a Committee on Department of Defense Organization headed by Nelson A. Rockefeller on 19 February 1953. The committee heard witnesses and reported on 11 April. Eisenhower accepted most of the committee's recommendations and transmitted them to Congress on 30 April as Reorganization Plan No. 6. This plan reaffirmed the power of direction, authority, and control of the Secretary of Defense; channeled responsibility and authority over unified commands through secretaries of the military departments; abolished the Munitions Board, the Research and Development Board, and several other unwieldy staff agencies and replaced them with six new Assistant Secretaries of

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Defense; and charged the Chairman of the Joint Chiefs of Staff with authority to direct the Joint Staff. While Air Force leaders had generally favored closer unification of the Armed Services, Ex-Secretary Finletter appeared in opposition to Reorganization Plan No. 6 when the House Committee on Government Operations held hearings on it. Finletter feared that the reorganization would create a single monolithic establishment that would dominate rather than coordinate the military services. At a time when the world was in the midst of a great air-atomic technological revolution, he was afraid that the monolithic department would emphasize balanced forces and equal divisions of the defense dollar by services instead of centering on atomic air power and making the other forces ancillary to it.[18]

Eisenhower also extended the authority of the National Security Council and provided it with new machinery. He included the Secretary of the Treasury and the Director of the Bureau of the Budget as members of the National Security Council, and on 23 March he established the NSC Planning Board to assemble, analyze, and organize data on problems presented to the Council. He established the Operations Coordinating Board of the NSC on 2 September in order that a single agency might be available to translate approved policies into operational programs and ensure that they were carried out.[19] Since Congress did not disapprove or amend Reorganization Plan No. 6 it became law on 30 June, and Secretary Wilson wasted little time putting it into effect. The additional Assistant Secretaries replaced the boards and agencies that had been specified for oblivion. On 2 July Wilson further directed the Joint Chiefs of Staff to designate officers to work with his representatives to revise the Key West agreement in accordance with the new organization. Completed by October 1953 but not announced until January 1954, this revision made the Secretary of a military department, rather than a member of the Joint Chiefs of Staff, the executive agent for a unified command. The line of authority thus ran from the Secretary of Defense to a unified commander through a Secretary of a military department, but the military chief of a service, however, was authorized to act for his department in matters regarding strategic direction and conduct of combat operations in emergency and wartime situations.[20]

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In July 1953 Eisenhower ordered the officers he had selected as new members of the Joint Chiefs of Staff--Admiral Radford who would become Chairman, General Ridgway who would be Army Chief of Staff, and Admiral Robert B. Carney who would become Chief of Naval Operations--to come to Washington where they would join General Twining, who had become Air Force Chief of Staff on 30 June, and "make a completely new, fresh survey of our military capabilities, in the light of our global commitments." On 24 July, Wilson assembled these officers and other top civilian and military officials at Quantico,

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Virginia, for a three-day "outing." Here Wilson expressed confidence in the new atomic weapons, stated that the United States had already attained a strength that would make any attack against them "foolhardy in the extreme," and firmly announced that the military planners must get more military strength for dollars expended. In another presentation, Director of the Budget Joseph Dodge warned that the fiscal year 1955 national budget would have to show further substantial reductions above and beyond the revised budget for fiscal 1954.[21] Signed on 27 July as the Quantico conference was breaking up, the military armistice in Korea promised to reduce the operating costs of the Armed Services, but on 20 August 1953 the Soviet Union announced that it had successfully tested a hydrogen bomb.

As the first step in the New Look that the Joint Chiefs of Staff were directed to take at defense requirements, Admiral Radford asked the National Security Council on 13 October to provide guidance as to the nature of the war which the Armed Services would be expected to fight. Radford emphasized that preparations to fight every kind of war would be unnecessarily costly and that no mobilization planning could be realistic or useful unless it was founded on a proper strategic outlook. In response to Radford's question, the National Security Council issued fundamental guidance in the form of a paper designated as NSC-162. The Council estimated that the danger of the Soviet air atomic threat had become absolute and stated that this threat had to be countered by American atomic air power. It recommended that air atomic striking power should provide the nation's first line of defense and that the Joint Chiefs should be authorized to plan to use the new weapons when and where feasible. It recommended increased spending of about $1 billion a year on air defense, and, in view of the added costs of air defense and of prevalent manpower shortages, it believed that the number of men in the military services should be reduced. President Eisenhower approved NSC-162 in its final version and summarized the new defense policy in his State of the Union message to Congress on 7 January 1954. At this time Eisenhower explained that the United States was "taking full account of our great and growing number of nuclear weapons and of the most effective means of using them against any aggressor." He went on to say that the United States would emphasize air power, mobile forces that could be held in strategic reserve and readily deployed to meet sudden aggression, continental air defense, a mobilization base that could be swiftly converted from partial to all-out mobilization, and a professional corps of trained officers and men. Eisenhower envisioned a defense establishment that could meet "a twofold requirement--preparedness for the essential initial tasks in case a general war should be forced upon us, and maintenance of the capability to cope with lesser hostile actions--and aimed to satisfy this requirement with less drain on our manpower and financial resources."[22]

Given the guidance that the nation would emphasize an air strategy as well as the information that the military budget and manpower

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ceilings would be reduced from those of fiscal year 1954, the Joint Chiefs of Staff established an ad hoc committee, headed by Lieutenant General Frank F. Everest, who was serving as Director of the Joint Staff, and including representatives from all of the services, to make recommendations on the force levels to be developed in the next two years.[23] Air Force planning was already well developed: General Twining had told a Senate committee in July that the Air Force was going to seek to attain its "ultimate goal of 143 wings" and he had directed the Air Staff to make a root and branch examination of Air Force requirements in the light of new weapons and new machines.[24] The Air Staff study showed that more powerful thermonuclear weapons would permit some reductions in the strategic air forces, though not substantial cuts since the number of thermonuclear weapons in the stockpile was still small. Substantial cuts could be made in medium troop carrier wings designed for service in theaters of operations, since many Army units were to be returned to a strategic reserve in the United States. Air defense wings would have to be increased. The Air Staff study recommended a program objective of 127 wings in fiscal year 1956 which would be expanded to 137 wings by the end of fiscal year 1957. The 137-wing goal would include 7 heavy bombardment, 28 medium bombardment, 4 heavy reconnaissance, 5 medium reconnaissance, 2 fighter reconnaissance, and 8 strategic fighter wings in the strategic air forces; 34 fighter-interceptor wings in the air defense forces; 2 tactical bombardment, 4 light bombardment, 21 fighter-bomber, 6 day-fighter, 5 tactical reconnaissance, 4 heavy troop carrier, and 7 medium troop carrier wings in the tactical air forces. In comparison with the 143-wing objective, the 137-wing program represented a reduction of 2 medium bombardment and 1 medium reconnaissance wing in the strategic forces; 1 light bombardment, 1 fighter-bomber, and 6 medium troop carrier wings in the tactical air forces; and an increase of 5 fighter-interceptor wings in the air defense forces.[25]

Early in December 1953 the Everest committee made its report to the Joint Chiefs of Staff, and this report contained four separate views as to the force requirements for the following two fiscal years. In view of the split recommendations, as well as their recognition that the probable availability of personnel and money would be the controlling factors in fixing force levels, the individual Joint Chiefs were now required not only to analyze their own service needs but to recommend what they thought the other services ought to have. They laid great stress on improving continental defenses, and they laid out a defense program in considerable detail to be accomplished over a period of years. They also made efforts to define a "level-off position in defense forces which could be attained and maintained for an indefinite period of time." The Joint Chiefs accepted the concept that "the United States will emphasize the development of those capabilities for which we are best suited, while our allies will assume greater responsibilities for developing other capabilities for which they are best suited." They recognized that military

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strategy would need to be reoriented in order to place greater reliance on a maximum exploitation of atomic weapons, and they accepted the proposition that there would be no time for build-up in a future war.[26]

Although the Joint Chiefs apparently had little difficulty outlining the strategic concepts springing from the NSC "New Look" directive, they had more difficulty recommending service force levels. At first, the Joint Chiefs wished to chop off the Air Force program at 127 wings to be attained at the end of fiscal year 1956. The Air Force, however, protested that the end-product 127-wing program would have to be differently configured from a program that was conceived as a measured step to a balanced 137-wing program, and, in the end, the Joint Chiefs recommended that the Air Force be authorized to attain 137 wings by the end of fiscal year 1957. They also accepted a revised Navy program whereby the Navy would meet personnel and financial reductions by reducing its auxiliary and amphibious warfare vessels. It would keep 14 attack aircraft carriers and 16 carrier air groups on active service, and in the fiscal year 1955 budget it would receive funds for beginning the construction of a third Forrestal-class aircraft carrier and a third atomic-powered submarine. According to General Ridgway, the Joint Chiefs gave "scant consideration" to his recommendations for Army force levels: he later described the fiscal year 1955 budget as a "directed verdict" and said that the same would be true of the 1956 and 1957 budgets. The Army was reduced to a strength of 17 divisions, 18 regimental combat teams, and 122 antiaircraft battalions. These force levels, Ridgway said, "were not based on the freely reached conclusions of the Joint Chiefs of Staff" but instead "were squeezed between the framework of arbitrary manpower and fiscal limits." For some reason, however, General Ridgway did not file a divergent paper, and later on Secretary Wilson, Admiral Radford, General Twining, and President Eisenhower each announced that the Joint Chiefs had "unanimously" agreed to the Armed Service force levels which were accepted by the Department of Defense and budgeted for fiscal year 1955.[27]

"The President of the United States, the Secretary of Defense, and the Joint Chiefs of Staff," Admiral Radford stated on 14 December 1953, "are of one mind: this nation will maintain a national air power superior to that of any other nation in the world." In this speech before the National Press Club and in another presentation to the Congressional appropriations sub-committees in March 1954, Admiral Radford defined "air power" to include "the Air Force, naval aviation, Marine Corps aviation, Army aviation, and the tremendous aircraft industry and civil air transport systems of the United States."[28] Secretary Wilson described the New Look as "a natural evolution from the crash program that was adopted following the beginning of hostilities in Korea." While Wilson also described the New Look as a logical application of "economy in force" to be attained by the exploitation of new nuclear weapons, he denied that the United

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States would place sole or exclusive reliance on the new weapons. General Twining described the New Look as a strategy that satisfied the two-fold requirement of "preparedness for general war, should one occur; and maintenance of the capability to cope with lesser situations--with at the same time less of a drain on our manpower, material, and financial resources."[29]

To carry out the recommended National Defense program for fiscal year 1955, Congress made available to the Department of Defense a total of $29.6 billion in new obligational authority, subdivided $7.6 billion for the Army, $9.7 billion for the Navy, and $11.6 billion for the Air Force.[30] While the New Look professed to depend heavily upon an air power posture, Ex-Secretary of the Air Force Finletter was quick to point out that the budget figures showed Air Force and Navy appropriations substantially the same as they had been the previous year, whereas the Army's funding had been substantially reduced. Finletter urged that fiscal considerations still had too much weight in determining the size of the military establishment, and he found that "the composition of the Armed Forces is still dominated by the Division-by-Services method, thus producing a compromised Defense Force in which the top priority functions are not provided for."[31] Viewing this same matter, retired Lieutenant General Ira C. Eaker agreed with the Eisenhower position that there was a very real limit to the amount of national resources that could be committed to weapons production, but Eaker nevertheless found that the national defense budget represented a serious imbalance of 75 percent defensive forces and 25 percent offensive. "No nation," he remarked, "has won or can win from a defensive posture."[32] Although welcoming the public announcements that the nation would increasingly emphasize air power, air-minded leaders were not entirely sure of the meaning of the New Look.

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In a speech before the Council of Foreign Relations in New York City on 12 January 1954, Secretary of State Dulles attempted to present an over-all view of the national security policies of the Eisenhower administration. This remarkable address provided a doctrinal rationale for the New Look and added a concept of "instant, massive retaliation" to the doctrine of deterrence. Dulles emphasized that the United States had generally reacted to Communist-instigated emergencies in the past. "Local defense," he said, "will always be important. But there is no local defense which alone will contain the mighty land power of the Communist world. Local defenses must be reinforced by the further deterrent of massive retaliatory power. A potential aggressor must know that he cannot always prescribe battle conditions that suit him." He also asserted: "The way to deter aggression is for the free community to be willing and able to respond vigorously at places and with means of its own choosing." He explained that the basic decision of President Eisenhower and the

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National Security Council was "to depend primarily upon a great capacity to retaliate, instantly, by means and at places of our own choosing." He pointed out that the Korean conflict had "been stopped on honorable terms. . . because the aggressor, already thrown back to and behind his place of beginning was faced with the possibility that the fighting might, to his own great peril, soon spread beyond the limits and methods which he had selected."[33]

The timing of Dulles' massive retaliation address coincided with a critical juncture in the foreign affairs of the United States. Dulles was scheduled to meet with Soviet and western foreign ministers at Berlin on 22 January. Even though he reportedly felt that the chances of reaching any significant agreements with the Russians were slim, nothing could be lost from a candid emphasis upon America's military power. The Eisenhower administration also wished to prevent Indochina from falling into the hands of the Communists, but despite large amounts of American military equipment and technical assistance the Communist Viet Minh forces with an active assistance from the Soviet Union and Communist China appeared likely to defeat the French in Vietnam, where guerrilla war had been in progress since 1945 and had been intensified after the Korean armistice. The massive retaliation address served to meet in part the policy vacuum that existed in Southeast Asia.[34] Contrary to the wishes of Dulles, who feared that the Communists might be inspired to attempt a feat of force in Vietnam to support their diplomacy, the Berlin Conference placed the problem of restoring peace in Indochina on the agenda for discussion at another conference to be held in Geneva in April.[35] The massive retaliation address also touched off another great debate on American policy in the United States. "All told," wrote Chester Bowles on 28 February, "the Administration seems to be saying that in dealing with future armed Soviet or Chinese aggression into non-Communist territory anywhere in the world, it proposes to rely chiefly upon atomic attack by the Strategic Air Forces against the major cities in Communist countries."[36] "All this means, if it means anything," said the defeated Democrat candidate for president, Adlai Stevenson, in a speech on 6 March, "is that if the Communists try another Korea we will retaliate by dropping atom bombs on Moscow or Peiping or wherever we choose--or else we will concede the loss of another Korea--and presumably other countries after that--as 'normal' in the course of events."[37]

Obviously attempting to clarify national policy in an interview published on 5 March and in an address on 9 March, Admiral Radford explained: "It is evident from the forces we intend to maintain that we are not relying solely upon air power."[38] At a press conference on 16 March Dulles called attention to the fact that his address had advocated "a 'capacity' to retaliate instantly. In no place did I say we would retaliate instantly, although we might indeed retaliate instantly under conditions that call for that. The essential thing is to have the capacity to retaliate instantly. It is lack of that capacity which in my opinion accounted for such disasters as Pearl

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Harbor."[39] In an appearance before the Senate Foreign Relations Committee on 20 March, Dulles emphasized that collective defense would be the companion of the capability for massive retaliation. "No single nation," he said, "can develop alone adequate power to deter Soviet bloc aggression against vital interests. By providing joint facilities and by combining their resources, the free nations can achieve a total strength and a flexibility which can surpass that of any potential enemy and can do so at bearable cost."[40] While flying home from the Berlin conference, Dulles wrote an article which he considered to be a "more polished . . . restatement" of his earlier address in New York. Published in Foreign Affairs, this article denied that "the United States intended to rely wholly on large-scale strategic bombing as the sole means to deter and counter aggression." He continued: "A potential of massive attack will always be kept in a state of instant readiness and our programme will retain a wide variety and the means and scope for responding to aggressions. . . . The essential thing is that a potential aggressor should know in advance that he can and will be made to suffer for his aggression more than he can possibly gain by it. This calls for a system in which local defensive strength is reinforced by more mobile deterrent power. The method of doing so will vary according to the character of the various areas. Some areas are so vital that special guards should and could be put around them--Western Europe is such an area."[41]

If Dulles had hoped that the massive retaliation address would help shore up the policy vacuum in Southeast Asia, such was not to be the case. Spurred into an all-out field campaign when the Berlin Conference provided them with a time-table, the Viet Minh laid siege to a substantial French garrison at Dienbienphu, in northwestern Vietnam. While Dulles had anticipated that the Viet Minh might attempt a feat of military force prior to Geneva, the first responsible intimation that the French were in extreme difficulty came to Washington from General Paul Ely, the French chief of staff, who stopped at the Pentagon on 20 March long enough to discuss the possibility of U.S. air strikes against the Communist forces surrounding Dienbienphu A little later, the French government forwarded a request for assistance to Washington through diplomatic channels.[42] As deliberations progressed in Washington, Admiral Radford expressed the view that the loss of Dienbienphu would constitute a serious loss of prestige to the entire Free World. In the Far East, Brigadier General Joseph D. Caldera took selected members of his FEAF Bomber Command staff to Saigon, where they made plans to fly a maximum-effort 98 B-29 carpet-bombing strike with conventional bombs against the Communist forces around Dienbienphu. Back in Washington, Admiral Carney joined Admiral Radford in recommending strong action, but General Ridgway was opposed. "I felt sure," Ridgway wrote later, "that if we committed air and naval power to that area, we would have to follow them immediately with ground forces in support." On the basis of an analysis made by a survey team he had sent to Vietnam, Ridgway predicted that the requirement for U.S. Army forces would be extremely large.[43]

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While the crisis continued, conferences between Dulles and Congressional leaders on 3 April and a discussion between Eisenhower, Dulles, and Radford on the evening of 4 April developed the consensus that the United States should intervene in Indochina only as a part of a collective effort, that the French should take further steps to give complete independence to Vietnam, Laos, and Cambodia, and that any ground forces employed in the war ought to be indigenous forces. When queried about collective action, the British were unwilling to make any undertakings in advance of the Geneva Conference. In Paris on 23 April, French Foreign Minister Georges Bidault pled that an American air strike could still save Dienbienphu, but neither Dulles nor Radford could now agree with him, since Radford felt that the military situation had deteriorated too far. When Dienbienphu surrendered on 7 May the way appeared open for the Communists to take over virtually all of Vietnam, but possibly because they feared to go too far and provoke an American response the Communists settled for less than they might have claimed. In the final Geneva protocol on 21 July, the French agreed to a supposedly temporary division of Vietnam at the seventeenth parallel pending a national plebiscite, and the Reds agreed to withdraw their forces from South Vietnam, Cambodia, and Laos.[44] Some critics of massive retaliation would later state that the policy met an almost immediate defeat in Indochina,[45] but the often-critical Thomas K. Finletter, writing shortly after the Geneva settlement, pointed out that the United States had been unable to take effective action in Southeast Asia because of the lack of a multilateral political base with Britain, France, and the indigenous countries of the area.[46] Meeting at Manila from 6-8 September 1954, representatives of Pakistan, Thailand, the Philippines, Australia, New Zealand, France, the United Kingdom, and the United States drew up and signed the Southeast Asia Collective Defense Treaty, mutually pledging themselves to consult on measures for common defense whenever one of the signatories felt the territory or political independence of any state in the area was threatened by armed attack or subversion.

Following closely after Geneva, the new American emphasis upon nuclear weapons and the reduction of manpower requirements permitted a reevaluation of the strategy of the North Atlantic Treaty Organization along lines earlier suggested by Great Britain. Under the strategy visualized at Lisbon in 1952 the Strategic Air Command's nuclear strikes would have been expected to delay a Soviet advance long enough to permit the mobilization of the force of 96 divisions that would be required to stop the aggressor at the Rhine. To most European nations this objective had been at once too costly in terms of manpower and too limited in scope to be acceptable, and the NATO nations had made little real progress toward fulfilling the program envisioned at Lisbon. In a new assessment of defense requirements in December 1954, the NATO Council resolved that member nations would plan on the use of nuclear weapons from the outset of a war, and this decision to stockpile nuclear warheads which would be readily available

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for the defense of the alliance in time of need permitted a reduction in the size of the ground forces thought necessary. Under the new NATO strategy the local defense forces would provide a "shield" at the forward defense line in Europe while air atomic strikes flown by the Strategic Air Command, the United Kingdom Bomber Command, and American naval forces would provide the "sword." Best described by General Lauris Norstad, who became Supreme Allied Commander in Europe in 1956, the NATO strategy included three objectives: "Our first task," Norstad explained, "must be to create conditions--and this means by the availability of force--so if an incident should arise . . . we could compel a pause. We could force a break in the continuity of the action that is started, whether it is by design, a probing operation, or whether by mistake. . . . Our second objective is in this break to compel the aggressor to make a conscious decision that he is either going to war or he is not going to war. . . . The third objective is when he is making that decision . . . he must think of the total consequences of the act, if he decides to go to war. . . . He must think of the fact that not only will he involve himself in a contact with these so-called shield forces in the forward area, but he will also involve himself in the operations of the retaliatory forces, so you make him face up to the total cost of aggression. You never permit him the luxury of thinking in terms of just a little piece of the price that he might have to pay."[47]

When the United States defense policy had matured in 1953-54, Admiral Radford described it as being based upon a studied assumption of Communist action: "Communism when seeking a means to a political end," Radford said, "is reluctant to use organized armed forces in an overt aggression except as a last resort." Radford saw two corollaries deriving from this basic assessment: "Communism will use all measures short of actual warfare to attain a given objective before resorting to armed force. . . . Communism will not resort to armed force unless there is a reasonable chance of quick victory without--in the opinion of its leaders--appreciable world reaction." This assessment of Communist policy provided the ground rules for American defense policy. "Actually," Radford explained, "there is no local defense which alone can contain the massive land power of the Communist world. Consequently, local defenses must be reinforced by the deterrent power of strong counteroffensive forces possessing the capacity for devastating counter blows deep into enemy territory. In other words, an Allied strategic concept of operations must be based on the combination of local defenses, deterrent power, and an ability to strike swiftly and powerfully. Our current defense program is geared to that concept. . . . In developing the collective physical shield . . . a growing reliance can be placed upon Allied forces now being strengthened in many areas of the free world. . . . But the essence of our concept is the capacity to strike in devastating strength at any element of the enemy's power. There can be no alternative. A workable deterrent will cause a would-be aggressor to hesitate, particularly if he knows in advance that he thereby not only

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exposes those particular forces he uses for aggression, but he also deprives his other assets of 'sanctuary' status." Radford emphasized that "if the Armed Forces of the Soviet Union committed aggression in force against this or that nation to whom we were tied in a collective security arrangement. . . . this would be the beginning of World War III."[48]

* * * *

According to one observer the majority of Air Force officers appeared to be strongly in favor of the military strategy of massive retaliation.[49] "History may show," stated Air Force magazine, "that the 'massive retaliation policy' of the Eisenhower Administration marked the turning point in the Free World's successive retreats and indecisive stalemates in dealing with the onrushing tide of aggressive Communism."[50] Writing as Vice Chief of Staff of the Air Force, General White described the new national security policy as being a policy of "realism." "We have recognized," he thought, "that our atomic weapon developments form the only effective counter to the over-whelming mobilized manpower of the Soviet. Our Air Force with its ability to deliver nuclear weapons has been recognized as an instrument of national policy." White noted that the air power concept was not new--he recalled that farsighted men such as Douhet, Mitchell, Arnold, Lindbergh, Slessor, Seversky, and Orvil Anderson had voiced the concept--but he remarked that "recent acceptance of these truths has been the result of startling advances in the power of modern weapons."[51]

Already engaged in the winter of 1954-55 in writing a pioneer book on American military doctrine, Brigadier General Dale O. Smith believed that Secretary Dulles' statement of the massive retaliatory policy was a "bolder and more confident step" which echoed the words of the late General Vandenberg, who had said: "Air power alone does not guarantee America's security, but I believe it best exploits the nation's greatest assets--our technical skill."[52] When it was published in May 1956, Smith's U.S. Military Doctrine, A Study and Appraisal, pointed out that the massive retaliation policy did not visualize air power as an exclusive or self-sufficient means of victory. President Eisenhower had emphasized that there would still be a need for effective land, amphibious, anti-submarine, and other forces. "The decision," Smith wrote, "is not an all air-power decision by any means but merely a decision to emphasize air in this age as the fulcrum for our military policy." He nevertheless hoped and expected that the national policy of exploiting air power--arrived at "through long and sometimes halting evolution of doctrine, and through exhaustive study and debate among experts in every field of the military art"-- would result in the elimination of the old tendency "to build three self-sufficient services, each planning to win a war with different doctrines."[53]

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While Air Force officers were said to have regarded the New Look and massive retaliation as being "a major, strategic reorientation toward war," the implementation of the policy into strategy seemed none too certain. Taking a clue from Smith's belief that armed service doctrines evolved upward and with general acceptance became "national policy," Colonel Paul C. Droz remarked that the executive policy of the New Look appeared to have "preceded rather than stemmed from plans and doctrine."[54] Colonel Wendell E. Carter pointed up this same observation: "While some observers conclude that the dominant nature of air power has now been recognized in national policy," he wrote, "it is relatively certain that the wisdom of this decision (if it has in fact been made) has not fully percolated down to all the subordinates who contribute to planning activities. It is significant, too, that the national policy was set by the President on his own initiative and was not the result of the unanimous advice of his military advisers. This may have put the lid on the pot, but it is doubtful that the fire has been turned off under the bouillabaisse--or that it will be until the services have a more nearly common viewpoint."[55]

2. Air Force Thinking on Counterforce and Air Power

In his commentary on the meaning of the New Look to the Air Force, General White asserted that the startling advances in the destructive power of air weapons had accentuated old truths: air forces must be combat ready; must have central direction in order to complement each other (even the best air force, if divided or compartmented, would be vulnerable to piecemeal destruction); must have a capability to inflict instant, effective retaliatory punishment upon an aggressor; and must remain uncompromised in their ability to exercise a wide variety of persuasive actions. White asserted that hostile air forces would always be the primary concern and priority target of the total U.S. air forces.[56] By 1953 General LeMay also believed that the Soviet nuclear delivery capabilities demanded that the Air Force should return to its old doctrines. Before 1950, when the Soviets had no atomic stockpile, LeMay had been willing to "violate the principles of war and forget about the rulebook and go about leisurely destroying their war potential or taking on any other task that seemed desirable at the time." By 1953, however, the Soviets had an atomic stockpile plus a growing delivery capability and LeMay accordingly concluded: "We have to go back to the rulebook and the principles of war and fight the air battle first, which means that we must as quickly as possible destroy their capability of doing damage to us."[57] In a landmark speech, which drew very little attention when it was delivered in February 1954, General Twining stated: "We can now aim directly to disarm an enemy rather than to destroy him as was so often necessary in wars of the past."[58]

Even though the Air Force leaders believed that Soviet air-atomic capabilities had merely served to return Air Force thinking to its

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old doctrines, the new Soviet capabilities nevertheless demanded changes in air strategy and especially in the missions of the Strategic Air Command. At a session of the USAF Board of Review for Tactical Operations in September 1949, Major General David M. Schlatter had observed: "Our Strategic Air Command isn't any more a strategic air command than my aunt's foot. It is our striking force." He argued further that the Strategic Air Command would have "to help the soldier dig in in Europe and hold on to territory against the forward Russian divisions."[59] Speaking in June 1953, General Vandenberg told a Senate subcommittee: "The proper role of air forces is to destroy the enemy's industrial potential." On further questioning, however, he stated that the Strategic Air Command would have to cover all the installations from which the Soviets could launch an air-atomic attack against the United States and then it would have two priority missions: to destroy the enemy's industrial potential and "to save the friendly ground forces that are already in contact with the enemy."[60] As outlined by General LeMay, the mission assigned by the Joint Chiefs of Staff required the Strategic Air Command to prevent an enemy nation from launching an atomic attack against the United States, to retard the massing and launching of Soviet ground forces, and systematically to destroy hostile war-sustaining resources.[61]

At the time that the Joint Chiefs directed that the Strategic Air Command would assist theater forces by retarding Soviet advances, the Strategic Air Command found it difficult to target specific objectives. Some of the Soviet forces would be moving, and aircraft would have to search for them prior to making attacks. Planning for the retardation mission became even more complex early in 1952 when the Joint Chiefs of Staff began to allocate nuclear weapons to the unified theater commanders for employment by naval air forces and theater air forces. Recognizing this problem, the Joint Chiefs directed the Air Force to establish a jointly-staffed war room in the Pentagon and joint coordination centers in appropriate theaters of operations, the purpose of these centers being to forward information on targets scheduled for nuclear attack to the war room where duplications might be noted and theoretically eliminated. Joint coordination centers were established in the Far East and in Europe during 1952: manned by Strategic Air Command personnel, SAC Zebra in Europe and SAC Xray in the Far East served both as coordination centers and as advance command posts to control an emergency war plan employment of Strategic Air Command forces in support of theater commanders. Under existing ground rules as many as four commanders were found to be scheduling atomic attacks against the same target. It was thought, however, that in case of a war the joint coordination centers would be able to spread the word when a target was attacked, thus halting duplicative attacks.[62] As long as all prospective nuclear targets were within the Soviet Union the simple coordination procedure appeared workable, but the situation rapidly began to get out of hand

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when the New Look greatly loosened planning for the employment of the ever-growing atomic stockpile in limited as well as general wars.[63]

Speaking in November 1953, Ex-Secretary Thomas K. Finletter voiced the opinion that the Air Force needed to revise its "consideration constantly away from the old anti-industry concept of the SAC operations and . . . make it an anti-force operation."[64] When he published Power and Policy in the summer of 1954, Finletter again argued that the "old counter-industry concept for the Strategic Air Command should be given up. There should be substituted for it what may be called the front-to-rear concept. Under this concept all targets from the enemy's front lines, through his communication and supply lines, his airfields and storage, back to and including the sources of production and governmental direction would be the objective of Atomic-Air's attack. In the time of atomic plenty there will be enough bombs to do all this. . . . The first emphasis would be on the enemy's atomic air, on the fields, installations, planes and missiles from which his atomic attack on us would come. Once these are destroyed the emphasis would shift to the obliteration of the enemy's military forces, his industry, and his ability to function as an organized state."[65]

In a review of Finletter's book, T. F. Walkowicz, a member of the USAF Scientific Advisory Board, agreed that mounting Soviet air-atomic capabilities were making the Soviet Air Force rather than the Soviet economy the priority enemy target in the event of a war.[66] In a major article published in February 1955 under the title of "Counter-Force Strategy," Walkowicz presented what he considered to be a comprehensive thesis on nuclear warfare. He reasoned that the possession of nuclear air weapons by both prospective combatants had rendered obsolete any idea of using a mobilization base in war: either the United States or the U.S.S.R. would win or lose a war with forces already on hand at the outset of hostilities. Since the United States and the Soviet Union each possessed combat ready forces able to destroy each other, a counter-economy strategy in the sense of bombing cities or factories was impracticable. The United States, however, held a substantial advantage in its possession of a larger stockpile and a wide variety of atomic air weapon systems. Walkowicz therefore urged that the United States should give priority emphasis to the development of both the Strategic Air Command and theater air forces and that nuclear weapons and delivery systems should be directed primarily against Soviet air forces and other enemy forces in being. "As our counter-force capability becomes really formidable," Walkowicz wrote, "the U.S. will have both the option of choosing and the initiative of announcing a policy to employ nuclear weapons primarily against military targets."[67] Finletter called Walkowicz's article "a fine contribution to thinking on this all-important subject."[68]

Both Finletter and Walkowicz emphasized the military reasons for a counterforce strategy, but Richard S. Leghorn, an Air Force reserve officer who had returned to civilian status after a tour in the Air

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Force Office of Development Planning, advanced the humanitarian aspects of a counterforce strategy. In an article "No Need to Bomb Cities to Win War, A New Counter-Force Strategy for Air Warfare" published in January 1955, Leghorn proposed that the United States might unilaterally renounce H-bomb and A-bomb attacks against cities, unless in retaliation for mass-effects weapons employed by the Soviets against free world cities. If the United States or its allies were attacked with conventional armies, the United States would punish the aggressor by directing tactical nuclear weapons against hostile attacking units in the battle zone and enemy military installations in immediate rear areas, including air bases supporting the aggression. If the United States or its allies were attacked with nuclear weapons, the United States would employ nuclear weapons to destroy the enemy's nuclear stockpiles and delivery capabilities.[69] Leghorn described his proposals as a "counter-force" strategy, but his plan to limit nuclear weapons to battlefield targets fell rather neatly into the definition of what Rear Admiral Sir Anthony W. Buzzard, British Royal Navy (Retired) would conceive to be "graduated deterrence." Buzzard proposed to return nuclear war to the tactical battlefield and to avoid strategic nuclear attacks against towns and cities unless such proved to be absolutely essential.[70]

Air Force leaders found much that was acceptable in the proposed counterforce strategy. Writing in the winter of 1954-55, Colonel Robert C. Richardson III, Air Member to the NATO Standing Group in Washington, suggested that at the outset of hostilities nuclear-armed adversaries would direct their blows against "quick pay-off" target systems such as combat formations of all arms and services.[71] General LeMay emphasized that the Strategic Air Command's primary war mission would be the enemy's air-atomic capability. "I think," LeMay said, "it is generally conceded by all military personnel in this day and age, you must win the air power battle, gain air superiority, before you can conduct any other type of military operation."[72] Major General John Samford, Air Force Director of Intelligence, was frankly skeptical about any proposal to make direct attacks against the psychological strength of the enemy: he knew no way in which target planners could estimate the effect of direct attacks against an enemy's will to wage war and he favored attacks against hostile military and industrial targets where effects of destruction could be better predicted and the results of incremental reductions could be more accurately measured.[73] There was general agreement in the Air Force that a future war would allow little or no time for mobilization. The Air Materiel Command accepted the policy that the decisive phase of a future general war would be the first 90 days and that hostilities could begin at any hour. "It is one of the tenets of modern warfare," LeMay wrote, "that the decision in tomorrow's conflict will be reached using only the forces in being at the outset. . . . Today, shooting wars are won or lost before they start. If they are fought at all, they will be fought principally to confirm which side has won at the outset."[74] As a

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second priority to the counter-air strikes, the Strategic Air Command planned to support theater commanders in retarding the advance of Soviet ground forces. In this retardation task, LeMay planned to deliver weapons of a theater's choosing against targets the theater commander wanted destroyed.[75]

Even though much of the counterforce strategy was acceptable, the Air Force was as yet unable to accept such an undertaking in all its details. Mindful that a major reason for the assignment of theater-support missions to the Strategic Air Command in 1950 had been caused by the fact that the large and scarce atomic weapons of that time could be transported only by strategic bombers, General Weyland believed that as tactical aircraft gained atomic capabilities the primary responsibility of the Strategic Air Command should be for attacks on basic sustaining resources, industries, and facilities essential for the prosecution of war and that the Tactical Air Command and the theater air forces ought to be "responsible for attacks on enemy military forces and materials in being, en route to or in battle."[76] Although the Strategic Air Command would remain responsible for an important portion of the retardation objective, the targets scheduled for attack under the retardation objective were somewhat less than counterforce seemed to contemplate. The Strategic Air Command also planned systematically to destroy the enemy's war-sustaining resources as a third-priority objective. "Here," said a SAC spokesman, "we go after their steel plants, their heavy industry, and the goods of war will be destroyed so that they cannot fight." This third-priority task, moreover, would be accomplished virtually simultaneously with the higher priority tasks, since the Strategic Air Command (unlike the naval and theater air forces which would retain some reserve of nuclear weapons) was committed to an immediate salvo of its nuclear stockpile as soon as possible after H-hour. Operational concerns had another important effect on the Strategic Air Command's target planning: many common denominator targets fell within several of the target categories and numerous separate targets were commonly found in the immediate vicinity of population centers. By increasing the size of the weapon delivered, the Strategic Air Command would be able to destroy a number of separate targets with one successful sortie, thus attaining a "bonus effect" from a single larger weapon.[77] At least two other reasons were given for the Air Force's early hesitation about accepting counterforce as a strategy. The counterforce concept posed a requirement for a very large number of nuclear weapons and delivery vehicles--many more than the Air Force had programmed or could reasonably expect to obtain.[78] The counterforce concept also demanded an accurate identification and location of Soviet forces prior to H-hour. As of mid-1956 the Air Force did not yet have intelligence or reconnaissance capabilities that could provide such exact information.[79] To the Air Force the counterforce strategy appeared basically sound and worth planning for, but it could not be immediately accepted in all of its details.

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The strategic requirements of the New Look--especially instant reaction to aggression and the corollary concept of instant readiness--touched off an active discussion on the need for the proper understanding of the characteristics of "air power." As has been seen, Brigadier General Mitchell in the early days of American aviation had defined air power as "the ability to do something in or through the air." Following this same dynamic definition, the Air Corps Tactical School had taught: "The air power of a nation is its capacity to conduct air operations; specifically, the power which a nation is capable of exerting by means of its air forces. . . . Air power is measured by the immediate ability of a nation to engage effectively in air warfare."[80] While early air thinkers generally identified air power with the air striking force, the emphasis on an aviation industrial mobilization base in the early 1940's led to a broadened definition of air power which was provided in Seversky's Victory Through Air Power. Being as he later said "a Navy man by education," Seversky adapted Admiral Mahan's classic definition of "sea power" for his own purposes. "I automatically said," Seversky recollected, "that air power means everything. The airplanes, the industries, the men, the materials, everything that produces the power in the air or power to navigate in the air constitutes air power."[81] At the end of World War II General Arnold accepted this broad definition of air power, and in 1955 Air Force Manual 1-2, United States Air Force Basic Doctrine, stated: "The term 'air power' embraces the entire aviation capacity of the United States."[82]

This broad definition of air power was accepted within the Department of Defense. When he justified reductions in the Air Force in June 1953, Secretary Wilson said that the Air Force's wing strength was only "a segment of our air power: and asserted that if Navy and Marine air strengths were taken into consideration the "over-all air power" of the nation totalled 152 wings.[83] Disputing Wilson's reasoning, General Vandenberg argued that naval air units were committed to a mission of controlling the seas and would not be available to assist with air missions until primary naval functions were accomplished. "In other words," Vandenberg said, "when the bell rings you would not, in my opinion, count upon the Navy to carry out its primary mission if, at the same time, it is required to help the Air Force carry out its own primary mission."[84] In December 1953, however, Admiral Radford defined national air power as including the Air Force, Navy aviation, Marine Corps aviation, Army aviation, and "the tremendous aircraft industry and civil air transportation systems of the United States."[85]

Believing that the New Look concept of air power as manifest in the fiscal year 1955 defense budget was only "an optical illusion--the same old numbers racket," Seversky began to change his mind about his definition of air power. In an article published in April 1954, he pointed out that from its share of the defense appropriations the Air Force "not only has to build an Air Force to fulfill its primary mission to destroy the enemy and to protect the continental United

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States, but it also has to build an enormous tactical air force, and transport and cargo planes in support of and for use by our Army." Seversky now maintained that aviation designed to support the Army should be budgeted to the Army. "Just aviation--an amorphous mass of aircraft, no matter how large, no matter how useful it may be to the Army, Navy, and Marine Corps--if it is not designed to win and maintain command of the air," he wrote, "does not constitute air power."[86] In an article prepared in July 1954 for the American Peoples Encyclopedia, Seversky wrote: "Air power is the ability of a nation to assert its will via the air medium. . . . Only when an aircraft is designed to assist and increase the efficiency of the air force in its task of establishing command of the air is it an instrument of air power."[87] In an amplification of this article for Air Force magazine, Seversky asserted that a lack of basic understanding of what constituted military air power was the root of the confusion reigning in the national defense effort. "The scope of the Air Force's mission," he maintained, "must be fully understood if our country is to shake off the curse of the present antiquated philosophy of balanced forces strategy."[88]

Believing that the real meaning of air power was getting lost in a maze of diverse definitions, Air Force thinkers attempted to provide a definition that would be nationally acceptable. In the Air War College Evaluation Staff, Colonels Page and Roussel prepared an article which defined air power in terms of the doctrine that air power was an entity. In this frame of reference they thought of air power as "those military forces . . . which are employed and directed as a single instrument by the military agency charged primarily with the responsibility for conducting operations through the air." They defined "military auxiliary aviation" as being "composed of those products of the national air capacity which are diverted or withdrawn from the air power total for the primary purpose of conducting land or sea operations under the military agencies charged with those responsibilities." They concluded: "Unlike air power, military auxiliary aviation is invariably confined in its use to support of operations which have definite land and sea boundaries."[89] Taking a semantic shortcut, Professor Leach abruptly defined "United States air power . . . as the United States Air Force."[90] When he appeared before Senator Symington's committee which was investigating air power in April 1956, General LeMay did not define air power but he stated that intelligence indicated that the Soviets would possess more long-range jet bombers than the United States by 1958-60. "now," he stated, "we are drifting into coordinating our tactics and weight of effort, timing of things, and that sort, and we are drifting towards what we airmen have maintained all along, to fight an air power battle requires a single commander." LeMay urged that a single air commander would be required in order to achieve the "primary single goal of destroying Soviet air power."[91]

The new definitions of air power were not acceptable to other national leaders. Admiral Carney stated: "Air power is not a

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compartmented thing peculiar to any one agency; it is needed by the Army, Navy, Air Force, and Marine Corps for the accomplishment of their assigned roles and missions; it is needed to expedite the business of other governmental agencies, or industry, and of the population at large."[92] Speaking pointedly in response to LeMay's testimony on 4 May, President Eisenhower discounted the charge that the United States was lagging behind the Soviet Union. "We have," he told reporters, "the most powerful Navy in the world. . . and it features one thing, airpower. . . . Now we have got a tremendous air-power, a mobile air power, in the sea forces."[93] Preferring to speak about deterrent power rather than air power, Secretary Wilson stated that "primary deterrent power" rested in the Strategic Air Command, but he emphasized that this force was supplemented by "atomic capable aircraft with carrier task forces constantly deployed overseas; the atomic bombing capability of aircraft of our tactical air forces deployed overseas and ever on the alert; and the atomic capability of our surface-to-surface guided missile and artillery units also deployed overseas."[94] When questioned on these matters by the Symington committee in July, General Twining conceded that naval aircraft could make a valuable contribution to the air power battle, provided carrier air attacks were possible against Soviet airfield targets immediately after a war's beginning and were coordinated with Air Force attacks. He pointed out, however, that the Navy had important primary control of the sea missions, that no one could be sure where naval carriers would be physically located or what targets their planes would be prepared to strike immediately after H-hour. For those reasons, Twining asserted that "the strategic air force has to be just as big, just as strong, and just as ready regardless of this Navy contribution on these targets I am talking about."[95]

After considering this course of efforts to define air power, the Air War College Evaluation Staff offered a more cohesive definition early in 1957. "Air power," it said, "is the hard core of any modern defense organization. It comprises those military resources, together with their effective command, control and employment, which enable a nation to use the air for its own purpose and to deny its effective use to the enemy." Given effective command and control that recognized the unitary nature of global air warfare, the Evaluation Staff's definition was broad enough to include Army antiaircraft defense as well as Navy air defense and aviation resources.[96] Emphasizing a dynamic and inclusive concept of air power, Major General James Ferguson, Air Force Director of Requirements, wrote in April 1958: "Air power is the total of elements needed to apply force in the appropriate degree. It is offensive, defense, reconnaissance, transport. It is general thermonuclear offensive, limited nuclear and conventional war, police action, or perhaps a show of force. It is deterrence and, if deterrence should fail, it is destruction of the aggressor."[97] Speaking to the National Press Club on 29 November 1957, however, General White declared that the U.S. Air Force was "synonymous with airpower."

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"Just as our Army and its soldiers are synonymous with land warfare and the Navy and its sailors with sea battles," he said, "so are the USAF and its airmen synonymous with air warfare."[98] In April 1958 Major General Jacob E. Smart, the Air Force Assistant Vice Chief of Staff, reiterated this same position that the National Defense Act of 1947 had established the U.S. Air Force as the service representing "the primary airpower strength of the nation."[99] At the Air War College, Major General Robert F. Tate nevertheless preferred the larger definition of air power. "I think we must," he said, "whether we like it or not, acknowledge that air power if properly used does lie in the Navy as well as in the Air Force, and perhaps eventually in the Army."[100]

Although the discussions of air power appeared academic, the emphasis placed on the unitary nature of national air power stimulated thought about the internal organization of the Air Force. While Air Force doctrine had accepted the fact that air units might be placed under diverse air commanders to simplify span of control, it nevertheless emphasized that air power must not be compartmented but must be wielded as a unitary force for the prosecution of the global air battle.[101] In view of the increasing Soviet air atomic threat and the requirement for unitary command and control of air power, there was a question as to whether the Strategic Air Command and the Tactical Air Command ought to continue to be separate establishments. As early as March 1953, Brigadier General James Ferguson suggested that the Air Force was not entirely without blame for prevalent compartmentations of air power. "We have permitted," he pointed out, "internal segregation or partition of air power at a time when technological developments least warrant such action. By such partition we invite the wedge which will split apart such aircraft assigned to TAC for special use as long range artillery at a time when this tactical portion of our air force may very well play an important role in the strategic mission."[102] As has been seen, Finletter proposed in Power and Policy the need for a merger of all atomic-air units under a single command which he thought might be called the "Strategic-Tactical Air Command" or simply "STAC."[103]

In the postwar years when no hostile nation had possessed air capabilities sufficient to destroy the United States, General LeMay had been willing to believe that the United States "could afford the luxury of devoting a substantial portion of our Air Force effort to support of ground forces." "The maintenance of part of our force as close support posed no grave risk," he thought, "because the enemy didn't have the capability to destroy us. He couldn't initiate an effective air offensive blow against us because he couldn't mount one." By 1956, however, LeMay considered that the Soviets possessed aircraft and weapons capable of inflicting atomic devastation on the United States. Under these conditions, he said: "Offensive air power must now be aimed at preventing the launching of weapons of mass destruction against the United States or its Allies. This

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transcends all other considerations because the price of failure may be paid with national survival."[104] Based on this strategic estimate, LeMay was apparently not adverse to the Army's attempts to increase its own organic supporting firepower. In June 1956 the new Army Chief of Staff, General Maxwell D. Taylor, stated that "the trend will be toward the substitution of the missile, the Army-controlled missile, for what we call close support of ground forces."[105] In a directive on roles and missions issued on 26 November 1956, Secretary Wilson authorized the Army to develop surface-to-surface missiles with ranges up to 200 miles. At an Air Force Commanders Conference in January 1957, LeMay considered that Wilson's directive was an emancipation of the Tactical Air Command inasmuch as it visualized, as LeMay saw it, that "the firepower necessary for close support in the confines of the combat zone can and should be provided by relatively short range weapon systems organic to the Army." He accordingly recommended that the time had come to reorganize all of the offensive elements of the Air Force into an "Air Offensive Command" under a single air commander. "With control of our air forces piecemealed throughout the world," he warned, "we need lose only in one area to insure the destruction of our own country. . . . Whether we choose to recognize it or not, SAC and TAC are bedfellows. . . . As a matter of top priority, for reasons of national survival, they must deter together through their ability to defeat Communist air power together." Given a combination of the Strategic and Tactical Air Commands, LeMay thought that the Air Force could more logically "take a united stand in pursuit of its ultimate objective of achieving unified control of all air offensive forces, regardless of service, under a single air commander."[106]

"I have stressed the indivisibility of air power and the necessity of centralized control of air resources," said General Weyland after assuming command of the Tactical Air Command in 1954, "as much as any man alive." From his headquarters at Langley Air Force Base, Weyland set out to develop the Tactical Air Command into a "jack of all trades" element of offensive air power as well as a supporting force for surface operations. The strategic air forces and the tactical air forces appeared to him to be an offensive fighting capability which would be applied against a hostile target spectrum comprising "an unbroken chain from field, mine, and forest to the battle area." Speaking of the target spectrum, he explained: "There is no sharp line of demarcation, there is a desirable area of overlap, and, by close coordination strategic and tactical air forces can and do complement and assist each other without duplication of effort."[107] In spite of these beliefs, Weyland took a firm stand against LeMay's "single offensive force" concept. He favored a single service that would integrate the offensive capabilities of all the services, thus permitting a "single-uniform" military force to exploit the national air capabilities, but he did not expect to see such a single service mature in his time. Under existing command organization, theater commanders had legitimate area responsibilities in which theater air

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forces assumed major importance, both for general war and for contingencies short of general war. Unless the Air Force was prepared to risk the danger that forces of the Strategic Air Command might be placed under theater control, Weyland argued that the Air Force must proceed very cautiously toward amalgamating tactical and strategic air forces. "We must face, too," he continued, "the inalterable fact that the forces of the Strategic Air Command are dedicated to a single and inflexible purpose--the prosecution of an all-out war. Their people and their equipment simply are not capable of or familiar with the many contingencies which may arise short of that general conflict." Weyland favored the establishment of a single commander with authority to control or coordinate worldwide tactical air resources, and he thought that many of the advantages supposedly inherent in a single offensive air commander could be attained through the establishment of a single centralized authority to direct targeting and to coordinate the timing of all air strikes in case of a general war.[108]

In offering his proposal for an "Air Offensive Command" General LeMay assumed that the Army would be quick to develop surface-to-surface missiles and to undertake its own close-support and interdiction efforts. Despite General Taylor's remarks, however, the Army would follow a very cautious approach designed to insure that Air Force support capabilities would be only gradually reduced as Army missile capabilities increased.[109] The growth of Army missile power would be cited as a justification for reducing the strength of the Tactical Air Command, but the Army would not arrive at an organic missile strength that would permit it to dispense with tactical air support. LeMay had also assumed that the missions of the Strategic Air Command and the Tactical Air Command were becoming increasingly congruous, but forces were already in the making that would demand that the Strategic Air Command would be almost entirely committed to the deterrence of general war while the Tactical Air Command would be developed as a general purpose force. Instead of moving together, the missions of the Tactical Air Command and the Strategic Air Command would become more widely separated. Although unable to agree to the integration of its own forces to the degree contemplated by General LeMay, the Air Force would continue to work for a higher degree of unification of the Armed Services.

3. Air Force Positions on Nuclear Stalemate and Limited War

"Air power," General Vandenberg stated in June 1947, "is a power for peace in the uncertain world of today--if air supremacy rests in the right hands."[110] In the late 1940's and early 1950's, Air Force leaders were said to be well agreed that American air weapons had to be clearly superior to an enemy's weapons and that the best assurance against the outbreak of war was the ability to win such a war.[111] Looking toward the long-term future in 1953, President Eisenhower attached great importance to the role of military power in maintaining

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the peace of the world. "This power," Eisenhower emphasized, "is for our own defense and to deter aggression. We shall not be aggressors, but we and our Allies have and will maintain a massive capability to strike back."[112]

On a visit to the United States the summer before his retirement as Chief of the Air Staff of the Royal Air Force in December 1952, Air Marshal Slessor recalled the hundred years of Pax Brittanica that had rested on the power of British naval forces and visualized the establishment of a Pax Atlantica based on air power. "I believe the stability of the world," he said, "can be preserved just as surely as it was between Waterloo and Sarajevo. And this time it will rest on airpower--largely, but not exclusively, American Airpower." Slessor repeated these ideas in a series of talks on the British Broadcasting Corporation early in 1954, and in May 1954 Air Force magazine published an article by him entitled "Has the H-Bomb Abolished Total War?" In this article Slessor asserted that total war waged with thermonuclear weapons "would amount virtually to mutual suicide." Reasoning from the premise that to win a war meant to create "world conditions more favorable for oneself than would have been possible if there had not been a war," Slessor concluded: "The world may take courage and hope from the fact that there is today not the slightest chance of anyone winning a war on that definition. . . . What has now happened is that total war has been abolished in the only possible way--it has abolished itself, now that new ultimate weapons of atomic and thermonuclear power are in the hands of both potential antagonists." Slessor reasoned that the United States and Great Britain could not afford "to neglect the defensive altogether," that they would have to "give the necessary priority to a striking force, not vastly superior in strength to anything that anyone else has, but strong enough to do the job and efficient enough to put the weapon down where we want to, if we have to," and that they would require "the ability to deal in a limited way with limited emergencies wherever and whenever they may arise." "We can take it as a foregone conclusion," he predicted in a look at the future, "that our opponents, having deduced that it would be too costly to overwhelm us by direct assault, will take every opportunity to turn or undermine our defenses by other means. We must look forward to a difficult era of what may be described as termite warfare--subversion, infiltration, and the exploitation of rebellion; fishing in the troubled waters of immature nationalism, of misgovernment and social inequalities in new states still in a rudimentary stage of political development, of religious hatreds and economic disequilibrium; and, almost certainly, other minor aggressions on the Korean model. . . . The function of atomic airpower will be the big stick in the background, to keep these affairs from spreading--to prevent the minor tactical episode from developing into the mortal threat."[113]

The concept of "nuclear stalemate" caught on rapidly in Great Britain and spread to the United States. The British military commentator J. F. C. Fuller agreed that the hydrogen bomb had "bereft

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organized international war of its political significance." "With the advent of the hydrogen bomb," stated Air Chief Marshal Sir Phillip Joubert, "it would appear that the human race must abandon war as an instrument of policy or accept the possibility of total destruction." Speaking to Parliament on 1 March 1955, Prime Minister Churchill predicted: "In three to four years' time. . . the Soviets will probably stand possessed of hydrogen bombs and the means of delivering them not only on the United Kingdom but also on North American targets. . . . It does not follow, however, that the risk of war will then be greater. Indeed, it is arguable that it will be less, for both sides will then realize that global war would result in mutual annihilation."[114] In the United States, the scientist Dr. Robert A. Oppenheimer coined the simile that war between thermonuclear powers would be equivalent to a battle to the death between two scorpions in a bottle. "No great war can ever again be won," said Dr. Vannevar Bush; "it can only end with the partial or complete annihilation of both contestants."[115] In October 1955 Secretary of the Air Force Donald A. Quarles referred to the creation of "a stalemate through deterrent strength" as being, "paradoxically, our best hope for peace." Secretary Wilson observed in January 1956: "I assure you that in my opinion everybody is going to lose in the next war. . . . The hope of the world that by having a stalemate long enough sensible men of good will throughout the world could try to get some formula for establishing peace in the world."[116]

At first the concept of "nuclear stalemate" was thought to be a condition that would have some possible benefit to the United States, but with the passing of time some defense analysts began to promote the idea that a condition of finely-balanced "mutual deterrence" would be very advantageous to the whole world. In 1959 Professor Oskar Morgenstern advanced the idea that it would be beneficial to maintain a nuclear stalemate, even by the expedient of strengthening Soviet forces by weakening U.S. power. "In order to preserve a nuclear stalemate," Morgenstern wrote, "it is necessary for both sides to possess invulnerable retaliatory forces. . . . In view of modern technology of speedy weapons delivery from any point on earth to any other, it is in the interest of the United States for Russia to have an invulnerable retaliatory force and vice versa."[117] A study prepared by James E. King, Jr., Paul H. Nitze, and Arnold Wolfers of the Washington Center of Foreign Policy Research recommended: "On the assumption that steps will be taken to create a workable alternative to U.S. strategic deterrence of the less provocative forms of Sino-Soviet aggression, the United States should pursue a policy 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."[118] Another civilian analyst, Herman Kahn, suggested: "We must not look too dangerous to the enemy. . . . We do not want to make him so unhappy and distraught that he will be tempted to end his anxieties by the use of drastic alternatives."[119]

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With the apparent exception of Secretary Quarles, Air Force thinkers were quite skeptical of the existence of a condition of "nuclear stalemate." Seeking to determine Air Force requirements under the New Look, an Air War College Evaluation Staff analysis completed in April 1954 held that the objective of deterring all-out war demanded a continuing ability to deliver nuclear weapons to the heart of the Soviet Union. The effectiveness of a deterrent would be proportionate to an enemy's conviction that the air capability would inflict unacceptable damage upon him and that he could not deny the capability by effecting an air-tight defense system, making a technological breakthrough in offensive weapons (such as an intercontinental missile), blackmailing America's allies, sabotaging or subverting American bases, or by making an effective surprise attack against U.S. offensive air forces.[120] In another study issued in April 1955 the Air War College Evaluation Staff acknowledged that deterrence was a composite of moral, economic, political, as well as military capabilities and that all military strengths--whether land, sea, or air--had some deterrent effect, but it asserted that deterrence of an enemy was primarily "the ability to retaliate against the heart and core of his nation--a capability held securely in the hands of invulnerable force--that will cause him to fear the consequences of any aggression he might initiate."[121]

Appearing before Senator Symington's "Study of Air Power" committee in April 1956, General LeMay presented the Strategic Air Command's definition of deterrence. "A deterrent force," he said, "is one that is large enough and efficient enough that no matter what the enemy does, either offensively or defensively, he will still receive a quantity of bombs or explosive force that is more than he is willing to accept . . . . A deterrent force is an effective nuclear offensive force which is secure from destruction by the enemy regardless of what offensive and defensive action he takes against it. The striking force is considered effective if it can still inflict unacceptable damage on the enemy."[122] From testimony such as this, the Symington committee concluded: "To be safe, we must have strategic airpower of sufficient strength to absorb any surprise attack and, even after suffering the heavy damage incident to such an attack, be able to retaliate." General Twining agreed with this conclusion.[123] Tersely summing up a belief that deterrence was a "delicate balance of terror," RAND analyst Albert J. Wohlstetter concluded: "To deter an attack means being able to strike back in spite of it. It means, in other words, a capability to strike second."[124]

Based upon their examinations of the nature and requirements of a deterrent posture, Air Force leaders seriously questioned whether a nuclear stalemate could exist and whether, if it could exist, it would serve to eliminate general war. In April 1956, Brigadier General Sidney F. Giffin, Vice Commandant of the Air War College, remarked that "stalemate" described an end situation in the game of chess in which neither of two opponents could win or lose. He considered the term inappropriate to a situation that should be described

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as a "precarious balance of power" that might at any time be "tipped through the indifference or carelessness shown by one side or through the moral or technological advances achieved by the other."[125] Expanding upon this same theme, Colonel Robert C. Richardson postulated that in order to maintain a stalemate situation "both sides must have stocks of atomic weapons and the means for their delivery while at the same time lacking defenses capable of protecting their vital areas from destruction by the enemy." If either side developed "pay-off" defenses against air attack the stalemate would never transpire. In view of the normal processes of evolution of weapon systems, moreover, he thought it unlikely that an exact parity in weapons, delivery forces, or defenses would occur for any length of time or endure for any length of time. "I suggest," he concluded, "that the so-called atomic 'stalemate' or 'stand-off' is more of a psychological than a real deterrent. At best it is a cliche born of the natural tendency to rationalize away the prospects of total atomic war."[126]

The fact that any effective nuclear stalemate would depend upon the psychological value judgments of Soviet leaders and to a lesser extent of the Soviet people was a cause for concern to Air Force leaders. General Spaatz agreed that no right-thinking person would initiate a nuclear war, but he added: "I do not agree that dictators are in their right mind. I am certain Hitler was not, so I do not think we can assume that the Russians are going to have . . . completely sensible people running them all the time."[127] This same concern for Soviet motivations and capabilities caused General Twining to describe the proposition that prospects of mutual suicide had abolished total war as "a dangerous fallacy." "We must recognize," he said, "the fact that total war is no less a potential threat today, when both sides possess atomic weapons, than it was several years ago when we alone had them."[128] In the spring of 1960, after becoming Air Force Chief of Staff, General White described deterrence as "what we hope to achieve through specific impact on the collective mind of the Soviet leadership."[129] Believing this, White took a "particular exception" to the notion of "mutual deterrence." "I cannot agree," he said, "that the Soviet Union is trying to deter us. Deterrence, as I see it, is a one-sided problem--it is ours."[130] Reasoning that no one could state what amount of destruction the Soviets or Chinese Communists would be willing to accept, that the Soviets had a tremendous advantage in their ability to make a first strike, and that technological change made for very rapid fluctuations in offensive and defensive capabilities, General Thomas S. Power, the new Commander of the Strategic Air Command, added that "a tremendous disservice. . . is rendered the American people when people say there is a nuclear stalemate. . . . It is a very fluid situation. We have the deterrent posture today. We can lose it tomorrow."[131]

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In the autumn of 1953, the U.S. State Department's Policy Planning Staff reportedly believed that the Army could have strengthened a case against the dominant trend toward nuclear weapons by giving up the idea of tailoring its forces for a large conventional war and instead basing its argumentation on the more solid ground of preparing to meet small wars.[132] In his massive retaliation address of 12 January 1954, Secretary Dulles did not neglect the matter of local defense: "Local defenses," he said, "must be reinforced by the further deterrent of massive retaliatory power." In April 1954 he expanded the theme, when he wrote: "To deter aggression, it is important to have the flexibility and the facilities which make various responses available. In many cases, any open assault by Communist forces could only result in starting a general war. But the free world must have the means for responding effectively on a selective basis when it chooses."[133] Despite these statements, Dulles apparently did not believe that the State Department could properly or competently advocate particular military means or methods for implementing the national strategy--this was the task of professional military planners.

In the initial planning for force allocations under the New Look General Ridgway rejected the image of limited war. "The day when wars had limited effects," he observed in the autumn of 1953, "is past. . . . War, if it comes again, will be total in character."[134] General Ridgway considered "around 26 divisions" or approximately 1.3 million men to be a realistic strength for the Army, but New Look planning visualized a reduction of the Army from its post-Korean War strength of 1,540,000 persons and 19 divisions to a strength of approximately 1,000,000 persons and such number of divisions as could be effectively manned with this strength by the end of fiscal year 1957. Ridgway viewed the reduction of the Army by one-third in some 30 months as "too fast and too drastic."[135] Alarmed by events in Asia and Europe in April 1954, Secretary Wilson indicated that a "soul-searching review" of specific policies, including the impending reduction of the Army from 19 to 17 divisions, was being undertaken. Actually the fiscal year 1955 budget originally estimated that the Army would be cut to 1,102,000 persons by 30 June 1955, but conflict in Indochina caused the retention of a personnel "cushion" and the Formosa Straits crisis of early 1955 delayed the planned reduction a little longer. Late in 1954 the Eisenhower administration sought to attain a balanced national budget in fiscal year 1956 by accomplishing military force reductions previously planned for fiscal year 1957 a year earlier. Secretary Wilson took the matter to President Eisenhower, with the Joint Chiefs present to argue their cases. According to Wilson, Ridgway wanted the Army to have "a much bigger force." The President authorized 35,000 more persons for the services, and the Joint Chiefs divided the increment, giving the Army 25,000, the Navy 7,000, and the Marines 3,000.[136]

Unlike the Army, the Navy had no difficulty implementing the New Look. As early as November 1953, Rear Admiral Arleigh A. Burke, who would become the Chief of Naval Operations in June 1955, pointed out

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that the Armed Services needed a new strategic concept to meet the divergent requirements of "preparation for vast retaliatory and counteroffensive blows of global war and of preparation for the more likely lesser military actions short of global war." Burke visualized naval and air forces capable of coping with special situations and the maintenance of "strategic reserve ground forces--not large--but in a high degree of combat readiness--so trained--constituted and equipped--that they can move immediately into any area to support Allied forces in those military actions which cannot be handled solely by local forces supported by our Naval and Air Force."[137] The Navy was alerted early in 1954 during the Indochina crisis and its aircraft carriers provided a backdrop of strength early in 1955 when the Chinese Communists brought pressure to bear against the Taechen Islands.[138] In their force requirements for fiscal year 1956, the Joint Chiefs of Staff raised the Navy's requirement for attack aircraft carriers from 14 to 15, without (as General Twining noted) specifying what kind of carriers they would be or how large. Early in 1956 Admirals Radford and Burke both pointed out that aircraft carriers could project air power into areas of the world where the United States had no airfields.[139] While Navy officers seldom failed to stress the versatility of sea power in any type of war, the Navy's concern was manifestly most intense on the problem of a general war. In June 1956, Admiral Burke told the Symington committee that he did not believe that the Soviet leaders would initiate general war, but he hastened to add: "At the same time, you can never count for sure on that. There may be an insane man who can persuade his people to follow him."[140] Admiral Burke also found it difficult to determine just what amount of offensive air capability might be necessary to deter Russia from general war.[141]

In making his assessment of Air Force requirements under the New Look General Twining disagreed with those persons "who profess to believe that the defense of the free world can be deployed against atomic attack and at the same time concentrated to meet a World War II type of offensive. . . . In the past it has been difficult enough to impose a new strategy on top of an old strategy. To impose now the old strategy on top of an old strategy on top of the new is out of the question."[142] At an Air Force Commanders Conference in May 1954, however, General Weyland expressed the belief that the Communists would never start a "brush-fire" war in an area where the United States was prepared to conduct effective combat operations, particularly tactical air operations. Pointing out that the U.S. Air Forces in Europe and the Far East Air Forces were both committed to existing areas of responsibility, Weyland suggested that the Tactical Air Command be authorized to organize and maintain a highly mobile tactical air force in the United States that could be deployed to meet contingencies anywhere in the world.[143] Both Twining and White agreed that Weyland's proposal had "considerable merit," but when Weyland formally requested authority on 25 June to activate an additional tactical air force headquarters the Air Staff proved

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reluctant to approve it. In order to attain 137 combat wings by 30 June 1957 the Air Force was alreadycommitted to reduce personnel assigned to overhead purposes.[144]

While General Weyland had originated the idea of a mobile tactical air force as a deterrent to local wars, Tactical Air Command officers believed that an Air War College Graduate Study Group thesis by Colonel Richard P. Klocko entitled "Air Power in Limited Military Actions" may well have influenced the Air Staff's ultimate acceptance of the new concept. Completed in August 1954, Klocko's thesis was said to have served "as a sort of a tactical air 'bible' at Headquarters USAF."[145] In his study Klocko assumed that in a period of "atomic equilibrium" the deterrent effect of atomic power would apply to both opposing coalitions, and that the world would be faced with a series of limited military actions. He defined such "limited military actions" as "any employment of military forces which falls short of launching the nuclear atomic air retaliation against the U.S.S.R." He believed that the New Look had failed in Indochina as a result of political default rather than flaws in military capabilities or concepts. In Indochina the United States had announced in advance that the conflict might be extended, and this "ultimatum" had caused world opinion to fear worldwide nuclear war. A better course of action would have been to have presented the Reds with a fait accompli. "The United States," he urged on the basis of this thinking, "should consistently and ardently advocate that the massive retaliatory power policy in general terms and the intent to use it if necessary should be internationally understood as a deterrent to limited aggressions and to general use. In any specific situation, however, the time, the place, and the means of applying this power should never be suggested or announced until the actual operation reveals them."[146]

Given the maintenance of massive retaliatory power and the condition of "atomic equilibrium," Klocko urged that the United States should seek to develop political and military stability in Free World countries around the Communist perimeter. Since the Soviet Union was the only air adversary who could seriously threaten Free World aerial operations and since any extended involvement with Soviet air power would inevitably expand the local conflict, Klocko thought that friendly air superiority could be assumed in limited actions. This would mean that both land-based tactical air units and aircraft carriers could be freely employed in limited air actions. Sea-based air power promised to circumvent awkward international questions regarding foreign base rights. The effectiveness of air power in limited military actions would vary directly with the degree of organization and centralization of the hostile forces, but Klocko pointed out that limited air operations could take many forms such as transportation, destruction, neutralization, blockade, or interdiction. All forms of military forces might ultimately be useful in limited operations, but the essential factor was air power's uniquely rapid ability to deploy to an area of crisis. Absence of

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prior funding authorities had hindered postwar deployments of air power to crisis areas, and, in order to minimize such a cause of delay, Klocko proposed that the Air Force should establish and fund a "Ready Air Fleet" within the Tactical Air Command. Based in the United States this Ready Air Fleet would be an integrated self-supporting organization that could immediately deploy to a crisis area and operate until such time as normal operational forces could be moved into the area to augment or replace it.[147]

After extended correspondence, the Air Force permitted the Tactical Air Command to activate the Nineteenth Air Force as an operational headquarters at Foster Air Force Base, Texas, on 8 July 1955.[143] In announcing the establishment of what would be called the Composite Air Strike Force, General White pointed out that the Tactical Air Command's nuclear strike and aerial refueling capabilities had brought a "New Look" to tactical air forces. "To meet the threat of lesser wars," he said, "our tactical air forces can provide an increasingly effective deterrent."[149] During 1955 and 1956 General Weyland frequently spoke his belief that the Free World faced an era of "periphery or 'brush fire' wars" which would have to be deterred or won with tactical air forces.[150] In May 1956 he told the Symington committee that the United States "must have adequate tactical air forces in being that are capable of serving as a deterrent to the brush-fire type of war just as SAC is the main deterrent to a global war."[151] Presenting his "Concept for Employment of Tactical Air Worldwide" to the Air Staff at about this same time, Weyland argued: "It is becoming increasingly clear that any armed conflict which may occur in the foreseeable future will most probably be of the limited or local variety. The United States must develop an effective deterrent to such local wars and must be able to support the indigenous forces of friendly countries if such a war does occur. SAC and ADC are dedicated as major war deterrents and their postures and concepts are limited to major war situations. SAC forces are not suited for and cannot cope with the essentially tactical air aspects of local wars. Nor should they become seriously involved in a local war, since they would jeopardize their effect as a deterrent to major war. Consequently, tactical air power must be the primary deterrent to local or limited war. Additionally, it must be the full-fledged but more economical element of our offensive air power as a general war deterrent."[152] In September 1956 Brigadier General Henry P. Viccellio, Commander of the Nineteenth Air Force, deployed Mobile Baker, a token Composite Air Strike Force consisting of one squadron of F-100C day-fighters, one squadron of F-84F fighter-bombers, a flight of B-66 tactical bombers, and a flight of RF-84F reconnaissance aircraft, from bases in the United States to Europe. Employing in-flight refueling, the F-100's made the Atlantic crossing in four hours and 55 minutes, and after arriving in Europe the atomic-capable strike aircraft participated in an operational exercise. "As SAC is a deterrent to major war," wrote Brigadier General Viccellio, "so will the Composite Air Strike Force be a deterrent to limited war."[153]

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Other Air Force leaders held somewhat different views on the likelihood of limited war from those expressed by Weyland. In response to a journalist's question posed to him in December 1955 as to whether air power could prevent small wars, General LeMay observed: "We believe that, by working hard and maintaining our efficiency at the highest possible standards, that is the best thing we can do to assure wars large or small will not happen. . . . I think that most wars are started when one nation thinks it could beat the other one. If they didn't think they were going to win, they certainly would never start it."[154] LeMay developed his thought more fully in an article published in September 1956. Here he defined the "decision phase" of a future war as the preparation of combat ready air atomic forces in a time of nominal peace. "Only a foolhardy nation," he continued, "would ever base its power strategy upon the doubtful assumption that what it started as localized conflict would remain localized. The only condition under which this assumption could apply would be for one nation to be absolutely and positively guaranteed that the other lacked either resolution or intelligence. For if a nation is determined to survive and preserve its way of life, it must avoid risk of extinction, regardless of how that extinction might be brought about and if a nation is intelligent, it must realize that objectives can be won just as surely in piecemeal advances as by one all-out blow. Therefore, combine both intelligence and resolution in a nation, and you have a nation against whom you dare not instigate limited actions unless you are ready to accept the possible consequences of all-out war. . . . This leads us back to where we started. An enemy cannot start a shooting war unless he has already won the decision phase, and he dare not, in the face of strength, resolution, and intelligence on our part, start a so-called 'limited action' unless he is in the same position."[155]

As late as mid-1956 General Twining appeared to be basing his thoughts on limited war on the assumption that the United States would continue to possess strategic forces superior to those of the Soviets. "It is conceivable," he said in June 1956, "that if the aggressor rationalizes that our retaliatory force would make it impossible or too costly for him to win a general war he might then choose the alternate of peripheral or small wars." Under these circumstances tactical air forces coupled with Army and Navy forces would provide "a powerful deterrent against peripheral war."[156] Intelligence information arriving in the United States during 1956, however, indicated that the Soviet Union was giving little attention to the preparation of forces for limited wars but was instead bending every effort to develop long-range air and rocket forces, which in a few years might well exceed the strength of the strategic forces of the United States. At the height of the Suez Canal crisis in early November 1956 the Soviets threatened to use nuclear-armed intermediate range ballistic missiles against France and Britain. Earlier Air Force thinking about limited war had assumed that Soviet forces would not be directly employed in peripheral undertakings, but by November 1956 Air Force planners could visualize a local war

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in which "the opposing side will have the full backing of the USSR, with, actually or potentially, very large forces equipped with the most modern weapons, and with the capability of using atomic weapons."[157] "The threat of limited war has increased," Twining stated in February 1957, "because the Soviets have acquired a greater capability to wage general war, and can, therefore, undertake limited aggression with less fear of total retaliation."[158]

In several speeches delivered during October 1956, Air Force Secretary Donald Quarles professed to find it hard to understand how the United States could successfully deter general war without also being able to deter or win little wars. "It seems logical," he said, "if we have the strength required for global war we could handle any threat of lesser magnitude. . . . From now on, potential aggressors must reckon with the air-atomic power which can be brought to bear immediately in whatever strength, and against whatever targets, may be necessary to make such an attack completely unprofitable to the aggressor."[159] In February 1957 General Twining pointed out that all of the armed forces of the United States could be called upon to provide forces to resist local aggression and to end it quickly before it could spread. "If we wanted to," he added, "we could even use part of the strategic force for jobs like that. It would of course depend upon the area, and the job to be done."[160] Accepting the position that the Air Force as a whole rather than any special part of it would deter or win small wars, Major General John D. Cary, Air Force Director of Plans, stated in March 1957: "The Air Force believes that local war is best prevented by the same means as general war."[161] This Air Force position included a recognition that tactical air forces deployed in oversea theaters might well be the first military force that could be brought to bear on an aggressor and that tactical air forces were cheaper than strategic air forces on a wing-for-wing basis. In any allocation of scarce resources between strategic and tactical air forces, however, the Air Force had to recognize that tactical air forces had three disadvantages: tactical air units would be vulnerable because of their proximity to the enemy; the limited range of tactical aircraft would curtail the number of targets they could be programmed against and would hamper their global mobility; and tactical air forces (except for the tactical Matador missile) would lack appreciable all-weather strike capabilities.[162]

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When Army leaders began to convert their frame of reference from general to limited war during 1954, they found some comfort in the writings of "unofficial critics of national defense." General Maxwell D. Taylor would state that George F. Kennan's The Realities of American Foreign Policy and Bernard Brodie's "Unlimited Weapons and Limited War" constituted the "first public questioning of the validity of the New Look policy of Massive Retaliation."[163] A new version of Army Field Manual 100-5 published in September 1954 gave

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predominant attention to the Army's role in a general war but also pointed to the probability that "political considerations" would prevent the use of maximum air power in limited aggressions. "The continuing possibility of such limited wars," the manual stated, "requires the maintenance in being of Army forces capable of immediate commitment and fully organized, trained, and equipped for combat, and at the same time possessing a capability of strategic mobility."[164]

The Army's claim for a greater strength appeared to be supported in January 1955 when the National Security Council completed its first comprehensive review of the New Look strategy. The NSC policy paper was described as giving recognition "for the first time to the possibility of a condition of mutual deterrence and the importance in such a period for the United States to have versatile, ready forces to cope with limited aggression.[165] President Eisenhower, however, wished to rely on Free World defense forces. "To provide for meeting lesser hostile action--such as local aggression not broadened by the intervention of a major aggressor's forces--growing reliance," Eisenhower wrote on 5 January 1955, "can be placed upon the forces now being built and strengthened in many areas of the free world. But because this reliance cannot be complete, and because our own vital interests, collective security and pledged faith might well be involved, there remain certain contingencies for which the United States should be ready with mobile forces to help indigenous troops deter local aggression, direct or indirect."[166]

Under the finally approved Department of Defense budget program for fiscal year 1956 submitted to Congress in January 1955, the Army would be expected to reduce its active duty strength to approximately 1,027,000 persons and could thus support 15 combat and 3 training divisions and 136 antiaircraft battalions.[167] As a matter of fact, however, the Department of Defense and the Joint Chiefs of Staff had encouraged each service to maintain the maximum combat force possible within approved manpower ceilings, and General Ridgway had preferred to increase Army combat units even though there had been a loss in personnel. On 30 June 1955, the Army would thus possess 20 divisions, 122 antiaircraft battalions, and 6 regimental combat teams. One of the divisions was slated for early inactivation, and Ridgway reported that 5 divisions were training organizations and that the 2 divisions located in Alaska and Panama were "static divisions." According to Ridgway, the Army thus had something in the neighborhood of 13 combat-ready divisions, and of this total only the 4 or 5 divisions that were combat ready and located in the United States and Hawaii could be counted as strategic reserve divisions. Ridgway was critical of the Army's "paper" strength and he pointed out that the 4 or 5 strategic reserve divisions had very little mobility in the form of airlift or sealift.[168] In justifying the Army program early in 1955, however, Ridgway continued to emphasize the role of Army forces in general war. "I think," he told Congressmen, "the part of prudence and wisdom dictates that the United States be prepared to win a long war if we get involved in it. That means substantial use of the

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decisive element in any war of the past, which has been the man on the ground, who has a capability for progressively applying force, who has the capability that no other armed service has, that of seizing, occupying, and retaining ground taken."[169] Although Ridgway thus continued to visualize the Army as a general war force, his valedictory criticism of the national defense strategy submitted to Secretary Wilson in a formal memorandum on 27 June 1955 emphasized the Army's role in limited war. Sometime between 1958 and 1962, Ridgway urged, the Soviets would possess a nuclear capability sufficient in size to inflict critical damage on the United States, and they would also have effected greatly improved air defense measures against American nuclear bombers. In this period U.S. nuclear air superiority would have lost its significance. Soviet strategy would be directed toward employments that would preclude the use of nuclear weapons on a worldwide basis. Free World military forces, except in Western Europe, were isolated detachments around the Soviet periphery. While U.S. military policy statements referred to a "mobile-ready force," Ridgway bluntly charged that "no adequate mobile-ready force now is in being and the actual creation of such a force must compete with increasingly emphasized continental defense, and with overemphasized nuclear-air requirements." "IT IS MY VIEW," Ridgway concluded in bold face type, "THAT THE COMMITMENTS WHICH THE UNITED STATES HAS PLEDGED CREATE A POSITIVE REQUIREMENT FOR AN IMMEDIATELY AVAILABLE JOINT MILITARY FORCE OF HARD HITTING CHARACTER IN WHICH THE VERSATILITY OF THE WHOLE IS EMPHASIZED AND THE PREPONDERANCE OF ANY ONE PART IS DE-EMPHASIZED."[170]

Even before he had been selected to succeed Ridgway as Army Chief of Staff, General Maxwell D. Taylor felt that the Army had been lagging behind in the national defense effort. Struck by what he believed to be a "departure from the dogma of Massive Retaliation" in the National Security Council guidance paper of January 1955, Taylor shortly after becoming Army Chief of Staff on 1 July 1955 presented to his staff a new program which he referred to as a "new strategy of Flexible Response." "In the approaching era of atomic plenty," Taylor reasoned, "the Communists will probably be inclined to expand their tactics of subversion and limited aggression." He thought that the military requirements of the United States would be to maintain military technological superiority, a deterrent atomic delivery system capable of retaliation, an effective continental defense system, adequate Army, Navy, and Air Force units capable of intervening in local aggressions, and other ready Army, Navy, and Air Force elements that would be capable of reinforcing the forces deployed abroad in general war or the ready forces that would intervene in local aggressions. Taylor also called for the development of indigenous defense forces, reserve forces in the United States, stockpiles of material to meet war requirements until wartime production became adequate, and a war production, mobilization, and training base to support an atomic general war. "The acceptance of such

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priorities of effort," he subsequently observed, "would have resulted in added attention to so-called limited-war forces and would have placed them in virtually equal priority with the atomic deterrent forces."[171]

The suggested strategy of "flexible response" was not acceptable to Secretary Wilson, who considered that the Free World had to rely on its collective strength "not only to beat back any local aggression but to deter the aggressor from broadening the conflict into global war." Wilson also believed that the "problem of deterring small wars cannot be considered separately from the problem of deterring war generally" and that the "capability to deter large wars also serves to deter small wars."[172] Since there had been no apparent change in the international situation and since the original New Look program could achieve stabilized combat forces by fiscal year 1957, Wilson announced in October 1955 that there would be no major change in the level of military spending or the size of the military force in the fiscal year 1957 budget. For fiscal year 1957 the Army was thus budgeted for a force of 19 divisions, 10 regimental combat teams, and 144 antiaircraft battalions.[173]

Appearing before the House Appropriations Subcommittee in February 1956, General Taylor accepted the budgeted force level for the Army for fiscal year 1957 but he nevertheless suggested that as time went on "unrestricted nuclear war will be a total disaster for all participants." He accordingly urged that the United States must develop "tridimensional" strength on the ground, in the air, and on the sea. "I feel," he said, "that we have made a great deal of progress in developing an atomic air deterrent. I think now that our program needs to be bent a little--perhaps more than a little--in order to focus attention on the danger of the small war which seems to me to be coming to the forefront all the time as the greatest danger we are facing." Taylor discounted the assumption that a general war would begin with all-out nuclear attacks. "It seems more likely" he continued, "that a combat situation might be created any place around the globe, smoulder for a while with local combat only occurring, and then widening by other factors to the point that the decision is taken--to go for keeps." "Our Army mission," he said, "is to destroy an enemy on the ground anyplace, anywhere." "There is no reason to say," he urged, "that we are hopelessly outnumbered and that our defense on the ground must be obtained indirectly from atomic superiority in the air. I am convinced that our Army, equipped with the weapons which we are now developing and supported by well-trained allies, can maintain deterrent strength on the ground sufficient to hold the Communist armies in check." In 44 countries around the world the United States was assisting its allies to develop more than 200 divisions. In addition to this force, Taylor estimated that an "optimum" U.S. Army strength based on purely military considerations would be "around 1.5 million men with an active combat force of about 28 divisions."[174]

The Army's new concept of limited war was presented to the public at an inopportune time. Believing that no useful purpose would be

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attained by questioning national strategy, the State Department looked with disfavor on a draft article that General Taylor proposed to publish in Foreign Affairs spotlighting nuclear stalemate and the likelihood of limited Soviet aggressions. The Soviets were clearly building atomic forces rather than ground strength for limited aggressions; they announced a major reduction of 640,000 men in their military force in August 1955 and would announce another cut of 1,200,000 men in May 1956.[175] Charged by Secretary Wilson to examine future military requirements for the three years following fiscal year 1957, the Joint Chiefs of Staff met in seclusion at Ramey Air Force Base, Puerto Rico, from 3 to 9 March 1956. General Taylor introduced his paper calling for the development of "flexible response," and he later recorded that his colleagues "read this Army study politely and then quietly put it aside." Again according to Taylor, the Joint Chiefs finally recommended that military programs should continue at approximately current levels for the three years after mid-1957. In order to maintain such force levels and still afford the costs of new equipment the national defense budget would have to be raised from some $34 billion to as much as $38 to $40 billion in the years up to 1960. After reviewing the Joint Chiefs' recommendations, Secretary Wilson estimated that costs of national defense would probably exceed the $40 billion mark.[176] In a new assessment of the role of NATO published in May 1956, Air Marshal Slessor suggested that the function of ground troops in Europe would be to serve as a token of national determination, like a trip-wire or a plate-glass window which if distrubed would unleash thermonuclear retaliation.[177]

In spite of the fact that Senator Symington's investigating committee had been established in response to the belief that the development of American air power was lagging, Army spokesmen used this forum to develop the case for flexible response. Appearing before the Symington committee in May 1956, a team of officers headed by Lieutenant General James M. Gavin, the Army's Chief of Research and Development, discussed the Army requirements for missiles and aircraft. "The Department of the Army's mission," Gavin explained, "is, by its evident readiness at all times, to be ready to win in a general war. At the same time it must, by virtue of its high state of readiness both in terms of modernization and mobility, deter small wars or deter any aggressor who would attempt to achieve a limited objective through limited military action. If a small war does occur, we must win such a war for failure to win would in itself bring on a general war." Gavin believed that the Russians, in the event that they decided to venture the risk of a general war in order to achieve an objective, "would start on the basis of a limited objective to put themselves in a better position, and perhaps ultimately cause enough deterioration of our position to where they could win without risking any attack upon the U.S.S.R." He repeated the Army position "that we are far more likely to be involved in a peripheral war than in a general war."[178]

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The new concept that limited war was a major threat, together with the impending development of Army antiaircraft missiles, led General Gavin to advance the idea that "in the missile era the control of the land will be decisive." By controlling the land military forces would possess the launching platforms necessary to control the air. Gavin argued that "air superiority" was "one of the most misunderstood terms" in the military vocabulary. "When first it came into use," he said, "it was presumed that it was a condition of affairs in a battle area that would enable one side to gain complete moral and physical superiority over the other. We learned in World War II that it was a fleeting stage of affairs indeed and while one side could enjoy complete air superiority such as we presume the allies did in the winter of 1944-1945, from time to time the enemy could strike suddenly and achieve in a local area a surprising degree of air superiority with a great posture of resources on his side. . . . With the performance of aircraft as we now see them coming along, that is where they fly at higher speeds and much greater turning radius, air superiority to us is going to be something quite different we believe than anything we have seen in the past. . . . It does not seem possible to control the land areas by merely flying over them with the type aircraft and type defenses that will be related to each other in the future. . . . So we do not think that the term 'air superiority' as it was applied in 1945 could well be applied to the future." Gavin also stated that surface-to-air fire in World War II and in Korea had been a principal destroyer of aircraft, and he pointed out that the Army's new family of "very effective" surface-to-air Nike missiles promised to increase aircraft kills at the same time that the increasing speeds of aircraft reduced the effectiveness of air-to-air combat. "We see emerging a pattern," Gavin said, "that suggests clearly that control of land areas will be decisive."[179]

Other Army officers--including Major General Earle G. Wheeler, Director of Army Plans, and Major General Hamilton H. Howze, Director of Army Aviation--discussed concepts of future land warfare, which would be characterized by wide dispersal of units and installations, ground and air mobility, firepower of increased range and lethality, and efficient and reliable communications. The Army intended to develop its own organic capability for air movements of Army combat units within the combat zone, but its interest also extended to four elements of air power that were beyond its organic resources: control of the air in the battle area, long-range deployment, intratheater airlift, and aircraft firepower. In order to attain "a reasonable degree of freedom from attack by enemy aircraft" the Army intended to depend upon air and naval forces, together with its own organic antiaircraft weapons. To place fire on targets beyond the range of organic weapons, the Army "presently has a direct interest in firepower delivered from aircraft." "As we integrate rockets and missiles into the Army fire support system," the Army briefer added, "we are increasingly able to provide much of this needed fire support with

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our organic weapons." Although the Army of the future would have decreased requirements for air superiority and air support, it would have a greatly increased need for tactical and strategic air transport aviation. Admitting that what he was suggesting exceeded the Army's stated requirements to the Air Force, Gavin specified that the Army needed a capability simultaneously to airlift one division in each combat theater, one division in the United States, and one division from the United States to a combat theater. General Wheeler testified that Air Force tactical airlift capability was sufficient to lift about one division and that studies had shown that the combined military and civil reserve air fleets would not be able to meet the requirements of all services during the first 30 days of a general war.[180] Summing up the position that the Army would be the decisive military force of the future, Gavin stated: "First we must aggressively continue our development of our surface to air missile family and in continuation of this development program acquire an antimissile capability. Second, the role of the man who fights on land with modern equipment and supported by missiles will be of decisive importance in future combat. Our nation . . . must have both strategic and tactical mobility to enable it to fly its power when and where needed in support of our national policy and to the degree needed, and finally, we believe that in the missile era the control of the land will be decisive."[181]

When General Taylor appeared before the Symington committee in June 1956, he viewed reports that the Soviets were reducing their ground forces and increasing their strategic striking arms with "cool skepticism." At this time Taylor repeated his plea that a "new atmosphere" was being created by "a condition of mutual deterrence, resulting in the decreased likelihood of deliberate general war, but the increased likelihood of the small war, the erosion of the free world." Stressing the Army's role as "an indispensable member of the service team," he recalled that "the primary function of the Army is the destruction of the enemy army, the primary function of the Air Force is to destroy enemy air power, and for the Navy to destroy enemy naval power."[182]

* * * *

Although the Joint Chiefs of Staff recommended in March 1956 that the military force levels for the three years following fiscal year 1957 should continue approximately at the existing New Look levels, they nevertheless estimated that the costs of modernizing these forces would raise the sum of the national defense budget to higher levels than the approximately $34 billion a year committed to defense during the first three years of the New Look. When the initial service requests for fiscal year 1958 were totalled the estimated requirement to meet authorized defense programs came to $48.6 billion--an amount which President Eisenhower described as "unrealistic."[183] Recognizing that it would be impossible to secure

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such an expanded peacetime military budget, Admiral Radford and the Joint Chiefs of Staff began to plan a new strategy that would be popularly described as the "New New Look." Believing that ground forces provided a visible rather than an actual deterrent to Soviet aggression, Admiral Radford favored a reduction in military manpower requirements. When he appeared before the Symington committee in June 1956, Radford speculated that a show of force coupled with a threat of nuclear retaliation would have deterred the Communist aggression in Korea. "I am quite certain," he said, "if we had had one battalion or even a company, on the 38th parallel in Korea flying the American flag. . . I don't think the Communists would have attacked because they would have known that if they overran this one United States combat unit, certainly the United States would come in." While ground forces thus provided a visible deterrent to aggression, Radford hastily added: "This visible deterrent may be obtained with very small forces."[184] In July 1956, Radford proposed to the Joint Chiefs of Staff that military manpower be cut, chiefly by reducing Army deployments in Europe and Asia to small atomic task forces and by greatly reducing Army strength in the United States. General Taylor strongly opposed these proposals at a Joint Chiefs of Staff meeting on 9 July, and, within a week, Radford's position was published in substance in the New York Times. Adverse international reactions led to the withdrawal of Radford's plan, and Secretary Wilson soon declared that no "responsible person" had ever advocated the reduction and withdrawal of forces contained in the so-called "Radford plan."[185]

When General Twining appeared before the Symington committee in June 1956 he strongly urged that the United States must commit itself to a new strategy that would place prime reliance on nuclear weapons for limited as well as general warfare. "We cannot afford," he said, "to keep in our Armed Forces conventional forces for the old type of warfare plus those for atomic warfare. We have got to make up our minds that we have to go one way or the other." By accepting a new strategy built around the use of atomic weapons the United States would be able to reduce its forces "considerably;" and such a new strategy, Twining stated, would represent "the only way we can provide the forces for the country within a reasonable standard of financing."[186] Twining's remarks brought a fact that had troubled Air Force leaders for several years into the public domain. While the original New Look guidance had emphasized nuclear weapons, it had been broad enough to require the maintenance of conventional air capabilities. The thesis that the armed forces must prepare for nuclear general war and non-nuclear local wars presented a serious dilemma. "By trying to be strong in both conventional and atomic capabilities. . .," Colonel Richardson urged, "we may become weak in both. At best, money and time will be wasted on obsolete weapon systems because of specious reasoning that atomic weapons will never be used."[187] Making strong allusions to "warped thinking," Brigadier General Dale Smith had written: "Air Forces provide the ideal weapons

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for limited war, but to be most effective, the political restrictions applied to a limited war must favor the air weapon rather than favor enemy manpower."[188] Writing in May 1956, General Weyland pointed out that tactical nuclear weapon capabilities were essential to the mobile tactical strike forces. "With nuclear weapons," Weyland thought, "these forces can be compact and yet be so effective as to provide the decisive balance of power." He emphasized that tactical nuclear weapons were not "weapons of mass destruction" and that they could be selectively employed against primary military targets. "We should never again, in my opinion," he concluded, "restrict our selection of weapons or target area as we did in Korea. The best weapon to do the job with the least loss of life should be selected for each target under consideration."[189]

In the summer of 1956 the Joint Chiefs of Staff did not accept Radford's proposals for marked reductions in Army manpower.[190] On 31 August 1956 the Air Force Deputy Chief of Staff for Development directed the Air Research and Development Command to limit the future development of high explosive weapons to those required for employment from already-operational aircraft.[191] "There is very little money in the budget we are proposing to you now," Secretary Wilson told Congressmen in January 1957, "for the procurement of so-called conventional weapons. . . . we are depending on atomic weapons for the defense of the Nation." In further explanation of the new strategy, Wilson said: "Our basic defense policy is based on the use of atomic weapons in a major war and is based on the use of such atomic weapons as would be militarily feasible and usable in a smaller war, if such a war is forced upon us." Radford reiterated the same thoughts: "Our whole military program," he stated in January, "is based on the use of atomic weapons in global war and in the use of atomic weapons in accordance with military necessity in situations short of global war." "We have said publicly that we are designing our forces to use atomic weapons," Radford repeated in March 1957. "That comes pretty close to saying we are going to use whatever weapons are necessary to defend our vital interests."[192]

Believing the $48.6 billion initial service requests for fiscal year appropriations to be "unrealistic," President Eisenhower in January 1957 requested Congress to appropriate $38.4 billion for the continuation of "our stable force concept." In the budget hearings, General Taylor and other Army spokesmen again presented the Army's strategy of flexible response, but Congress appeared to be more strongly concerned with a need to hold spending in check to avoid raising statutory national debt limits and displayed more interest in the Symington committee's finding that the U.S. strategic striking force was "declining relatively as against the steadily growing striking capacity of the Soviets" than in its other recommendation that the United States should be prepared for both limited and unlimited war.[193] While the Army spoke in terms of an additional requirement for strategic airlift, Secretary Wilson had already stated his opinion that the Air Force structure appeared to provide

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"adequate airborne lift in the light of currently approved strategic concepts."[194] In February 1957, moreover, General Taylor informed Symington that the combination of active and reserve tactical airlift was "considered to be adequate for the Army's needs at this time."[195] In an added rebuff to the Army's requirements for strategic mobility, Admiral Radford sponsored a special airlift briefing for the House Committee on Appropriations which demonstrated that 1,800 C-124's would be required to move an Army division with its impedimenta and 30-days' supplies in a 24-hour period. Even if aircraft were available, such a movement could not be accomplished because of a lack of enough landing and takeoff airfields. "I think," Radford summarized, "there are people in the Army who honestly feel that it should be possible to move Army units by air . . . to any place in the world. I say that people who then express the feeling that we do not have that capability do not understand the magnitude of the problem of moving by air."[196]

According to Secretary Wilson, President Eisenhower had reduced the service requests for fiscal year 1958 appropriations because he sensed that a "budget-cutting thing" was in the wind. "Obviously," Wilson remarked as the military budget got severe handling in Congress, "the people in the country are in no mood to spend more dollars."[197] Instead of the $38.4 billion budget requested by Eisenhower, Congress was going to vote only $35.4 billion in new appropriations for fiscal year 1958.[198] Even though it was obvious that Congress would not vote the amount of money requested for fiscal 1958, President Eisenhower ruled in the summer of 1957 that the defense budget for fiscal year 1959 would again be held to a $38 billion ceiling.[199] Faced with the decision that Eisenhower wished a stability of expenditures and that the National Security Council endorsed increased dependence upon atomic weapons, Secretary Wilson, apparently with the assistance of Deputy Secretary Donald Quarles and Admiral Radford, attempted to cut the Gordian-knot by proposing reductions of military manpower to compensate for the rising cost of military equipment. Presented at a meeting of the National Security Council on 25 July 1957, the Wilson-Radford plan called for holding defense expenditures at approximately $38 billion in the period 1959-61 by reducing over-all military manpower. All of the services would reduce their forces, but the Army would expect to drop from 15 to 11 divisions in the period. Forewarned of the Wilson-Radford plan, Army Secretary Wilber Brucker and General Taylor spoke out strongly in the meeting against what they described as a preparation for general atomic war and the neglect of lesser wars in which big weapons could not be used. Wilson was said to have remarked in reply that the national policy was to "maximize air power and minimize the foot soldier," and, as Taylor recalled, there "seemed to be a tacit agreement that this was a correct if colloquial statement of the military strategy being pursued by the United States."[200] Although the plan was never specifically approved or disapproved, it became the point of departure for the Department of Defense budget for fiscal year 1959. The Army

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was instructed to plan for an end strength of 900,000 men and 15 divisions in fiscal year 1958 and 850,000 men and 14 divisions in fiscal year 1959.[201]

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As it happened the strategy of what was called the "New New Look" was put together in the United States during 1956-57 in a period of growing Soviet strategic challenge and relatively fixed United States defense budgets. As has been seen, the Air Force was already perfecting its position that the total military capability that deterred general war would also serve to deter or to win limited wars, but Lieutenant General Thomas S. Power, Commander of the Air Research and Development Command, was nevertheless troubled about the Air Force's capabilities to participate in cold and limited war crises. On 10 December, Power wrote Twining suggesting that an Air Force cold war symposium should be held in order to study new requirements for doctrine, equipment, techniques, and systems necessary for limited military operations. Power was especially concerned about the effectiveness of Air Force weapons and tactics in a small war in which the use of nuclear weapons might be forbidden.[202]

On a call from General Twining, Air Force commanders assembled at the Pentagon on 9 April 1957 for a Cold War Conference. At this session the commanders resolved that the problem of local war would require an additional conference later in the summer, but General White nevertheless considered that the discussions were marked by an agreement that the Air Force should seek to explain to the public that there was a vast difference between megaton thermonuclear weapons and small tactical atomic weapons and should also seek to make a "continued and increased effort to eliminate the high explosive requirement from the national policy." According to White the conference agreed that the Air Force should measure its high-explosive capability and retain it; should not increase it; and should eliminate it when the national policy permitted.[203] Speaking for the Air Research and Development Command, Lieutenant General S. E. Anderson thought that it would be inconsistent to continue to plan to use conventional weapons in view of the types and numbers of aircraft that were operational and projected, the speeds, bombing accuracies, guidance systems, and the hardening of enemy targets. Anderson recognized that nuclear weapons were frowned upon in a time of peace but he predicted that they would be needed and relied upon once a war broke out.[204]

Already on the public record with a statement that "we must continue to maintain a capability for the use of conventional weapons, thus rounding out our ability to deal with any contingency which might arise,"[205] General Weyland dissented from the findings of the Air Force Cold War Conference. Weyland wrote White that if he were willing to think solely as an Air Force officer he could join in a policy of replacing conventional weapons with nuclear weapons because

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it would make the Air Force job so much easier, but as an individual charged with upholding national policy Weyland could not accept a course of action which could eventually undermine national policy. "I can visualize local war situations arising," he wrote, "where the threat of only atomic retaliation would severely prescribe the U.S. bargaining position at the conference table and turn the mass of human opinion against us; whereas possessing a conventional retaliation, could place world opinion on our side. . . . I do not foster a large and expensive program, but rather a modest program designed to meet the limited requirements of a local war and the aircraft we visualize now and in the future. I, therefore, believe our policy must be to continue retention and modernization of a conventional capability until such time as small atomic weapons, pinpoint delivery systems and world education reach the point of reliability and acceptance so as to permit elimination of conventional weapons, yet retain the proper environment in which our national policy can thrive and be effective." Weyland also took issue with the Strategic Air Command's position that it could fight a local war without detriment to its general war posture. "I don't think any unbiased Air Force officer," he wrote, "visualizes B-52's finding and dropping weapons on a small guerrilla troop concentration in the jungles of Indo-China--or some other area of concern in the local war problem. I not only think it illogical, but feel that it would be a pure mal-employment of such an expensive force when we can do the job better and more economically with tactical air forces."[206]

At the same time that the major Air Force commanders were not in complete agreement about a sole reliance on nuclear weapons, Secretary Dulles emphasized the importance of Free World defense forces in an address before the annual luncheon of the Associated Press on 22 April. Placing emphasis on collective defense, Dulles noted: "It is agreed that the primary task is to deter war. . . . It is also agreed that the principal deterrent to aggressive war is mobile retaliatory power. . . . It is also agreed that it would be imprudent to risk everything on one single aspect of military power. There must be land, sea, and air forces for local action and for a defense which will give mobile striking power the chance to do its work."[207] At a news conference on 16 July, Dulles spoke of a need for making the NATO allies less dependent upon the United States and revealed that the United States was studying ways whereby "through perhaps a NATO stockpile of weapons and various arrangements of that sort, there can be assurances to our allies that, if they are attacked, if war comes, they will not then be in the position of suppliants, as far as we are concerned, for the use of atomic weapons."[208] On the basis of the 22 April address, General Taylor hoped that Dulles might support the Army in the discussions on 25 July before the National Security Council. Taylor reported, however, that Dulles remained silent and that the State Department representatives had an "attitude of curious detachment." "It was," he recalled, "as if they felt that conflicts in the Pentagon were what the Japanese call 'a fire on the other side of the river.'"[209]

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A few weeks after becoming Air Force Chief of Staff, General White assembled the Air Force commanders in Washington on 27 August to discuss and mature an Air Force position on local wars, which White subsequently approved. This position stated that the Air Force requirements in any local war situation could be met with forces and resources provided for general war purposes; that local war operations could be supported from available stocks and facilities, provided some minimum calculated risks were assumed; that a local war could spread into a general war and that failure to make such an assumption could bring about such an expansion; and that the almost infinite variety of possible local war contingencies required the tailoring of effort in the light of specific situations and resultant national objectives. The position paper noted that the Air Force possessed varied forces with adequate logistical back-up able to meet many likely local war situations. These forces included the Tactical Air Command, which was prepared to redeploy rapidly by air to participate in local wars with little advance notice, and the Strategic Air Command, which was prepared to participate in local war situations from general war positions to an extent not appreciably affecting its general war posture. These forces were under the control of the Air Force Chief of Staff and should so remain when used in a local war situation. The composition of air forces initially involved in a local war would generally be dictated by the situation but would consist of the best forces that could be made available at the earliest time.[210]

In an address to the USAF Scientific Advisory Board on 4 December, General White elaborated the Air Force position and philosophy on local wars. He noted that the national policy toward local war was to deter the conflict and failing that deterrence to cope with it successfully. The military contribution to deterrence hinged on three generally agreed essentials: Adequate armed force, manifest determination to use the force, and a potential aggressor's belief that the force and determination existed. "It is the Air Force view," White said, "that just as nuclear delivery capability constitutes a deterrent to general war, so can this total firepower deter local war. The right measure of this total firepower can, in turn, resolve local conflict if we fail to deter the aggression. . . . We <u>deter</u> with our total capability, including all lesser facets thereof; we will elect <u>to use</u> that portion required and best suited to the resolution of the particular conflict." The policy of any nation especially in the nuclear age demanded that if conflict must be waged it would be done in a manner as to invoke the least risk of aggravating the conflict into general war. This required the rapid application of force and the resolute application of force, neither too little nor too much. "Those principles," White thought, "call for a military capability, <u>within</u> (and not separate from as in addition to) total U.S. forces, which is instantly ready, flexible, and selective including nuclear firepower." He emphasized that the application of force would vary. The Strategic Air Command certainly would not be unleashed to handle minor disputes, but it could dispatch aircraft to warn, repulse, or

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destroy aggressor forces in significant local conflicts. "If the conflict is so small as to obviate the need for the balancing power of nuclear weapons," he continued, "then the United States certainly has the capability to handle the conflict." General White urged that it would be impossible to preconceive and tailor make a force that would be appropriate to the many types of limited conflict that could occur: it would be much wiser to select and adapt portions of the joint and allied general war capabilities and use them as political requirements might dictate at the time.[211] Appearing before the Senate Preparedness Investigating Subcommittee on 17 December, General White acknowledged that local war might be said to be the "primary job" of the Tactical Air Command, but he considered that the Strategic Air Command could "because of its long range and its flexibility, without moving from its general war positions, bring to bear its very great forces in a local war situation."[212]

Even though he had earlier questioned some of the Air Force policies regarding local war, General Weyland supported the new Air Force position in a major address delivered before the American Ordnance Association in November and the USAF Scientific Advisory Board in December. Weyland reminded his audiences that it would be very difficult to forecast where a local war might occur or who the enemy might be. Primarily the general war deterrent, the Strategic Air Command could nevertheless quickly assist in a local war situation, but the theater air forces and the Tactical Air Command were specifically designed and trained for the wide variety of tasks to be expected in local wars. "Generally speaking," Weyland suggested, "a friendly country which is a possible target for local aggressions has a capability for effective ground fighting, but few have an appreciable tactical air capability. If they know they will be supported quickly, they may be depended upon to fight in defense of their own country. U.S. Tactical Air can provide the decisive balance of power in time to be effective."[213] Explaining the concept that the Strategic Air Command could deter local war, General LeMay, now Air Force Vice Chief of Staff, said to the Senate Preparedness Investigating Subcommittee: "I do not believe we can afford to maintain separate weapon systems for various types of arguments that we might get into with our neighbors in the world. I think we are going to have to build for the worst cases, and then use them for all others. . . We have been into some minor skirmishes because we did not make it clear that we would use our full power as necessary."[214] Even more of the meaning of the Air Force position on nuclear weapons and limited wars was revealed by Major General James H. Walsh, Director of Air Force Intelligence: "The military objectives in a limited action," Walsh said, "would be, first, to gain air control and then to cripple the enemy military force. This objective really does not depend on nuclear weapons for its basic validity, but we have come to respect the decisiveness and effectiveness inherent in nuclear firepower, principally because of its great economy in sorties. . . . In this fast-moving age we no longer can build non-nuclear forces at the expense of our atomic strike and defense units,

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and at the same time move boldly into the parameters of space at the tempo required for survival. . . . It is time that we recognize that we have crossed the nuclear Rubicon, and to consider the political and military advantages accruing therefrom. We cannot allow our national courage to collapse by resorting to very cautions and reticent objectives, which would penalize our ability to use nuclear weapons intelligently to deter and, if hostilities occur, to bring limited wars to a quick end. The agonizing memory of the drawn-out Korean conflict is too fresh to be forgotten."[215]

* * * *

Although the United States remained committed to a policy of maximum reliance upon air power and nuclear weapons for both general and limited war contingencies, the Army's concept of "flexible military response" gained acceptance in influential circles. Writing on 23 September 1956, Professor Walt Whitman Rostow desired the United States to outstrip the Soviet Union in the nuclear arms race, but he also urged: "We must develop American capabilities in the general area of limited war. We must round out the spectrum of deterrence down to the level of guerrilla operations."[216] Many of the analysts at the RAND corporation endorsed the strategy of limited war. Civilian scholars began to provide a body of literature on the subject. Published in 1956 under the editorship of William W. Kaufmann a volume entitled Military Policy and National Security contained essays focusing attention on limited war. Appearing in 1957, Professor Robert E. Osgood's Limited War: The Challenge to American Strategy argued that limited war had become the most likely form of armed conflict and that the United States should develop its military policy on this assumption.[217] Also published in 1957, Professor Henry A. Kissinger's Nuclear Weapons and Foreign Policy would be extremely influential at national policy levels. Although the volume reflected the author's opinions it had grown out of panel discussions initiated in 1954 by the Council of Foreign Relations. Under the chairmanship of Gordon Dean, the members of this panel included such active-duty military officers as General Gavin and not a few of the civilians who had earlier participated in "Project Vista." Believing that complete defense unification was out of the question, Kissinger called for the reorganization of the Armed Services into a strategic force and a tactical force, each to be combat ready for the accomplishment of separate missions in general or limited war. Kissinger believed that Western Europe could be successfully defended with tactical nuclear weapons, but he argued in great detail that the effective use of these weapons required new formations, force structures, and tactics.[218]

The new body of literature on the subject of limited war reinforced the Army position on strategy and may well have affected the thinking of Navy leaders. Although the Navy strongly supported strategic

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deterrence during the early years of the New Look, Navy leaders became strong advocates of limited war preparedness following the retirement of Admiral Radford as Chairman of the Joint Chiefs of Staff on 15 August 1957 and the appearance of the Soviet Sputnik on 4 October 1957. "Given a shield of mutual deterrence," Secretary of the Navy Thomas S. Gates announced in December, "power to prevent limited aggression and to win limited war becomes decisive." Admiral Burke now urged that the United States by its emphasis on general nuclear war was in imminent danger of losing sight "of the necessity to maintain adequate strength to combat limited war in areas remote from this country--limited wars requiring United States control of the seas." "There is also," he continued, "a growing tendency to consider a nuclear war as being adequate to cope with limited war. This is a fallacy. For a war to remain limited, there must be restraint in the selection of targets and in the use of nuclear weapons."[219]

Already having begun to believe that the tactical nuclear defenses of the North Atlantic Treaty Organization needed to be strengthened, Secretary Dulles appeared for a brief moment to be flirting with the concept that Europe might be the scene of a limited nuclear war. In an article prepared for publication in Foreign Affairs which was released on 18 September 1957 Dulles expressed a belief that the development of small and clean nuclear weapons would benefit Free World defenses. "In the future," he wrote, "it may thus be feasible to place less reliance upon deterrence of vast retaliatory power. It may be possible to defend countries by nuclear weapons so mobile, or so placed, as to make military invasion with conventional forces a hazardous attempt. . . . Thus, in contrast to the 1950 decade, it may be that by the 1960 decade the nations which are around the Sino-Soviet perimeter can possess an effective defense against full-scale conventional attack and thus confront any aggressor with the choice between failing or himself initiating nuclear war against the defending country. Thus the tables may be turned, in the sense that, instead of those who are nonaggressive having to rely upon all-out nuclear retaliatory power for their protection, would-be aggressors will be unable to count on a successful conventional aggression but must themselves weigh the consequences of invoking nuclear war."[220]

In Europe where he had become Supreme Allied Commander in November 1956, General Lauris Norstad wished to increase the effectiveness of the NATO shield forces by increasing their tactical nuclear capabilities, but he thought it "very unlikely" that any serious incident along the sensitive frontiers of NATO could remain limited.[221] As far as General White was concerned local conflict in the NATO area would be "tantamount to general war."[222] At the NATO Heads of Government Conference on 16 December 1957 Secretary Dulles stated that the "major deterrent to Soviet aggression against NATO is the maintenance of a retaliatory power of such capacity as to convince the Soviets that such aggression would result in their own destruction." The United States nevertheless desired that the strength of the NATO ground, sea, and air shield

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forces should be increased and to this end the United States was prepared to make available intermediate range ballistic missiles to the NATO countries and to participate in a NATO atomic stockpile program, whereby nuclear warheads would be deployed under United States custody at agreed upon bases where they would be released to the NATO commanders for employment by nuclear-capable forces at the outset of hostilities. NATO units would be equipped and trained to use the nuclear warheads when they were released to them at the appropriate time. The NATO Heads of Government accepted the American proposals on 19 December 1957.[223] In order to effect the decisions the NATO Standing Group in Washington worked out a plan known as MC 70 that required the creation of a minimum ground force of 30 divisions which were to be regarded as essentially nuclear forces. Some 22 of the NATO divisions were to be available by 1960-61, about half way through the five years covered by the plan.[224] While this acceptance of the force goals of MC 70 as a planning objective promised to increase the effectiveness with which the shield forces could perform their shield mission there would be no relaxation on the requirement for the strategic nuclear deterrent. After its regular meeting in Paris in December 1958, the North Atlantic Council reaffirmed "that NATO defensive strategy continues to be based on the existence of effective shield forces and on the manifest will to use nuclear retaliatory forces to repel aggression."[225]

After reading the Dulles article in Foreign Affairs, General Taylor had great hope that the State Department would support an expansion of the Army and agree "that limited-war forces had the active role to play in future military operations, the atomic retaliatory forces a passive role." When he presented the strategy of flexible response to the National Security Council at a January 1958 meeting, however, General Taylor observed that there was animated conversation but that "Secretary Dulles and his advisers did not provide the strong support for a new strategy which I had hoped."[226] Taylor had evidently misread Dulles' writings, and it was soon evident that Dulles continued to think of defense as a combination of collective local defense and of strategic retaliation. In an executive session of the Senate Foreign Relations Committee on 9 January 1958 Dulles made it evident that he was not prepared to endorse a limited-war program that called for large-scale spending and committed the United States to local defense in peripheral areas. Dulles warned that any attempt to finance the extra military effort by cutting economic aid--as some members of Congress had suggested--would be "reckless folly."[227]

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CHAPTER 9

MISSILE TECHNOLOGY AND THE AIR FORCE, 1945-1960

1. Guided Missiles: The Research and Development Phase

"On October 4, last year," said General Nathan F. Twining, Chariman of the Joint Chiefs of Staff, in January 1958, "a shot was fired which was both seen and heard around the world."[1] The "shot" was the successful launching of the Soviet Sputnik I, the first man-made satellite in history. Following up this feat on 3 November 1957, the Soviets successfully launched into orbital flight the satellite called Sputnik II, a 1,120-pound vehicle which carried the world's first space passenger, a dog named "Laika." The impact of the Soviet triumph in space and missile technology created dismay everywhere outside the Iron Curtain. In Washington, the House Committee on Government Operations warned: "We face the terrifying prospect that nuclear attack upon the United States can be directed from Soviet bases."[2]

Concerned about the delay in the development of new weapons, Congressman Daniel J. Flood of Pennsylvania critizized "the whole mentality in the Pentagon and the Armed Forces of the United States, especially with the military, and this goes for all of them--the Army, the Navy, and the Air Force, and everybody else." "And until that mentality is changed by the rule of reason," Flood warned, "until men with ideas, until men with imagination, until somebody is willing to leave his feet and take out that play as it comes around his end, until that hidebound military mind gets more elastic, and until brilliant and capable officers are permitted to try--and if they miss not get their heads cut off--you are going to be in a bad shape for a long time."[3] Other authorities believed that "service bickerings" had contributed to the lag in United States missile-space technology. In his State of the Union message on 9 January 1958, President Eisenhower observed: "I am not attempting today to pass judgment on the charge of harmful service rivalries. But one thing is sure. Whatever they are, America wants them stopped."[4]

* * * *

Viewed in retrospect the influence of technology upon modern warfare had begun to mainfest itself in the final stages of World War II and was apparent in German missile employments and in the Anglo-American developments in electronic warfare and nuclear explosives. The translation of these potential technological developments into a new and unexplored plateau of military force capabilities required imagination, time, and tremendous quantities of money. At the end of World War II General Henry H. Arnold did

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not lack imagination. Dr. Theodore von Karman's Scientific Advisory Board warned Arnold that German aeronautical laboratories had made great progress in missilery even beyond the Wasserfall ground-to-air antiaircraft missile and the V-1 and V-2 offensive projectiles. Arnold also believed that the United States had "shown a dangerous willingness to be caught in a position of having to start a war with equipment and doctrines used at the end of a preceding war." In his final war report, Arnold visualized the employment of projectiles which might have velocities of 3,000 miles per hour. Such weapons could be launched from "true space ships, capable of operating outside the earth's atmosphere."[5]

Genuinely interested in intercontinental air warfare and wishing to initiate new research projects before plentiful wartime funds dried up, Arnold withheld three $10 million items from the Air Force's fiscal year 1946 procurement budget and committed the money to long-range developmental projects. As has been seen, AAF Project MX-791 committed $10 million to the Douglas Aircraft Corporation for a three-year study of future warfare. This contract marked the genesis of the non-profit Research and Development Corporation (RAND) which would split away from Douglas in 1948. Completed in forced draft on 2 May 1946, a RAND study entitled "Preliminary Design of an Experimental World-Circling Spaceship" demonstrated that American engineers and engineering skills were capable of orbiting a 500-pound satellite by 1951.[6] Other portions of the fiscal 1946 funds that Arnold diverted to development were committed to some 26 projects dealing with four categories of missiles: air-to-air for the protection of bomber forces and for use by fighter interceptors; surface-to-air for use against invading aircraft and missiles; air-to-surface as stand-off weapons for employment by bombers; and surface-to-surface for use in both short-range tactical and long-range strategic employments.[7]

The Air Force planned a wide range of exploratory projects and intended that only those projects that showed definite promise after preliminary study would be continued.[8] The inspiration for a part of the projects came from industrial sources. Mr. Simon Ramo, for example, visualized that future combat against an A-bomb-equipped adversary would require air-launched fighter missiles "so that our fighter planes could stand off at a distance safely and launch the missiles and go home while the missiles went about doing the job." Believing that "the military field was going to be a very fascinating and important one for that class of scientist who was interested in applied technology," Ramo went to work as director of research in the radio division of the Hughes Aircraft Company.[9] Other projects followed lines of research indicated by German progress, thus visualizing parallel development of both subsonic pilotless aircraft and supersonic guided missiles. Specific projects undertaken in early 1946 included the Falcon air-to-air missile; the Rascal stand-off missile; the ground-to-ground Matador, Snark, and Navaho winged pilotless aircraft missiles; and the

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MX-774 Hiroc intercontinental ballistic missile. Looking toward ground-to-air defense, the Boeing Company received a contract for a ground-to-air pilotless aircraft (GAPA) for use against high performance aircraft, and the General Electric Company and the University of Michigan undertook basic design for ballistic trajectory rockets capable of intercepting and destroying hostile missiles. Conducted at the Willow Run Research Center, the Michigan University study was designated Project Wizard.[10] In the course of exploiting captured German technological data, the Air Materiel Command's Project Paperclip brought a number of prominent German scientists to Wright-Patterson Air Base. Included in the group was ex-Major General Walter R. Dornberger, who had headed the German military rocket development program. These German scientists assisted in drafting the missile research and development program, and the Air Force gave considered thought as to whether the group ought not to be retained as an "in-house" research and development capability within the Air Materiel Command. In the early 1920's, however, the Air Corps had attempted to design and build aircraft at Wright Field, and this "arsenal system" had proved inferior to the development of aircraft by private enterprise. The Air Force therefore deliberately made the decision not to attempt to retain the group of German missile experts, and within a few years most of them were employed by private industry.[11]

"The aerial missile, by whatever means it may be delivered," warned Major General Hugh J. Kneer, Secretary-General of the AAF Air Board, on 26 February 1946, "is the weapon of the Air Corps. Unless we recognize it as such and aggressively establish ourselves as most competent in this field, the responsibility therefore will become established by the Army or the Navy."[12] Since only a limited quantity of "brains and materials" was available for research and development in the United States, Knerr feared that scarce resources might be saturated by competing Army, Navy, and Air Force projects.[13] Under the terms of a War Department directive issued on 2 October 1944, the Army Air Forces was responsible for the development within the Army "of all guided or homing missiles launched from the ground which depend for sustenance primarily on the lift of aerodynamic forces."[14] The first organization dealing exclusively with guided missiles was established early in 1945 by the Joint Chiefs of Staff for the purpose of reviewing projects concerned with the development of rockets comparable to the German V-1's and V-2's. This was called the Committee on Guided Missiles and existed to review programs and recommend action.[15] Long familiar with the arsenal system of development, the Army Ordnance Department began research on artillery-type missiles at Fort Bliss, Texas, and White Sands, New Mexico, before the end of World War II. A WAC-Corporal research rocket was fired at White Sands in September 1945, and in the autumn of that year Dr. Wernher von Braun and about 120 other German scientists were brought to Fort Bliss to assist with experimental firings of captured V-2 missiles. The main

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objective was a scientific high-altitude research program, but the Fort Bliss group was given an additional task of developing a small research vehicle called the Hermes II. Looking back at his work at Fort Bliss, von Braun would describe the general attitude as being: "The war is over; let us utilize these interesting new toys that we imported from Europe, and let us put them to use for high-altitude research."[16] Early in 1946, the Navy Bureau of Aeronautics awarded four research contracts for feasibility-design studies of space vehicles, and in August 1946 the Naval Research Laboratory contracted with the Martin Company for an improved research version of the German V-2 which was called the Viking.[17]

Looking toward the coordination of research and development activities the Secretaries of War and Navy established the Joint Research and Development Board on 6 June 1946, under the chairmanship of Dr. Vannevar Bush, who had headed the wartime Office of Scientific Research and Development. The Joint Research and Development Board promptly established a Committee on Guided Missiles.[18] In view of a further need to clarify arguments as to what the jurisdiction of the Army and the Army Air Forces would be for missile development, the War Department on 7 October 1946 made the Army Air Forces responsible "for the research and development activities pertaining to guided missiles." Three days later, the War Department provided that this assignment of responsiblity was only for research and development and should not be necessarily applicable to the assignment of operational responsibility for such guided missiles as were developed and procured.[19] The enactment of the National Security Act of 1947 vested over-all review authority for national military research and development in the National Military Establishment's Research and Development Board, where Dr. Bush would remain on duty as the chairman until 5 October 1948, and the Committee on Guided Missiles would continue to function as a board activity. In the separation of the Air Force from the Army, the Air Force was relieved effective on 19 July 1948 of its responsibility for the guided missiles research and development program required to accomplish roles and missions of the Army.[20]

By committing a total of more than $34 million of its fiscal year 1946 funds to research in missiles, the Air Force appeared to have solidly grounded its future on the new technology. The decision to award the missile development contracts rather freely also reflected an appreciation of the fact that the United States lacked basic technical knowledge on the subject and of the fact that World War II had knocked out Western Europe's capacity to provide basic technological knowledge for some years to come.[21] Almost at once, however, the most imaginative item of the Air Force research program--the 5,000-mile MX-774 Hiroc intercontinental ballistic missile whose study contract had been allocated to the Consolidated-Vultee Aircraft Corporation--began to meet difficulties. As previously noted, Dr. Bush, while testifying before the Senate Committee on Atomic Energy in December 1945 completely discounted

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the technical feasibility of a high-angle intercontinental rocket.[22] The technical problem was indeed a large one. The early model atomic bomb weighed a little over five tons and had a half-mile kill radius. The Hiroc would thus have to be a very large missile with an extremely powerful thrust, but even this would not solve the problem of accuracy. The average accuracy possible with a Norden bombsight was 15 mils, and, even with this accuracy, a Hiroc fired from a distance of 5,000 miles would theoretically miss its target by about 75 miles. Obviously, in view of the half-mile kill radius of the warhead, this was not very attractive.[23] The missile also presented technical difficulties. The specific impulse of the oxygen and alcohol fuels was too low to give the missile a 5,000-mile range. The warhead would encounter very high temperatures when it reentered the earth's atmosphere. Some scientists suggested that the Air Force was proposing to develop a meteor which would burn upon reentering the atmosphere.[24]

Although scientists would later declare that Bush's evaluation of the technical feasibility of an intercontinental ballistic missile was entirely sound in the light of the technology of 1945, Bush continued to suspect both pilotless aircraft and guided missiles. In his book, Modern Arms and Free Men, published in 1949, Bush pointed out that the German V-1 pilotless aircraft fired against London had been easily countered. "When the defense dispositions reached their climax," he wrote, "they brought down some ninety-five percent of the buzz-bombs that came within range, and they repeated or bettered this performance later at Antwerp." Flying slowly at constant altitude and in a straight line, the V-1 buzz bombs had made almost ideal targets. Based on these analyses, Bush urged that the manned bomber was far cheaper and superior to either a pilotless aircraft or a ballistic missile. He dismissed the ballistic missile quite summarily: "It would never stand the test of cost analysis. If we employed it in quantity, we would be economically exhausted long before the enemy." For the near future, Bush suggested that only small and short-range missiles would have practical application to air warfare.[25]

Even though he gave strong support to the development of missiles during his tenure as Deputy Chief of Staff for Research and Development of the Air Force, Major General LeMay was quite unwilling to admit that the heavy bomber lacked growth potential. "We in the Air Force," LeMay wrote in May 1946, "are assuming that guided missiles will be fired at bombing vehicles whatever their form may take and are already taking measures to develop our own defensive missiles which will intercept and destroy enemy vehicles whether they are fighter planes or guided missiles. Granted as the science progresses, tactics will change, new weapons will be employed, but destruction of enemy industry and means to wage war calls for large quantities of destructive power. It may well be that in the future this power may be more efficiently delivered by rockets or guided missiles than by heavy bombers; however, it is

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not here yet and the science of strategic bombing and the development of bombing equipment will keep pace with the defensive missiles used to stop it. The heavy bomber will only go out of existence when a new weapon is invented which will do the job more cheaply and efficiently. . . . Even when the efficient guided missile of large weight carrying capacity and extreme range is developed, military flexibility may still demand the existence of manned vehicles capable of delivering tremendous blows on spots inaccessible to rocket fire. . ., or to conduct mopping up operations after guided missile attacks, or to conduct operations against targets of opportunity. No one weapon will meet all the requirements of modern warfare, and it can be safely assumed that warfare in the future will become even more complex."[26]

When he appeared before the House Subcommittee on Appropriations on 6 March 1947, Lieutenant General Ira C. Eaker, Deputy Commanding General of the Army Air Forces, emphasized the tremendous expense of preparing for an early "push-button warfare" capability. Eaker suggested that the day "may come" when the long-range guided missile would replace the conventional very heavy bomber. With unlimited funds and resources in a development effort equivalent to that which had produced the atomic bomb, Eaker estimated that a 5,000-mile guided missile could be developed in five years. "Ten to fifteen years from now, by working hard and with at least a quarter of a billion dollars annually for experimentation in that field alone," Eaker estimated, "we can produce a rocket of 5,000-mile range. The prototype. . . will probably cost 200 million each, and individual rockets of that size and type thereafter may cost as much as 7 million." "We cannot, therefore," Eaker concluded, "abandon the development of the very long-range very-heavy bomber as a primary weapon of our long-range striking force but we should, as a wise precaution, spend the necessary experimental funds to insure that we are the first in the field with a long-range guided missile which may be the primary weapon at some future date, but probably not within 15 years."[27]

While the Air Force had assumed that some of the missile projects established in 1945-46 would prove infeasible and would be dropped after a year or two, it was not prepared for the reductions in research and development funding that would occur in fiscal year 1947. As has been seen, the Bureau of the Budget impounded and transferred Air Force research and development funds. In the guided missiles field, the reduction in funds from $29 million to $13 million which took place in December 1946 forced the Air Force to terminate some 11 of 28 guided missile projects, even though it had not received the technical data it needed to make well-advised decisions. The reduction was especially unfortunate at the particular time because some missile contractors were progressing from a study phase to one of testing of small-scale missile mock-ups.[28] In an effort to establish guidelines for a drastically reduced missile program, Major General B. W. Chidlaw, the Air Materiel Command's

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deputy commander for engineering, recommended on 6 May 1947 that the Air Force "should concentrate on those missiles which show greatest promise of early tactical availability." Chidlaw also envisioned that missile projects should be established for phased development in a relatively few companies, thus reducing a rather high cost arising when a number of companies attempted to expand their engineering and scientific staffs to handle individual projects. Since the 5,000-mile MX-774 intercontinental missile did not promise "any tangible results in the next eight to ten years," Chidlaw recommended that it be deleted from the Air Force program.[29] In Washington a staff study signed by Brigaider General Thomas S. Power, Air Force Deputy Assistant Chief of Staff for Operations, on 16 June 1947, based its recommendations regarding missiles on the basic assumption that "for the next ten years, long range air bombardment will be effected by means of subsonic bombers only." Given this assumption, the pressing requirement would be for operational bomber-defense and stand-off bombing missiles and conversely for surface-to-air and air-to-air interceptor missiles. The study posed an urgent requirement for an early development of a means to detect and destroy enemy supersonic guided missiles, an early requirement for high-accuracy surface-to-surface 1,000-mile guided missiles, and an eventual requirement (probably by 1957) for an up-to-10,000-mile range supersonic surface-to-surface missile. The study recommended first priority for bomber-launched air-to-surface and air-to-air missiles; second priority for a 150-mile tactical surface-to-surface missile; third priority for bomber and missile interceptor missiles with associated detection and control means; and fourth priority for long-range surface-to-surface missiles. General Vandenberg approved this outlined order of priority on 18 June 1947, and, after coordination through the War Department, it was transmitted to the Air Materiel Command as a directive on 12 August 1947.[30]

The full effect of the Air Force decision was to subordinate the guided missile research and development program to the support of a strategic bomber offensive. The reorganization of the Headquarters of the Air Force which took place on 10 October 1947 manifested a similar preoccupation with the preparation of a force in being. For the next several years, the Air Force policy on guided missiles would include the twin precepts that the Air Force would program guided missile units in addition to its manned aircraft units pending an establishment of the extent to which the guided missile units would be able to supplement or replace manned aircraft units and that guided missiles would be handled in aircraft channels throughout the Air Force. The latter precept meant that missiles would receive no preferential treatment but would be handled like any other piece of Air Force hardware.[31] When appropriations were reduced in the spring of 1947 the Air Materiel Command promptly dropped the contract for the MX-774 intercontinental ballistic missile. The Consolidated-Vultee work had nevertheless

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arrived at three important innovations: the use of the missile body as the wall of the fuel tanks as a weight saving measure, the employment of swiveling rocket engines to provide directional control in flight, and the technique whereby a nose cone would be separated from the main missile body. Enough money remained when the project was cancelled to permit the contractor to test three single-stages of the missile during 1948. The results were so favorable that Consolidated-Vultee and its successor Convair Division of the General Dynamics Corporation kept the key members of the MX-774 engineering team together to continue studies of ballistic missile systems.[32] Following the demise of the MX-774, the Air Force missile program was progressively reduced to the Falcon air-to-air interceptor missile, the Rascal stand-off bomber missile, and four pilotless aircraft missiles: the Matador, the Snark, the Bomarc, and the Navaho.

When it became responsible for the coordination of service research and development programs with National Defense unification in 1947, the National Military Establishment's Research and Development Board recognized that guided missiles programs represented a relatively new technical field in which little was known and took a fairly relaxed view toward service projects that were in some competition with one another. At the same time that the Air Force was working on the Falcon missile, for example, the Navy was developing the Sparrow air-to-air missile, but the two missiles involved different approaches to the same problem.[33] In another respect, however, Dr. Bush was less liberal. While the reductions of funds for research and development in fiscal years 1947 and 1948 were a part of general reductions in postwar military appropriations, Bush arbitrarily limited the total defense research and development budget beginning in fiscal year 1949 to approximately $500 million a year. Believing that only so much technical talent was available, Bush insisted that larger expenditures would automatically produce waste and poor results by forcing much research and development work into the hands of mediocre personnel. Dr. Karl T. Compton, who succeeded Bush as Chairman of the Research and Development Board in October 1948, believed that the Defense Department could wisely spend an annual research and development budget of $650 million a year, but the precedent of the $500 million budget had unfortunately been set. In fiscal year 1950 the Department of Defense spent about $550 million in research and development, less than four cents out of every dollar appropriated for the defense establishment.[34]

Facing the need to conserve scarce defense research and development funds and acting under direction of the Secretary of Defense, the Joint Chiefs of Staff reviewed missile research and development projects in the autumn of 1949. As a result of this examination, primary responsibilities for research and development of short-range surface-to-air missiles were allocated to the Army and Navy.[35] At this time the Boeing Company appeared to be making

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good progress in developing the Air Force "Gapa" missile, but the Army had also begun to develop the Nike-Ajax missile in 1945 and the Navy was developing Terrier and Talos antiaircraft missiles, either of which might meet Air Force requirements for point-defense weapons. The Air Force moreover recognized that a tremendous number of 25-mile-range beam-rider antiaircraft missiles would be required to defend the continental United States. In view of these factors and the decision of the Joint Chiefs of Staff, the Air Force stopped development of the Gapa antiaircraft missile in November 1949 and contracted with Boeing and the University of Michigan to investigate the feasibility of a 250-mile-range interceptor missile plus an associated electronic control system. The feasibility study was approved during 1950 and a development contract was formally awarded in December for a Bomarc (Boeing and Michigan Aeronautical Research Center) weapons system.[36] Based upon the Joint Chiefs of Staff review, the Air Force also resolved not to attempt to develop missiles suited for close-support of ground forces. The Air Force position was that close-support missiles ought to be handled by the Army as an improvement of its battlefield artillery. Both the Air Force and the Research and Development Board kept the tactical Matador missile under surveillance during most of 1949 to determine whether its 350-mile range should not be extended or whether it should be dropped from development. Compared with other missiles, however, the Matador was essentially simple. It was in effect a subsonic pilotless-fighter aircraft which was guided to its target by a ground-based shoran bombing system. The Air Force eventually decided that the Matador (TM-61) system would give all-weather interdiction capabilities to a tactical air force and deserved programming. The Matador was first flown in 1950 and was deployed overseas beginning in 1954 to stations in Germany, Taiwan, and Korea.[37]

The other Air Force missile systems were far more complex than Matador. Most of them were theoretically scheduled for operational capability in the 1954-55 time period, but each of them pressed beyond existing parameters of the technological arts. Basically a parasite pilotless aircraft which would be carried under the fuselage of a B-36 or a B-47, the Rascal was designed as a Mach 2, 100-mile-range missile which could be launched and controlled from the bomber through its flight course and into a target. The Snark (SM-62) resembled a big sleek fighter plane whose turbojet engine gave it a Mach 0.9 airspeed and whose range was specified to be 5,500 miles. Once launched and in flight the Snark was to guide its own course to its target by a gyrostabilized star-tracking celestial navigation system. The Bomarc (IM-99) was designed as a pilotless fighter which would be launched with a liquid-fuel rocket booster and whose twin ramjet engines would give it a Mach 217 airspeed. Receiving command-control guidance from a ground radar control system that could see both the missile and the hostile bomber, the Bomarc was to be maneuvered into an attack position, at which time its own radar would lock on the target and home the missile to the target. Unlike the other missiles, the Navaho (SM-64)

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was not expected to be operational at an early date. This missile was designed to carry a very heavy nuclear warhead (subsequently determined to be a thermonuclear warhead) and was to have a 5,500-mile range and a supersonic speed of Mach 2.7. The navigational system was to be a nonemanating pure inertial system, which would not have to refer to the stars or to the ground for course-guidance corrections. Getting the Navaho up to flying altitude where its ramjet engines could take over was a problem which presented some initial complexity. One thought was that the Navaho could be lifted by a B-36 and launched in the air. In 1950 final design specifications provided that the Navaho would be launched pickaback from the ground by liquid-fueled rocket engines. Each of the missiles involved exploitations of underdeveloped technology and how soon any of them could be placed in operation was a matter of guess. "We have tried," candidly admitted Major General Saville, "to make a guesstimate of operational availability which includes the fact that inventors have invented as scheduled and that the tests have gone on with the noraml amount of 'snafu' that we expect."[38]

* * * *

Speaking in 1953, Dr. Walter G. Whitman, Chairman of the Defense Research and Development Board, suggested that mistakes in military research and development had included the reductions in research and development funding after 1945 and his board's inability to decide what program should receive the greatest emphasis at any one time.[39] Looking backward from 1957 at the initial phase of Air Force missile development, Lieutenant General Charles S. Irvine, who was then Deputy Chief of Staff for Materiel, observed: "What he had done when looking at the early developments of the atomic bomb. . , was to come to the conclusion with what we knew then of ballistic-type machines--with what we knew about guidance, that we were not ready to build essentially a ballistic machine and do an efficient job of knocking out targets considering the number of dollars or man-hours it would take per target. We went to the airbreathing route, a pilotless airplane, a subsonic Snark or Navaho supersonic machine, which would in its time period carry a big enough warhead and be more accurate. This appeared to be the best solution as we saw the state of the art at that time. . . . Looking back at it, maybe that was a bad decision. We could have developed a guidance for the ballistic missile while we were doing the other job. But our crystal ball was not that bright."[40] Colonel Edward N. Hall, who would become an Air Force missile expert, blamed the early decisions equally upon ballistic advocates, who thought in terms of thousands of yards rather than thousands of miles, and the aerodynamic people who were convinced that there would always be an inverse relationship between speed and range and could not visualize a supersonic vehicle that would have a 10,000-mile range.[41] Whatever the exact cause, the Air Force had in effect assumed in

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its projections that there would be a period of years in which there would be a gap between piloted aircraft and ballistic missiles: this gap could be most feasibly filled by air-breathing pilotless aircraft.[42]

Both as a reaction to the Soviet atomic explosion and in recognition that research and development had lagged in the several years that it had been subordinated to operational concerns, General Vandenberg--with more than a little prompting from Secretary Symington--reestablished a Deputy Chief of Staff for Development at the Air Staff level and established the Air Research and Development Command on 23 January 1950. Major General Saville assumed the duty as Deputy Chief of Staff for Development without delay, but the organization of the Air Research and Development Command required an evolutionary period. The Command established its permanent headquarters in Baltimore in May 1951 and shortly took control of the major Air Force research and development centers.[43] The mission and basic concepts that would guide the new organization for research and development were worked out in the period of transition. The Ridenour report had demonstrated that past thinking on research and development had been on a project basis and that the research-development-production cycle had been much too long. "In the past," noted Brigadier General Donald N. Yates, Assistant Deputy Chief of Staff for Development, "we. . . pointed toward mainly the development of an aircraft. . . hoping that we could patch existing guns, armament, and electronics equipment into it."[44] At the request of General Fairchild, Major General Saville prepared a staff study on the development and procurement of combat ready air vehicles. This study recommended the adoption of a systems approach in the development of new weapons, the making of a decision to go into limited production at the time that the mock-up or breadboard model was approved, the conduct of an accelerated and integrated test program before the production rate was stepped up, and the retention of development responsibility and authority within one agency during the life span of the equipment. The weapon systems concept gained immediate acceptance, and a weapon system was defined as "a completely and integrally equipped aircraft, missile or other flying device with all its airborne and ground equipment necessary to satisfy a military operational requirement."[45] During its first year of operation the Air Research and Development Command also faced the problem as to whether it should attempt to build and man laboratories for Air Force research. After careful study, Dr. Ridenour advised Lieutenant General Partridge, who had taken command of ARDC on 24 June 1951, that "the primary mission of the ARDC in the field of research is to connect the Air Force with pertinent research being done elsewhere, and to stimulate work that appears to be of direct interest to the Air Force." Broadening the guidance, Partirdge stated the rule that the ARDC would handle both research and development "out of shop" when contract operations were proper and feasible. "The ARDC," Partridge stated, "favors

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contract operations when such contract operations are to the advantage of the U.S. Government."[46]

While the Air Force was expanding its research and development organization, the beginning of the Korean War loosened budgetary pursestrings. Where the Air Force received $238 million for research and development in fiscal year 1950, annual and supplemental defense appropriations made $522.9 million available to the Air Force for such purposes in fiscal year 1951.[47] With more money available President Truman wanted to see the missiles program move along faster, with especial emphasis on the development of defensive missiles. On 30 August 1950, Truman invited Mr. K. T. Keller to a conference at the White House and requested him as an experienced engineer to see what he could do to advance the guided missile program. When he received the presidential mandate, Keller began a 90-day fact finding tour to service research installations and contractor facilities, including the Army's Redstone Arsenal at Huntsville, Alabama, where Army missile research and development had been drawn together from White Sands, Fort Bliss, and other installations in 1949. Keller determined that about 4,000 military and 11,000 contractor personnel were working on missile programs, and he came to believe that the best contribution that he could make to the programs would be to head a small organization that would act as a consultant and adviser to everyone having to do with guided missiles. Accepting Keller's conclusions, Truman appointed him Department of Defense Director of Guided Missiles on 24 October 1950 and charged him to direct and coordinate the activities connected with research, development, and production of guided missiles. From his observations of the service missile programs, Keller came to several other conclusions. He saw no reason why one service might not be charged to conduct research and development on a missile system that might be assigned to another service when it became operational. Keller also thought that engineers tended to avoid "the dirty, stinking work of getting the little problems cleaned up;" quite frequently when they met problems they tended to veer off to a new conception rather than concentrating on the solution of the problem. He believed that the development process had to stabilize its objectives "long enough to get hardware and to find out what made malfunctioning in a piece of mechanical apparatus." Believing this Keller promptly embarked on a campaign "to get hundreds of missiles out flying so that there can be some kind of a sensible evaluation of the field for general policy guidance." Keller was impatient with the military concept that logistical support concepts ought to be worked in to the plan for the development of a weapon system. "We must get a workable article first," he said.[48]

Based upon his mandate from President Truman and his understanding that highest priorities should be given to the development of air defense missiles, Mr. Keller picked out the Nike, the Terrier, and the Sparrow as programs for expedited development. Speaking of

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Keller, Dr. Wernher von Braun, who had moved to the Redstone Arsenal as Director of Development Operations, recalled: "When he came in things began to move."[49] Limited to a range of 25 miles, the Army's Nike Ajax antiaircraft missile did not significantly compete with the Air Force Bomarc, but the Army soon began to develop the Nike Hercules which would have a range of 75 miles.[50] Apparently with Keller's enthusiastic support, the Army initiated development of the 450-mile-range Redstone missile in 1951.[51] Although the range of the Redstone was reduced to about 200 miles when it was programmed for a heavy thermonuclear warhead, the successes with the program indicated that it would be equally feasible to develop another missile derived from Redstone that would have a range of about 1,500 miles. Believing that the Army might want to deploy its tactical support missiles far to its rear, perhaps a thousand miles or more, Major General Gavin, who was serving as the Army's Assistant Chief of Staff for Plans and Operations, recommended that the Army should seek to develop a 1,500-mile ballistic missile.[52]

While increased appropriations for research and development benefited the Air Force missile programs that were in process in 1950, the Department of Defense emphasis on defensive missiles naturally lent little assistance to Air Force requirements for offensive weapons. To the Air Force and also to the RAND Corporation the development of an intercontinental ballistic missile would serve two useful purposes: it would provide an offensive weapon system, and the boosters employed for the intercontinental missile would also be powerful enough to place military earth satellites in orbit. Even though the Air Force was compelled to cancel work on the MX-774 Hiroc, General Vandenberg nevertheless signed a USAF space policy statement on 15 January 1948 which read: "The USAF, as the Service dealing primarily with air weapons--especially Strategic--has logical responsibility for the satellite."[53] Apparently as the result of continued RAND studies, Major General Saville late in 1950 directed that a long-range rocket study be reinstituted, and, in view of its earlier work with MX-774, Convair received a study contract on 31 January 1951 calling for an investigation of the relative merits of glide and ballistic type missiles capable of a 5,500-mile range with an 8,000-pound warhead. This study contract soon was limited to an intensive investigation of a ballistic missile. In view of favorable results reported by Convair and evidences of Soviet progress toward the development of high-thrust rockets, the Air Research and Development Command suggested in March 1952 that the MX-1593 study missile--now also called Atlas--be reissued in the form of a general operational requirement for the development of such a ballistic missile. At this time, however, the Defense Research and Development Board did not agree and approved no more than the continuation of studies of the missile and development of components for it.[54]

The initial studies of the intercontinental Atlas missile visualized large and heavy atomic warheads, but in the winter of

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1952-53 the Atomic Energy Commission's advances in the development of new nuclear weapons pointed the way to the design of small, high-yield warheads. In December 1952, the USAF Scientific Advisory Board pointed out the substantially increased warhead yields meant that accuracy requirements and guidance developments could be somewhat relaxed. By the summer of 1953, Convair was able to show that many of the design characteristics of the Atlas could be met from existing technology. The Atlas, for example, would be able to use the high-thrust, liquid-fueled rocket engines that had been designed to launch the Navaho missile. Convair estimated that the Atlas could be made operational by 1962, but in Washington, Major General Yates, Air Force Director of Research and Development, called attention to the fact that the Atlas development program would be extremely expensive. Where the Air Force had received $525 million in new obligational auchority for research and development for fiscal year 1953, the new Eisenhower military budget for fiscal year 1954 allotted $440 million of new money for such expenditure. "It is extremely important," Yates ordered in reference to Atlas, "that this expensive program be carried on at a relatively slow rate with increases planned only on the accomplishment of the several difficult phases of the program."[55]

At the same time that the Air Force was making a decision to go slow in developing the Atlas, other events were occurring that would make it necessary to speed it up. Early in 1953 Mr. Trevor Gardner took office as Special Assistant for Research and Development to Air Force Secretary Talbott, and Gardner actively supported the development of an intercontinental missile. Effective on 30 June 1953 the implementation of Reorganization Plan No. 6 abolished the National Defense Research and Development Board and the Office of Director of Guided Missiles and vested these responsibilities in a new office of Assistant Secretary of Defense for Research and Development. Based upon a request received from Gardner the Department of Defense Armed Forces Policy Council ordered the establishment in June 1953 of a study group of the nation's leading scientists to evaluate strategic missile programs. To perform this task Gardner assembled a group of scientists under Professor John von Neumann, which would be known as the Air Force Strategic Missiles Evaluation Committee or less formally as the "Teapot" Committee. Holding the first of three meetings in November 1953, the von Neumann committee undertook to examine both the impact of the thermonuclear breakthrough on the development of strategic missiles and the possibility that the Soviet Union might be somewhat ahead of the United States in developing ballistic missiles. Later evidence would make it apparent that the Soviet Union had addressed itself as early as 1946 to the same problem of transporting a 10,000-pound atomic warhead over intercontinental distances that had confronted American planners. The Soviets had captured the German rocket center at Peenemunde and had carried many German technicians away to Russia. These technicians were not permitted to

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participate in the advanced Soviet development programs which were evidently designed to boost 5-ton warheads over intercontinental distances, but by 1953 many of the German technicians were being allowed to return home and they brought reports of the intense Soviet interest in all phases of missile technology. In the course of its investigation the von Neumann committee got four separate and different intelligence estimates, but Gardner noted that the "lump impression. . . is that the Soviets are significantly ahead of us in the strategic missile field."[56]

While the von Neumann committee was at work the RAND Corporation provided it with technical assistance, and RAND also prepared an independent report which was transmitted to the Air Force on 8 February 1954. When the von Neumann committee report was submitted on 10 February, it was prefaced by the observation: "Unusual urgency for a strategic missile capability can arise from one of two principal causes: A rapid strengthening of the Soviet defenses against our SAC manned bombers, or rapid progress by the Soviet in his own development of strategic missiles which would provide a compelling political and psychological reason for our own effort to proceed apace. The former is to be expected during the second half of this decade. As to the latter, the available intelligence data are insufficient to make possible a precise estimate of the progress being made by the Soviet in the development of intercontinental missiles, but evidence exists of an appreciation in this field on the part of the Soviet, and of activity in some important phases of guided missiles which it is natural to connect with the objective of development by the Soviet of intercontinental missiles. Thus, while the evidence may not justify a positive conclusion that the Russians are ahead of us, a grave concern in this regard is in order."[57]

In its review of the Air Force missile program the von Neumann committee noted that the employment of thermonuclear warheads would permit significant relaxations in requirements for missile thrust and orders of guidance accuracy. It concluded that new warheads would make it possible to redesign the Atlas and develop it for operational use in about five or six years, provided the Air Force gave the ballistic missile program overriding priority, centralization of directing authority, and exceptionally competent scientific guidance. Not content merely to limit itself to generalities, the committee provided an important study of Air Force research and development management procedures. In its weapon system development of the B-58 bomber and the Matador missile, the Air Force had employed an existing company as a weapon system single prime contractor, but the committee stated unequivocally that no single contractor in the United States had sufficient across-the-board technical competence to manage an intercontinental ballistic missile developmental program. The Air Force similarly did not have sufficient in-house capabilities to manage such a program. The von Neumann committee therefore proposed to establish a special management group by drafting highly competent men from universities, industry, and government.[58]

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Believing that the strategic necessity for the intercontinental ballistic missile was at least as urgent as the wartime atomic bomb development, Trevor Gardner worked diligently to get top-level support for such a missile. After a series of three meetings on the subject of the entire missile program, the Air Force Council recommended on 23 March 1954 that accuracy requirements be reduced for all missiles carrying thermonuclear warheads and that the Atlas program "be reoriented so as to achieve the early establishment of an optimum intercontinental ballistic missile system." General Twining approved the recommendations on the same day, and on 14 May the Air Force further directed that the Atlas program would be given its highest development priority.[59] In an unusual management action the Air Research and Development Command established a Western Development Division of its headquarters under the command of Brigadier General Bernard A. Schriever at Inglewood, California, on 1 July. The primary mission of the Western Development Division was specified to be the management of the development program for Air Force Weapon System 107A (Project Atlas) including ground support for it and to recommend operational, logistic, and personnel system concepts for the system. In view of the fact that procurement and contracting for the Air Force was the mission of the Air Materiel Command, this command on 15 August established the Special Aircraft Project Office (later the Ballistic Missiles Office) on the field location at Inglewood.[60]

Seeking to preserve the scientific talent available in von Neumann's committee, Gardner persuaded many of the men who had served on this committee to continue to function as the Atlas Scientific Advisory Committee. At a meeting of 20-21 July the Scientific Advisory Committee again considered the weapon system responsibility for Atlas and again recommended that no existing airframe manufacturer--including Convair, which wanted to assume the role of weapon system single prime contractor--was strong enough in scientific depth and experience to discharge prime contractor responsibilities. In August the Western Development Division made a study which determined that systems responsibility could be placed either with an airframe contractor, with a university laboratory, with an Air Force organization, or with a specially qualified contractor who would be independent of the contractors supplying missile components. An available contractor of the latter type was already in existence: in September 1953 Simon Ramo and Dean Wooldridge, who had done pioneer management work with the Hughes Aircraft Company in the development of the Falcon air-to-air missile, had split off and formed the Ramo-Wooldridge Corporation. Brigadier General Schriever was impressed with the new corporation and recommended that technical direction and systems-engineering responsibility be contracted for with it. Being authorized to take the action on 3 September 1954, the Ballistic Missiles Office negotiated a contract with Ramo-Wooldridge to provide scientists and engineers needed to provide complex technical and scientific

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analysis and systems engineering direction to the several associated contractors who made up the development team. Together with their military counterparts in the Western Development Division, the Ramo-Wooldridge technical and scientific personnel were integrated into what Schriever described as "a development-management team, with all elements working on a side-by-side, counterpart basis."[61] Given final assurance by the Atomic Energy Commission that a small, high-yield warhead could be expected, the final configuration of the Atlas missile was firmed-up in the last quarter of 1954. In the first six months of 1955 basic system development contracts were let for the Atlas airframe and nose cone, guidance and control, and propulsion systems.[62]

At its meeting in July 1954 the Atlas Scientific Advisory Committee suggested that an alternate strategic missile to the Atlas ought to be put under development at once. There were several reasons for this. Convair's plants were near the California coast and to depend upon a single location for a single strategic missile would make the program extremely vulnerable to hostile attack. The structure of the Atlas was "a big pressurized metal sack," which might collapse under violent maneuvers. At any rate, a missile with a more conventional structure would offer more prospects for growth potential. While the reasoning was valid, the Air Force was hard put to make a decision for a second straight strategic missile in view of rather stringent expenditure limitations.[63] Some further indecision resulted after 2 December 1954, when the Air Force issued a general operational requirement for a tactical ballistic missile with a range of 1,000 to 2,000 miles. Schriever feared that the development of a tactical missile would cause competition for the use of existing test facilities, thereby delaying the Atlas strategic missile. He also suggested that a tactical missile might become a natural "fall out" from one of the stages of an intercontinental missile.[64]

Early in January 1955 Ramo-Wooldridge provided Schriever with a favorable analysis of the prospects for developing a two-stage, conventional-structure intercontinental ballistic missile. On 12 January Schriever formally asked approval for the alternate strategic missile, pointing out that such a program would desirably provide second sources for subsystems that might be interchangeable between the Atlas and the new missile. By early March the Air Research and Development Command and the Air Materiel Command developed a proposal which went forward to Washington, and on 28 April Secretary Talbott approved a second source for intercontinental missiles, with the understanding that the missile would be constructed well away from either seacoast. The new missile--designated as the XSM-68 Titan--would also include a configuration that could be adaptable to exploitation as a tactical ballistic missile. From proposals submitted by several aircraft companies an Air Force source selection board recommended that the Martin Company appeared best qualified to develop the missile's airframe,

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and a letter contract was issued on 27 October 1955 authorizing Martin to design, develop, and test the airframe for the two-stage XSM-68 and to plan a program for the development of the complete weapon system. The Western Development Division and the Ramo-Wooldridge Corporation management team was charged to exercise weapon system engineering responsibility for the Titan.[65]

At the same time that the Air Force directed the Western Development Division to proceed with the Titan, it directed the division to study and evaluate all possible approaches to the tactical ballistic missile. In line with this directive, Schriever directed his subordinates to look into earlier research studies concerned with solid-propellant technology. Based on this preliminary work, the Air Force contracted in April 1956 for three studies looking toward the development of solid propellant rocket motors. During this year both the Tactical Air Command and the United States Air Force in Europe prepared qualitative operational requirements for a quick-reacting tactical ballistic missile, but the Air Force could not validate the requirements because limited funds had to be principally devoted to the development of the intercontinental missiles. A Western Development Division working group headed by Lieutenant Colonel Edward N. Hall nevertheless put together a concept of a three-stage solid-propellant missile that could possibly be employed by stages for either tactical or strategic purposes. Such a missile would desirably be relatively cheap, available in quantity, and capable of rapid reaction from hardened ground silos. Growing Air Force interest in such a second generation ballistic missile caused Major General Schriever to designate the working group in September 1957 as a small weapon system office for what was first called "Weapon System Q," later "Sentry," and finally "Minuteman."[66]

The operational concepts for the Minuteman missile drawn up by Lieutenant Colonel Hall's group visualized a simple, reliable, rugged missile with a long storage life and simplified maintenance requirements. The missiles could be deployed in underground silos, spaced far enough apart and sufficiently hardened so that an enemy warhead would be able to destroy no more than one missile. The missiles could be maintained in constant readiness to fire, and a given complex of missiles would be controlled by an automatic monitoring and launch system. The intercontinental solid-propellant missile would not be able to carry as heavy a warhead as the Atlas or Titan, but Ramo-Wooldridge urged that "by keeping the missile small and the weapon system cost low, we can more readily afford to size the force so that a sufficently large portion of the force will survive, irrespective of actions taken by the enemy."[67]

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As late as the spring of 1955 the Eisenhower administration apparently assumed that the Soviet Union would not be technologically able to counterbalance American strategic superiority until late

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in the 1960's. Based on new information, however, the Technological Capabilities Panel of the President's Science Advisory Committee--called the Killian committee after its chairman, James R. Killian--made a report to President Eisenhower on 14 February 1955 which displayed more concern about the vulnerability of North America to surprise attack. The Killian committee specifically recommended that a top priority be given to the Air Force program for the development of intercontinental missiles and that the development of intermediate range ballistic missiles would also be essential to the national security. Lending support to the new strategic estimates, the Soviets displayed enough Type 39 heavy jet bombers at the May Day 1955 celebration in Moscow to make it evident that these equivalents of the Air Force's B-52 had been in quantity production as much as a year before such had been anticipated.[68] In October 1955 the National Security Council accepted much of the Killian committee's report: it recommended the highest national priority be extended to the development of the intercontinental ballistic missile and additionally recommended that land-based and ship-based intermediate range ballistic missiles should be considered essential to the national security. By December, President Eisenhower had assigned highest priorities to the Atlas and Titan and Jupiter and Thor programs.[69]

In March 1955 Major General Gavin had already recommended to General Ridgway that the Army should proceed with the development of a 1,500-mile intermediate range ballistic missile, but Ridgway turned him down because he anticipated that the Army could not get the money for such a program.[70] In November 1955 the Joint Chiefs of Staff studied the matter of intermediate range ballistic missiles, and with General Taylor dissenting, recommended to Secretary Wilson that the Navy had a valid requirement for a ship-based intermediate range ballistic missile and that the Air Force had a similar requirement for a land-based intermediate range ballistic missile, while the Army had no valid requirement for such a capability.[71] Wilson, however, was unwilling to accept this guidance. On 8 November he ordered that an Army-Navy team would work together on an intermediate range ballistic missile that would be based largely upon the Army's Redstone and that the Air Force would independently develop another intermediate range ballistic missile. In order to coordinate the separate programs Wilson established a Department of Defense Ballistic Missiles Committee, but he frankly stated that he expected the interservice competition to hasten the development of an intermediate range missile, even though the duplication would increase the expense to the nation. At the same time that he established the Defense Ballistic Missile Committee, Wilson brought into being the Air Force Ballistic Missile Committee and the Joint Army-Navy Ballistic Missile Committee.[72]

Recognizing that the Soviets would score a tremendous advantage if they got intercontinental ballistic missiles into operation before the United States possessed a similar capability, the Air Force did not wish anything to interfere with the development

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of the intercontinental missile. "We felt," stated Trevor Gardner, "that we had to get that weapon first." Gardner recorded that the immediate effect of Wilson's directive for the competitive development of the intermediate range missiles would be to establish competition for hardware, people, money, and facilities which might well jeopardize attainment of an early strategic missile capability. He also described Wilson's directive as having the "amazing result of causing committees to be born at a rather rapid rate. Those of us who had been running the program found we were now working part time for committees and spending large fractions of our time. . . justifying ourselves before these various committees at the Secretary of Defense level and within the Air Force." Convinced that "current budgets in research and development would not permit us to remain technically superior to the Russians in airpower," lacking "sympathy with the kind of organization that was set up to manage the ballistic-missile activity," and "alarmed that the total Air Force budget would simply guarantee us the second best Air Force in the future," Gardner resigned as Assistant Secretary of the Air Force for Research and Development and presented his views in a series of magazine articles early in 1956.[73]

Viewing the Wilson decision in retrospect Secretary of the Army Brucker would later remark that the Army's authority to develop an intermediate range ballistic missile stirred "another one of the services" which was "not interested except passingly in the IRBM" into immediate action and the competition advanced the missile program "over a year to a year and a half."[74] At Redstone Arsenal Major General John B. Medaris had already been designated to command an expanded Army missile activity in October 1955, and the Army Ballistic Missile Agency was officially established there on 1 February 1956. Paper studies on the Army's Jupiter missile had gotten underway in the summer of 1955, and, following the Wilson decision, plans to develop the Army IRBM went forward rapidly. The Jupiter would use the engines that the Air Force had developed for the Navaho booster and which would be used in the Atlas. Based on the belief that nuclear warheads smaller than those planned for land-based IRBM's and ICBM's could not be made available, the Navy participated in the initial planning for the Jupiter. In September 1956, however, the Atomic Energy Commission advised the Department of Defense that even smaller warheads could be developed, and as a result of this information the Navy sought permission to withdraw from the liquid-fueled Jupiter program and to develop a smaller, solid-propellant fleet ballistic missile which would be called the Polaris. Given Wilson's approval in November 1956, the Navy completely withdrew from the Jupiter program on 10 December 1956.[75] Following the Army arsenal concept the Army Ballistic Missile Agency served as designer and prime contractor for the Jupiter missile, and the Army contracted with the Chrysler for hand-tooled test quantities of the airframes required for assembly of the completed missile.[76]

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Admittedly presenting an Air Force view on the subject, Lieutenant General Irvine described both the Army Jupiter and the Air Force Thor as "fall-outs" from the Atlas program. The Army disputed this in the case of the Jupiter.[77] The Air Force Thor, however, was clearly derived from already going missile programs, following a plan that had been developed by the Western Development Division-Ramo Wooldridge team even before the Air Force assigned the intermediate range ballistic missile project to the Air Research and Development Command on 18 November 1955. The Thor (SM-75) would utilize already developed engines, nose cone, and guidance systems, and the only new contractor required for it was for the construction of the airframe. A letter contract was issued on 27 December 1955 to the Douglas Aircraft Corporation for the development of the SM-75 airframe and for assembly and testing of the missile. In less than a year after its development was ordered the first Thor arrived at the Air Force Missile Test Center, Patrick Air Force Base, Florida, on 18 October 1956. The first Thors were handmade articles, but the Thor had been set up on a production basis from its inception and the Douglas Company was prepared to begin production in quantity.[78]

When he directed in November 1955 that both the Army and the Air Force would develop intermediate range ballistic missiles, Secretary Wilson had announced that development of the missiles would not prejudice the roles and missions of the services. "I am going," he said, "to let Admiral Radford and the Chiefs take enough time to worry about. . . the specific roles and missions at some later date after we know what we have."[79] Army spokesmen nevertheless made it very clear that they wanted the intermediate range missile. Early in 1956 General Taylor boldly asserted the Army's claim to a 1,500-mile missile. "Our Army mission," he said, "is to destroy an enemy on the ground anyplace. . . . We are very interested in being able to use for Army purposes against Army targets any missile of any range."[80] After becoming the Chief of Army Research and Development, Lieutenant General Gavin urged that "TAC air is going out" and that the Army would need missiles to fight in an area such as "from the Black Sea to the Mediterranean where TAC has no requirements." Army leaders also urged that the Jupiter would be mobile and suited for field deployment, whereas the Air Force Thor would have to be deployed in fixed positions.[81]

In the event of future hostilities Secretary Wilson conceived that Army, Navy, and Air Force weapons would be employed by a unified commander who "would use all available weapons and all kinds of people that were made available to him," and for this reason Wilson was not too much concerned as to how a given weapon that might be developed would fit into the service roles and missions. He nevertheless requested Admiral Radford to discuss the effect of new weapons on the service roles and missions with the Joint Chiefs of Staff. While Wilson considered the advice of the Joint Chiefs of Staff, he apparently exercised his own judgment on the matter. The Air Force possessed reconnaissance,

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intelligence, and ancillary capabilities required to employ a 1,500-mile missile, and, as explained by a Defense spokesman, a 1,500-mile missile "gets into the strategic mission--strategic as distinct from the tactical part of the battle."[82] Announcing his decisions in a major policy document issued on 26 November 1956, Secretary Wilson ruled that the Army would continue to develop surface-to-surface missiles for the close support of Army field operations but that the Army's zone of operations would be defined as extending not more than 100 miles beyond the front lines and normally about 100 miles to the rear of the front lines. The dimensions of the Army combat zone would thus place a range limitation of about 200 miles on the design criteria for Army missiles. Wilson ordered that operational employment of land-based intermediate range ballistic missiles would be the sole responsibility of the Air Force, that operational employment of ship-based intermediate range ballistic missiles would be the sole responsibility of the Navy, and that the Army "will not plan at this time for the operational employment of the Intermediate Range Ballistic Missile or for any other missiles with ranges beyond 200 miles."[83]

* * * *

With the exception of the Army's Nike Ajax and Redstone, the Air Force's Matador, and the Navy's pilotless aircraft called the Regulus, Department of Defense missiles had not progressed beyond the research and development stage by the spring of 1957. Initially because of budgetary limitations and then because of the impact of the Soviet Sputnik, the Department of Defense faced many moments of truth during fiscal year 1958 when decisions had to be made on the acceptance or rejection of new weapons systems that were approaching readiness for production and operational deployment. These would be agonizing decisions at best, and the decision making process would be additionally complicated by the interservice rivalry which may have proven useful in hastening research and development but which resulted in a maze of claims and counterclaims as to the advantages or disadvantages of particular systems.

In July 1958 the Air Force faced the problem of maintaining a force in being that would deter large and small wars while simultaneously bearing the expense of developing missiles for future employment within a fiscal year 1958 expenditure ceiling of $17.9 billion.[84] Monetary considerations forced a sweeping reconsideration of the Air Force missile programs. As has been seen, Air Force developmental planners had assumed in the late 1940's that there would be a gap period between the time when piloted aircraft would be going out and ballistic missiles would be available for service and that air-breathing pilotless missiles would be valuable weapons in the transitional phase. In order to meet these requirements, the Air Force had put the SM-62 Snark, the SM-63 Rascal, and the SM-64 Navaho under development. Following then current logistical concepts an aviation company had been designated as the single prime

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weapon systems manager for the Snark, Rascal, and Navaho and the Air Force had intended to pursue a "fly before buy" policy. Many factors other than management were involved, but each of these programs slipped badly. None of the programs would be capable of operational employment by the middle 1950's. The elapsed time from program approval to the first operational unit deployment of the Snark would be 13.4 years. With all-out developmental priorities, including the Western Development Division-Ramo Wooldridge prime weapon systems management and a new concurrency concept of development--the cycle of development to unit deployment of the SM-75 Thor and the SM-65 Atlas was reduced to 3.3 and 4.9 years respectively. Had the Thor and Atlas been developed on a "fly before buy" concept, the Air Force estimated that their development to deployment cycle would have been nearly four years longer.[85] By early 1957 it was evident that the pilotless aircraft and the ballistic missiles would enter the operating inventory not at staggered intervals but at approximately the same time, and it was equally evident that the ballistic missiles would be the superior weapons.

By the spring of 1957 the Air Force had invested $679.8 million in the research and development of the Navaho spread out over the many years of the program. Facing the fact that the high-altitude cruise-type Navaho had been superseded by the Atlas and Titan, the Air Force cancelled the Navaho program on 8 July. While the Navaho program would never produce a weapon system, the Air Force nevertheless considered it had been "anything but an unqualified failure." For several years the Navaho program had permitted a continuing development of the large liquid-fueled rocket engines which in the end powered the Atlas, Thor, and Jupiter missiles. The inertial guidance system developed for the Navaho enabled the Navy's Polaris-equipped submarines to fix accurate positions at sea needed for missile firings. The design for the Mach-3 B-70 bomber was heavily based on a scale-up of the Navaho missile. And the North American X-10 test vehicle that was developed in the course of the Navaho program provided many of the design features which would be incorporated into the Hound Dog GAM-77 light-weight air-to-ground missile that would be speedily developed in lieu of the never satisfactory Rascal. At the cancellation of the Navaho, moreover, the North American Company was able to use its design team and facilities for the accelerated development of the Hound Dog when the contract for the development of this air-to-ground missile was awarded on 16 September 1957.[86] Unlike the Navaho, the Snark would be only a partial casualty to technological progress since it could enter the operating inventory prior to guided ballistic missiles. Although it would not be as efficient as a manned B-52 the Snark insured against a loss of aircrews, had quick reaction time, and could be programmed for low-level attack. Weighing these factors, the Air Force made the decision to reduce the end objective of the Snark program from one wing with 120 missiles to a group with 30 missiles which was programmed to enter the inventory

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in August 1959. The Snark--technically the world's first intercontinental missile after its successful 4,400-mile test flight on 31 October 1957--was considered to be a complement to the manned bomber force since it would confound an enemy's defense problem.[87]

On the basis of the high development priorities that President Eisenhower had extended to the intercontinental and intermediate range ballistic missiles, the Air Force and the Western Development Division (which was redesignated as the Air Force Ballistic Missile Division on 1 June 1957) assumed that the Atlas, Titan, and Thor would be programmed for full weapon systems development during fiscal year 1958. Alarmed about budgetary ceilings, however, the Secretary of Defense sent the National Security Council a list of proposed changes in the ballistic missile program, and in August 1957 the National Security Council and President Eisenhower concurred in the Secretary of Defense's recommendations. In brief, only Atlas would continue in weapon system production; Titan would remain in a status of a little more than development; and a Defense committee would evaluate Thor and Jupiter to determine which would continue in development.[88] In the summer of 1957, Secretary Wilson promised to make the choice between Thor and Jupiter before retiring from office. This and other decisions, however, were going to be made by Secretary of Defense Neil H. McElroy, who succeeded Wilson on 9 October 1957, just in time to have to reevaluate U.S. missile programs in the light of the Soviet Sputnik.[89]

Following the impact of the Soviet satellite, Secretary McElroy accepted Air Force plans for some acceleration of Atlas production and for programming nine Atlas squadrons, but he chose to continue to make evaluations of Titan, Thor-Jupiter, and an antimissile defense system. The Thor-Jupiter problem continued to be greatly complicated. In General Taylor's mind the assignment of operational Jupiter missiles to the Air Force amounted "virtually to killing the program, because this Army-built weapon has never appealed to the Air Force."[90] Lieutenant General Irvine on the other hand thought that the Thor and Jupiter were "about as alike as the Ford and the Chevrolet," and that one of them but not both of them ought to be selected for production. To produce both would be wasteful in duplicative training and ground support equipment. Irvine also argued that the Thor had been developed with "hard tooling" and was ready for production, whereas Jupiter was still an "experimental and prototype missile."[91] After deliberation, Secretary McElroy evidently felt that the combination of the two IRBM programs would accelerate the accumulation of knowledge in an area where little background was available, and on 25 November he decided that both Thor and Jupiter would be produced for the operational inventory. At this time McElroy directed the Air Force and the Army to produce and deploy 4 Thor and 4 Jupiter IRBM squadrons to recipient NATO nations between December 1958 and March 1960.[92] This decision did not immediately end the interservice difference over the concept as to whether the intermediate range ballistic

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missiles should be employed from a fixed but semihardened emplacement as the Air Force conceived or from mobile field positions as the Army wanted. The Army continued to program Jupiter for field mobility until November 1958, when the Air Force concept prevailed.[93]

In its post-Sputnik proposals for an accelerated intercontinental ballistic missile program, the Air Force recommended that Titan be expanded into a full scale weapon system and that Minuteman be put into development. On 12 December the Department of Defense gave its approval for a nine squadron Atlas force and a four squadron Titan force.[94] On 27 February 1958 the Department of Defense also authorized the Air Force to proceed with research and development on the SM-80 Minuteman missile, but it now appeared reluctant to proceed with the authorized weapon-system status for Titan possibly because of the expectation that the second-generation Minuteman would prove to be a superior missile. At any rate, the Department of Defense demanded a number of studies of the Titan as compared with the Atlas. Made during the summer and early autumn of 1958, these Air Force studies admitted that the cost for the logistical support for two ICBM systems would be about $200 million more than for a single system, but the Titan nevertheless held many potential advantages. It had more growth potential than the Atlas both for the extension of its range and for an increase in its payload, and the solid-structured Titan promised to provide a better vehicle for space exploitation purposes. Bringing both Atlas and Titan into the combat inventory would provide more missile units in a shorter time and would maintain a larger production base for missiles. Neither Atlas nor Titan had been fully tested, and the Air Force was reluctant to risk the security of the nation by adopting a single system until complete research and development proved it to be irrefutably superior. The task of hardening the Titan promised to be easier than would be the case with the thin-skinned Atlas, and Titan would use storable liquid fuel thus giving it a better reaction time.[95]

Jolted as much as the other military services by Sputnik the U.S. Navy promptly instituted an independent reevaluation of the Polaris intermediate range ballistic missile program which had gotten underway in December 1956. This program involved the deployment of solid-fuel Polaris missiles aboard nuclear submarines. By the earlier projections the Navy had planned to have the Polaris-equipped nuclear submarines ready for operation in 1963, but the Navy believed that it would be possible to accelerate the program and move the date of use up to 1960. Secretary McElroy approved this accelerated program in early December 1957.[96] Although the Polaris program involved a marriage of solid-propellant missiles with lightweight high-yield thermonuclear warheads, which had not been perfected, with nuclear submarines, that would have to be built, the Department of Defense considered Polaris to be a "low risk" program. The lightweight warhead had been guaranteed by the Atomic Energy Commission, the solid propellant missile had benefited from earlier technology, guidance systems were well underway because of the

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Atlas program, and the nuclear submarine Nautilus had been at sea for some time. The only thing that was not certain was whether or not a submarine would be able to launch the Polaris missiles from under the surface of the sea: if this proved impossible it would still be possible for the submarine to "pop-up" and launch its missiles.[97]

* * * *

Only a small suspicious cloud in the early 1950's, a divergence in Army and Air Force concepts of air defense stormed up rapidly with the development of what appeared to be competing technological capabilities but which was actually, as General White pointed out, "a disagreement or different point of view on what is the proper and most economical defense, point defense or area defense."[98] As viewed by General Taylor the Joint Chiefs of Staff agreement of 1949 which allocated primary responsibility for the development of short-range surface-to-air missiles to the Army and Navy was predicated on the understanding that the line of demarcation in air defense research efforts "was that the Army was interested in extending its traditional antiaircraft artillery role, which is largely point defense of vital targets, whereas the Air Force's legitimate interest was more in the interceptor role, so that the missiles they would go for would perform interceptor-type missions."[99]

As previously noted, the Air Force discontinued its research on short-range surface-to-air missiles after 1949, and it began to put together the Semiautomatic Ground Environment (SAGE) systems needed to control an area defense of the United States by fighter-interceptor aircraft and Bomarc ground-to-air pilotless interceptor missiles. Even though an earlier Project Wizard conducted by the University of Michigan Air Research Center revealed that there were no promising technological developments that appeared useful for a defense against a hostile ballistic missile attack, the Air Research and Development Command on 6 July 1953 directed its Air Force Cambridge Research Center-Lincoln Laboratory team to prepare a study plan for defense against intercontinental ballistic missiles. Based on the preliminary findings of this study, the Air Force awarded three study contracts to three aircraft-electronic company teams for the purpose of identifying the means needed to detect/identify and intercept/destroy hostile ballistic missiles. On the basis of these Project Wizard-3 study reports the USAF Scientific Advisory Board concluded that any quick-fix solution (such as the use of modified Talos or Bomarc missiles against hostile missiles) would be greatly expensive and not apt to succeed. While Wizard-3 did not succeed in its main purpose, it produced important bonus technology in the form of the development of high-powered radar with a detection range up to 3,000 miles, together with computers that would permit a quick determination of a ballistic missile's trajectory. Put into operation at a site at Milestone Hill near the

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Lincoln Laboratory the experimental radar was able to view missile firings from Patrick Air Force Base, Florida.[100]

The production and deployment of the Army's Nike Ajax ground-to-air antiaircraft missile beginning in 1953 did not contravene the Army-Air Force understanding about air defense since the Ajax was clearly a point-defense weapon with a range of about 25 miles. In mid-1953, however, the Army began to develop the Nike Hercules which would have a range of about 75 miles. Since the Nike Hercules would extend out into the range of the Bomarc, Lieutenant General Gavin predicted that "conflict" in air defense roles and missions would be almost "inevitable." In mid-1946 Lieutenant General Stanley R. Mickelsen, commander of the Army Antiaircraft Command, additionally predicted: "Nike is capable of killing any known guided missile and will be effective against the intercontinental ballistic missile when it materializes."[101] In November 1956 the Army approved an additional program for the development of an anti-missile system which would be known as the Nike Zeus.[102] At the same time that the Army was extending the range of its Nike family of missiles, General Taylor denounced a rumor that the Air Force intended to procure and deploy Navy-developed Talos air-to-ground missiles as "an invasion of the Army's antiaircraft mission."[103]

When Secretary Wilson was preparing his roles and missions clarification which he would issue on 26 November 1956, he noted that the Air Force wanted to deploy Talos missile installations around some of its air bases.[104] In an attempt to clarify the air defense mission in his memorandum Wilson directed that the Commander-in-Chief, Continental Air Defense Command, would have the authority and duty to state his operational need for new and improved weapon systems and for recommending to the Joint Chiefs of Staff all new installations of any type. He further directed that the Air Force would be responsible for "area defense" and that the Army would be responsible for "point defense." The point-defense surface-to-air missiles would be designed "for use against air targets at expected altitudes out to a horizontal range on the order of 100 nautical miles." Wilson directed that the Army would continue to develop the Nike Ajax, Nike Hercules, and would assume responsibility for development of the land-based Talos. The Air Force would continue to develop Bomarc, and the Navy was given a free hand to develop ship-based air defense systems.[105]

Even though Wilson's memorandum placed a limit on the range of Army point defenses, it did not change the Army's concept of how the air defense of the United States ought to be built. Employing Nike batteries of high-level coverage, Hawk missile batteries for low-altitude protection, and missile-master radar for the control of the individual batteries, the Army's concept of continental air defense involved a building block approach whereby ground-to-air missile protection would first be given to strategic air bases, population centers, and other vital points and then would be extended outward to protect the remainder of the nation as far as

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funds permitted. The Army urged that the independently controlled ground-to-air missile batteries would be difficult to destroy. On the other hand, it said that the elaborate communications through which the SAGE system would control Bomarc missiles and manned interceptors would be easier for an enemy to destroy.[106] The Air Force doctrine on air defense continued to visualize an area defense in which an air defense commander would maintain the integrity of his forces and would not permit them to be parcelled out, and it taught that the enemy should be intercepted and destroyed as far as possible from a defended area. "The principle of air defense," General White explained, "should be to strike the enemy just as far from his target as possible. The best defense is to hit him before he gets off the ground with his bomber or with his missile. . . . The worst and last-ditch business is over his intended target over here."[107]

In 1957, General Taylor along with other Army representatives urged the Secretary of Defense and the Joint Chiefs of Staff to accept "a crash $6 billion program in order to achieve an operational capability with the Nike-Zeus by 1961."[108] At this same time, the Air Force took a more measured look at the nation's defense requirements. It believed that the Soviet Union could have an initial operational capability with prototype intercontinental ballistic missiles sometime between mid-1958 and mid-1959 but that the Soviets would not be able to rely solely on this small capability to launch an attack against the United States. Thus up until about 1962 any attack against the United States would have to be made by a mass of Soviet aircraft supplemented by intercontinental ballistic missiles. Based on these estimates the Air Force visualized a requirement for an air defense system that would be able to counter a mixed-force threat. Since the Soviets would undoubtedly aim their missiles at American strategic retaliatory forces, the immediate Air Force objective was to provide three ballistic missile early warning sites (BMEWS) which--with 3,000-mile radar developed from the Milestone Hill model--would be able to provide approximately 15 minutes prior warning of the arrival of hostile ballistic missiles. Even this short warning time would permit the Strategic Air Command to launch a part of its strategic retaliatory force and might save the lives of many people who would have a little time to take cover.[109] Other than for this plan, General White was willing to admit that the nation's air defenses were not what they should be. "The active air defense," he said, "is a can of worms, to be real honest; there are so many different kinds of weapon systems. We have got the Nike; we have got the Bomarc; we have manned interceptors; we have the radar for not only the early warning but the actual tracking and control of fighters and of Bomarcs."[110]

Expressing himself as lacking enthusiasm for the manner in which continental air defense was being handled in terms of "area" and "point" defenses, Secretary McElroy announced that effective on 7 February 1958 he was going to establish the Advanced Research Projects Agency (ARPA) within the Department of Defense and would

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charge it to provide unified direction and management of the antimissile programs and for outer space projects.[111] Without awaiting the establishment of ARPA, McElroy directed the Air Force on 16 January to continue as a matter of urgency that portion of the Wizard program that would perfect early-warning radars, tracking and acquisition radars, communications links between early-warning radars and the active air defense system, and the data-processing components required to form an integrated system. He simultaneously directed the Army to continue its development effort on the Nike Zeus as a matter of urgency, concentrating on a system development that would demonstrate the feasibility of achieving an effective, active anti-ICBM system that could discriminate against electronics countermeasures and decoys. The Army would limit itself to work on the missile and launch system and to the development of acquisition, tracking, and computer components required for an integrated missile system. McElroy's directive thus made the Army responsible for designing an antimissile missile, while the Air Force was charged to create an effective missile detection system.[112]

While McElroy stated that the principal officers in the Air Force thought that his plan was "a reasonable way to proceed," General LeMay told questioning Senators on 21 January that the decision "does not add up to me, and it does not add up to the Air Force. The Air Force recommended that the two missions go together."[113] A little later, Secretary of the Air Force James H. Douglas expressed the optimistic hope that the directives covered no more than development and that a decision as to the operational assignment responsibilities had not been made.[114] As it was charged to do the Air Force promptly cancelled the three study contracts in which it was seeking means to intercept and destroy hostile ballistic missiles,[115] but Secretary Douglas continued to hope that, once developed by the Army, the antimissile defense--following the precedent of the Jupiter--would be placed under the Air Force for operational employment.[116] Chairman Carl Vinson of the House Committee on Armed Services was also disappointed at the split responsibility in the antimissile defense, and on 28 January he sent McElroy a letter expressing his committee's recommendation that the total responsibility for antimissile defense, operational as well as developmental, should be promptly assigned to the Army.[117]

While the divided Department of Defense authority for the development of an antimissile defense system would not be changed, the interest engendered in the subject resulted in some clarification in national air defense responsibilities. One problem that concerned the Air Force was a fear that, in the confusion of a national emergency, friendly Army air defense missiles might accidently shoot down Air Force planes. General LeMay was adamant about the need for a complete integration of Army weapons in a true defense in depth that would prevent losses of friendly aircraft to friendly antiaircraft missiles. "Our air offensive and our air defense," LeMay said, "cannot be permitted to interfere with each other. This

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requires extremely close direction and control to assure protection of our offensive and defensive forces and the most effective destruction of enemy forces."[118] In its report on the military construction bill for fiscal year 1959, the Senate Committee on Armed Services called attention to the fact that both the Army and Air Force had been making defense plans "without regard to the accumulation of long-range contingent liabilities," and the final bill passed by Congress required the Secretary of Defense to determine what missiles or combination of missiles were to be employed in specific areas. After more than a year's study of the very complex subject, the Secretary of Defense approved an Air Defense Master Plan on 19 June 1959 that projected the air defense system that was to be operational in the continental United States by fiscal year 1963. In broad detail the Secretary accepted the Air Force concepts of area defense, an integrated air defense in depth, and a centralized control of air defense weapons.[119] As will be seen, however, the Air Defense Master Plan would require marked changes and reductions in the Air Force continental air defense program.

2. Integrating Missiles into the Air Force

"To say there is not a deeply ingrained prejudice in favor of aircraft among flyers," stated General White, whose service as Vice Chief of Staff and Chief of Staff of the Air Force spanned the eight years after June 1953, "would be a stupid statement for me to make. Of course there is."[120] General LeMay, who became Vice Chief of Staff in July 1957 and would become Chief of Staff of the Air Force in July 1961, was similarly candid in a speech in Philadelphia in September 1961. "I seek weapon systems," LeMay said, "that I think can do the best job and afford the nation the most protection. In military thinking I am a conservative. I believe we shouldn't discard a proven, reliable weapon system or concept unless we have something that is able to replace it and do a better job. In short, I believe in having protection along with progress."[121]

The Air Force problem of providing "protection along with progress" greatly complicated all phases in the process of providing modernization. "In 1946, right after the end of the war," said Dr. Edward Teller, "we could have said: Let us develop ballistic missiles. . . . Well, we did go into the development of ballistic missiles, but at an exceedingly slow and small rate. We did not start a vigorous development because it could not be proved that these missiles will be really important." While the Soviets were apparently willing to take great gambles in their development programs, Teller noted that Americans were willing to spend billions when they knew there was a big payoff in prospect but were conservative when it came to spending even a few millions to begin to develop an area which no one could predict for certain would pay off. "In this intermediate range of practical reserach," he concluded, "we have been rather poor."[122] Speaking about barriers in

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Air Force missile development, Colonel Hall, who became chief of the Western Development Division's propulsion development, pointed out: "The barrier to be overcome was not of sound, or heat, but of the mind, which is really the only type that man is ever confronted with anyway." Hall noted that the Armed Services were compelled "to justify their development activities in terms of the economic validity of the gains to be achieved. No new weapon, however spectacular, can really be justified," he said, "unless it promises to perform military tasks at a lower gross cost than will any weapon system preceding it."[123]

At the same time that new weapons had to be justified in terms of lower gross costs, they also had to be justified within the Air Force in terms of operational suitability. To some extent the concept of force modernization impacted upon the requirement for combat readiness and made for a dichotomy between operational concerns and research and development that was closed only gradually. The original definition of the Air Force guided missile projects in 1945-46 was generated by a small group of men within the Air Staff who were almost entirely concerned with an expansion and exploitation of technology.[124] Senior Air Force officers accepted the proposition that the Air Force must develop experimental missiles, but they believed that "push-button" warfare was far from a reality. In the consolidation of missile development projects in May 1947, the Air Force gave priority to missiles that could support or defend against a strategic air offensive. The Air Force also accepted the decision that missiles would be integrated into the force structure as an evolutionary rather than a revolutionary undertaking. This policy required the Air Force "to program guided missile units in addition to its manned aircraft units, and as the effectiveness of the missiles is estabished the extent to which they will replace or supplement manned aircraft units may be considered."[125] In the light of this decision the Air Force did not make efforts to form operational concepts for missiles until 1952, nearly seven years after the technical projects had been established. Issued on 18 September 1952, the Air Force policy letter on guided missiles declared: "Concepts concerning the organization of pilotless aircraft units, their logistic support, and their tactical operation are being developed that basically adhere to existing concepts for Air Force operations. In short, it has become clear that the Air Force will incorporate pilotless aircraft into its organization with only slightly more readjustment than is necessary when new models of more conventional aircraft types are made available to its flying units."[126]

The thought that missiles had different characteristics from aircraft matured rather slowly. By 15 August 1955, however, the Air Force was willing to state a stronger policy which recognized that "guided missiles are weapons with special qualities." "Manned aircraft techniques," noted the new Air Force policy statement, "have, of necessity, been the basis in the past for most of the

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development practices and planning for use of missiles. Reluctance to depart from such development practices and planning procedures may prevent maximum progress." This policy still contemplated that a limited number of missile units would be formed by appropriate commands to provide operational data, but this action would have to be initiated during the research and development program. Plans for integrating missile units into the combat inventory, moreover, would have to be made even before operational data on the capabilities of the missiles was complete.[127] Apparently since little thought had been given to the conceptual problem earlier, the Air Force found itself in need of answers to many questions about missiles in 1956. "Will an airpower," asked Colonel Donohew in December 1956, "represented only by ballistic missiles located in this hemisphere represent a 'Maginot Line' concept and thereby cause a trend toward military isolationism? . . . How long will you require a dual force, manned and unmanned, before you are willing to accept the unmanned? How long will you wait before you will be willing to give up a manned unit and take an unmanned unit in its place? What sort of a kill capability will you insist upon in the unmanned weapon knowing that it will give you one sortie? How will you assure yourself that the unmanned weapon is always ready to go? Can you shift your thinking from a 'control of the air' concept based on actual combat operations to one of 'deterrent control of the air' based on unmanned weapon systems in being and capable of instantaneous launch? How much assurance of operational capability must you have before you will be willing to stake the future of this nation on the pressing of a button--a button that launches an attack which cannot be recalled?"[128] Answers to these conceptual questions had to be evolved separately in the Strategic Air Command, the Tactical Air Command, and the Air Defense Command.

* * * *

The Strategic Air Command's mission of maintaining a constant state of split-second combat readiness greatly complicated any aspect of force expansion or modernization. In the early 1950's the Strategic Air Command devised successful procedures for reequipping and retraining some of its wings while others continued to maintain combat readiness. The success of these procedures, however, demanded that new equipment should be virtually combat ready before it was assigned to strategic air wings.[129] As the result of the requirement established in 1944 the Air Force elected to develop a Boeing six-engine, medium-range B-47 jet bomber. The plane made its first flight in 1947, entered production in 1948, and in 1951 the Strategic Air Command received the first operational aircraft. The B-47 would become the standard aircraft for replacing the old B-29's and B-50's and equivalent reconnaissance types in the 26 medium bombardment and 5 medium strategic reconnaissance

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wings allocated to the Strategic Air Command in the Air Force 137-wing program. Evolving from studies begun in 1945 the Boeing eight-engine, long-range B-52 did not attain a final design configuration until 1950. Produced from a contract issued in February 1951, the first B-52 flew in April 1952. The first operational B-52 would be delivered to a SAC combat unit in 1955, and B-52's and RB-52's were programmed to replace B-36's and RB-36's in the 7 heavy bombardment and 4 heavy strategic reconnaissance wings allocated to the Strategic Air Command in the 137-wing program.[130]

In the original planning for the 137-wing Air Force expansion, the Strategic Air Command was allocated 8 strategic fighter wings and 2 strategic fighter reconnaissance wings, but how these wings would be employed or what their equipment would be reamined in doubt. In March 1951, the McDonnell Aircraft Corporation's XF-88A won the design competition for a long-range fighter, and after substantial modification and redesignation as the F-101A Voodoo this plane was slated for procurement and delivery to the Strategic Air Command in a fighter and reconnaissance configuration in the 1956-60 time period. What the Strategic Air Command actually wanted was an intercontinental-range fighter that could precede bombers to a target area in an advance wave and eliminate hostile interceptors, probably by delivering nuclear weapons against airfields. The only fighter that the Air Research and Development Command could visualize for this role would be as big as a medium bomber, and, declining to receive such a plane, SAC modified the 137-wing program to increase its B-47 wings from 26 to 28, with a corresponding reduction in fighter wing authority. In May 1956 SAC inactivated another fighter wing and replaced it with a unique light strategic-reconnaissance wing equipped at first with RB-57 aircraft. The 5 strategic fighter and 1 strategic fighter reconnaissance wings that SAC retained continued to be equipped with F-84F and RF-84F aircraft.[131]

Neither the B-47 nor the B-52 were supersonic aircraft, but studies initiated by Boeing and Convair in 1946 indicated the feasibility of a supersonic jet bomber and outlined its characteristics. After renewed studies started in 1949, the Air Force published a general operational requirement for a supersonic bomber in 1952. Both Boeing and Convair submitted designs, and the development contract was let with Convair in February 1953 for an XB-58 aircraft, a bomber which in many respects would resemble a "blown-up version" of Convair's F-102 Delta Dagger fighter interceptor. Following the new development concept, the B-58 would be developed by Convair as the single prime contractor and as a complete weapon system. After reviewing the B-58 program at a master planning board meeting in December 1954, a Strategic Air Command representative liked the supersonic capabilities of the aircraft but bluntly stated that the plane's lack of intercontinental range made it somewhat less than SAC desired as a replacement for the B-47 medium bomber. The Strategic Air Command continued to have reservations about the B-58 even after it was first flown in November 1956.

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Whether the Air Force would order procurement of the relatively expensive B-58 remained in doubt through most of 1957, pending performance tests of the prototype model.[132]

As soon as the B-52 was committed to production, Major General Power, then Vice Commander of the Strategic Air Command, requested on 30 March 1953 that the Air Force should undertake new developmental studies for a 1960-65 time period high-performance intercontinental bomber which should "embody the longest range, highest altitude, and greatest speed (in that order of priority), capable of attainment in the time period under consideration and consistent with requirements of military payload and defensive systems." Power pointed out that missiles would have to attain a high degree of accuracy and reliability before they could replace or supplement manned aircraft units. He further noted: "Regardless of the missile program, it is the opinion of this headquarters that the continued advance in the art of manned flight to high altitudes and long ranges should be at all times a priority objective of the Air Force's development program."[133] While Air Force aircraft had always utilized petroleum fuels, the Boeing Company, when given a one-year contract to study Power's request, proposed a new approach to the twin requirements of speed and endurance. The application of nuclear energy had been under study since 1946, and more recent investigations promised to develop a new high-energy chemical fuel. Boeing proposed to develop a nuclear-cruise bomber which would utilize high energy chemical fuel for a high-speed dash. In mid-1954 both the Joint Congressional Committee on Atomic Energy and the Air Force Council were enthusiastic about the importance of nuclear aircraft power, and Weapon System 110A--Advanced Strategic Weapon System--accordingly included a requirement for extensive studies on a nuclear cruise-chemical dash bomber. In July 1954, however, the Air Force ordered that as a hedge against the failure of the development of a nuclear power plant, parallel development would be devoted to a weapon system designed only for chemical power. After additional study the Air Research and Development Command in April 1955 effectively divided the two power projects: Weapon System 110A became the "chemical bomber" and a new Weapon System 125A was established for the development of a nuclear-powered bomber.[134]

In the autumn of 1950 when it became apparent that research and development might soon provide strategic missiles the Strategic Air Command established a guided missiles project office in its Directorate of Plans. The Strategic Air Command's criteria for pilotless aircraft was soon stated to be reliability, accuracy, minimum vulnerability, and operational suitability.[135] On 17 August 1951 General LeMay stated that the Strategic Air Command's policy was "to get into the guided missiles business at the earliest possible date and further to get guided missiles into the war plans at the earliest possible date. These two objectives are to be accomplished without sacrificing combat capability."[136] "It is only by staying ahead," wrote Brigadier General R. M. Montgomery,

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the SAC Chief of Staff, on 2 October 1953, "that we can stay on top." Montgomery nevertheless expressed SAC's concern that the Air Force appeared to want to program the Rascal missile into SAC's wings before the Rascal demonstrated any operational capability, and he pointed out that SAC could not afford to put B-36's or B-47's into a modification for conversion to a capability that appeared to be of questionable operational worth.[137] In response to an Air Staff request for an exact statement of SAC policy on guided missiles, Montgomery stated on 18 April 1954: "the nature of the mission assigned to the Strategic Air Command by the Joint Chiefs of Staff requires the maintenance of a constant state of combat readiness. This is turn establishes a firm requirement for any weapon system which is integrated into the SAC inventory to possess a proved and demonstrable combat capability in terms of range, accuracy, and reliability." At this time the Strategic Air Command could see some compatibility between the Rascal and the B-36, but it believed that if the B-47's were required to carry the stand-off missile they would be seriously degraded in range and in altitude characteristics. The Strategic Air Command was even more skeptical about the potential operational worth of the Snark: in its existing configuration the Snark appeared to have little potential as an operational weapon system.[138]

In the Air Force in the early 1950's there were predictions that guided missiles would be the "exclusive vehicle for future air war" and that the Soviet Union might skip the jet bomber stage of aircraft development technology and jump directly into guided missiles. Brigadier General Dale O. Smith argued against the first prediction in November 1953. Smith believed that the art of war would continue to be "a contest of wills, strategy, and quick decision based upon fragmentary information." Only a pilot in a manned air vehicle would be able to appraise situations that could not be predicted in advance.[139] The second prediction appeared invalid when the Soviets gave no signs of skipping jet bombers and developing missiles. On May Day 1954 in the fly-by over Moscow the Soviet Air Force openly paraded numbers of new TU-16 medium jet Badger bombers, which evidently were in quantity production, and a single Type 37 Bison heavy turbojet bomber, which apparently was a prototype of an intercontinental aircraft needed to attack the United States.[140] Following an Air Research and Development Command briefing on new weapon systems late in 1954, General LeMay accepted the proposition that the ICBM would be the ultimate weapon in the SAC inventory, but he asserted that manned bombers would be the primary weapon for a long time to come. He urged the assignment of the highest priority possible to the development of the Weapon System 110A together with penetration aids to include an air-to-surface missile expansion of the heavy bomber force, and early development and production of an air-to-surface missile for the B-52. He recommended discontinuation of the Rascal program and elimination of the Snark if it detracted from Weapon System 110A.[141] In a study prepared for

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the Air Research and Development Command on 27 May 1955, Major General Yates described the deficiencies in guided missile programs as tracing back to a superficial recognition at top-levels of the government of the potential dominance of missiles and the relative underemphasis on guided missile development within the Air Force primarily due to a preoccupation with manned aircraft.[142]

In the spring of 1955 American intelligence continued to be fearful of Soviet aircraft development. At the May Day 1955 celebration in Moscow the Soviets displayed 13 Type-37 Bisons and at least 3 (some observers counted 9) turboprop TU-95 Bear heavy bombers. This display indicated that the Soviets had put the intercontinental Bison into production fully a year before such was predicted and that the even more formidable Bear might also be in production. At this same air show the Soviets displayed 43 twin-place all-weather Flashlight jet interceptors, enough to make it evident that these "very dangerous" swept-wing fighters were already operational in air defense units.[143] These aircraft sightings demanded an immediate reassessment of Air Force capabilities. The size and composition of the Strategic Air Command had been computed early in 1954 on a war gaming of the then-existing JCS target list and expected combat attrition rates. Based on a floating D-day B-52 production rates were fairly leisurely and were predicated on a 40-hour week without overtime at Boeing's plant in Seattle. In order to reduce the potential vulnerability of a single-source production of B-52's the Air Force had already asked for a second source of production. When he received the news of the Soviet aircraft sighted over Moscow, Secretary Wilson acted swiftly to expand B-52 production and to bring a second Boeing plant into operation in government owned facilities in Wichita, Kansas. In an expeditious action, Wilson secured Eisenhower's approval for the action within the National Security Council and by-passed the Bureau of the Budget. On 26 May Secretary Talbott and General Twining appeared in executive session with the Senate Armed Services Committee and received approval for accelerating B-52 production by 35 percent. Emergency budget actions added some $356 million for increased aircraft procurement to the budget for fiscal year 1956.[144]

Even though Secretary Wilson supported the expansion of B-52 production he announced his opposition to any enlargement of the Air Force beyond its goal of 137 wings slated for attainment by the end of 1956.[145] Since 137 wings had become a "magic number" representing the "ultimate in airpower," the Strategic Air Command had to effect changes within its internal force structure in order to schedule more bombers against an expanding target spectrum. While SAC had programmed 7 heavy bomber wings and 4 heavy reconnaissance wings as separate functions, it quickly determined that the requirement for bombs on targets would be more important than poststrike reconnaissance and secured authority to shift reconnaissance wings into bombardment work on 1 October 1955. This represented a more than 50 percent increase in long-range B-52 bombardment capability.[146] soon as it got some operational experience with B-52's, the Strategic

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Air Command also found it feasible in the spring of 1956 to program 45 B-52's per wing as opposed to the former allocation of 30 B-36's per wing.[147] Based on these actions, and also counting additional planes allotted for combat support and testing, the Air Force ended up with a total authorization for 603 B-52's.[148]

In spite of the authorized augmentations of the Strategic Air Command General LeMay was anything but optimistic when he appeared before the Symington air power committee hearings in April 1956. LeMay explained that in order to get best results from a small number of well-qualified technical personnel, SAC had formerly concentrated its air units on a few air bases. Now LeMay emphasized that SAC would have to expand its base system in order to reduce its vulnerability. Pending a new war gaming of Soviet capabilities, LeMay was not prepared to say how much larger the SAC force should be, but he knew that it should be larger. He wished the Air Force to press forward with the development of an intercontinental ballistic missile, but he doubted that the first models of these weapons could be as efficient as manned bombers. "I think," he said, "it is reasonable to say that the first ICBM will augment the manned bomber force; and at some later date will supplant a portion of the manned bomber force. But I do not believe that in the foreseeable future the ICBM will replace all of the manned bomber force." LeMay urged that the ICBM be developed "with the utmost urgency," that a follow-on manned bomber to the B-52/KC-135 combination be produced "at the earliest possible time," but, "before then," he said, "we need more B-52's."[149] In meetings in Omaha and Washington on 6 and 13 June 1956, LeMay and key SAC officers stated the following priorities for production and development: (1) B-52's, (2) B-52's plus penetration aids, (3) Weapon System 110A, (4) Weapon System 110A plus penetration aids, (5) Navaho, (6) Atlas, and (7) Weapon System 125A. LeMay stated that even after the Navaho and Atlas were fully developed, the Strategic Air Command would still require manned bombers in order to strike the targets designated for it.[150]

Although the basic idea had long been tacitly accepted, the Air Force definitely announced in 1956 that it would adhere to a concept of maintaining a mixed force of manned air vehicles and guided missiles. In an article published in September 1956, Major General Richard C. Lindsay, Air Force Director of Plans, pointed out that missiles had unique characteristics but were still characterized by relatively large circular error probabilities and would be operationally inflexible once they were launched. "It appears unlikely," he wrote, "that guided missiles will completely replace aircraft in any mission area during the foreseeable future. It looks as if the future force structure will be mixed in varying degrees depending upon the job to be accomplished. . . . A look at the technical estimates of the surface-to-surface missiles' future capability in relation to manned aircraft and the targets to be attacked indicates that about fifty percent of the Strategic Air Command's mission could sometime be accomplished with guided missiles."[151] General Twining suggested early in 1957 that the phase

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out of manned bombers and fighters would have to be slow and could not be undertaken until missiles were operational and had proven their worth. In Twining's opinion missiles with large warheads would be effective against area targets, but they would not be effective against precise targets such as enemy airfields for many years. "As I see it now," he said, "I would employ a bomber force to go get the airfields rather than gamble on missiles."[152] Expressing basic agreement with the Air Force Chief of Staff, Major General Schriever stated: "This ballistic missile is largely a retaliatory weapon, and it would be used against an enemy's economy."[153] Summing up the Air Force position on a mixed force, Colonel John B. Tipton of the Air Force plans directorate pointed out in May 1957: "The unique characteristics of missiles of all types, both offensive and defensive, make them superior to manned systems in many respects and they will replace manned systems when demonstrated capabilities indicate those tasks which they can do better or cheaper. In most respects, however, missile systems are complementary and not competitive."[154]

As it had been projected to do the Strategic Air Command completed its expansion to the 51 wings authorized to it under the 137-wing program in May 1956, but even as this objective was accomplished the changing world environment was already rendering the force goal obsolete and it was also apparent that the Air Force could not support 137 wings and continue to modernize them without additional appropriations. Based upon an appreciation of the fact that "the number of bombers we require is a function of the targets we must hit, the time period in which our strikes must be completed, the effectiveness of the enemy warning and defense system and the degree of protection and dispersal we can provide our force against his attacks," General Twining agreed that the Strategic Air Command needed additional B-52's. In preparation for the fiscal year 1958 budget estimates, Twining asked the Joint Chiefs of Staff to accept a requirement for six additional B-52 wings, making a total of 17 heavy bombardment wings. Given the development of an air-to-surface stand-off missile, Twining estimated that the B-52 could continue to be an effective delivery system through 1965 and very probably beyond that period. As long as the Strategic Air Command's medium bomber groups had been equipped with relatively-slow B-36 bombers, SAC required strategic fighter aircraft, but the B-52's would be expected to defend themselves and SAC's six fighter-type wings could be eliminated thus making way for higher priority programs. According to Twining, the Joint Chiefs of Staff refused to accept the requirement for expanding the number of B-52 wings, particularly since the aircraft complement of each of the 11 B-52 wings was being expanded from 30 to 45 aircraft. As a result, the Air Force budget for fiscal year 1958 visualized the already approved 11 wings of B-52's. Twining accepted this decision with evident reluctance: "If the enemy continues his building program of long-range bombers," he warned, "we will again examine the size of our B-52 force."[155] The Strategic Air Command nevertheless divested

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itself of its fighters. In the first half of 1957 the four most experienced strategic fighter wings were transferred to the Tactical Air Command, and the other strategic fighter wing and the strategic fighter reconnaissance wing were inactivated.[156]

At the same time that he sought additional numbers of intercontinental bombers to program against an increasing number of targets in an increasingly severe defense environment, LeMay also subscribed to the concept which defined a deterrent force as "an effective nuclear offensive force which is secure from destruction by the enemy regardless of what offensive and defensive action he takes against it."[157] At its establishment, the Strategic Air Command had inherited many bases in the United States that had been built in good-weather areas for use in training units that would fight overseas. Most of these bases were thus in the southern part of the United States, and were poorly located for transpolar intercontinental air missions. During the 137-wing expansion, moreover, nearly all SAC bases had to accommodate two wings. Even with inflight refueling the medium-range B-47's had to be programmed to conduct their offensive strikes from bases in Europe or in the Pacific, bases which were hazarded by Soviet TU-16 Badgers during the middle-1950's and would soon be covered by Soviet intermediate range ballistic missiles.[158] Seeking to provide increased security and to compound the enemy's offensive force requirement, General LeMay recommended in 1956 that no more than one squadron of B-52's and one wing of B-47's should be located on a single base. The Air Force accepted the objective of so dispersing the B-52's during fiscal year 1958, but it could not immediately afford to disperse the much larger number of B-47 wings.[159] As eventually worked out the solution for the dispersal of the B-47 wings included thinning them down to one wing per base and designating an additional 80 to 100 alternate airfields to which B-47's would disperse in periods of international tension.[160]

The survival of strategic aircraft on a given air base was also related to the degree of alert practicable and the amount of warning time available. With the Distant Early Warning line in operation against Soviet jet aircraft, LeMay counted on getting two hours tactical warning time and believed that it would be possible to get something like 60 percent of his aircraft into the air in this time. Against a Soviet ICBM attack, however, the zone of interior bases could count only on about 15-minutes tactical warning, and oversea bases would be fortunate to get as much as 10-minutes advance notice of Soviet IRBM strikes. As a part of their normal training some aircraft crews were always in a state of readiness for missions and could quickly be diverted to retaliatory strikes. Already looking forward to the era of intercontinental missiles, LeMay began preparations in 1956 to secure a degree of ground alert readiness which would enable his wings to launch as many aircraft as possible in 15 minutes. "If we can get this alert concept worked out to a point where we can operate under it with a high degree of efficiency," he said, "then I think that even though the Russians have the intercontinental missile that they will still have to consider that question:

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Will we accept this number of bombs?"[161] The ground alert concept was expensive in requirements for alert facilities and additional aircrews, but by the winter of 1956-57 SAC was planning to keep 30 percent of its crews and aircraft on ground alert. This planning was quickly matured after September 1957, and in July 1958 the command placed approximately one-third of its combat-ready fleet on continuous ground alert.[162]

One of the principal reasons why LeMay wished to build up SAC's B-52/KC-135 intercontinental capability was a realization that oversea bases would become increasingly vulnerable to Soviet medium-range bombers and IRBM's.[163] Rather than to continue to risk entire wings at advance bases, the Strategic Air Command instituted a "Reflex concept" of forward deployment to bases in North Africa in July 1957. Under this concept designated B-47 wings periodically rotated small numbers of crews and aircraft to the forward bases where they stood runway alerts for short intervals of time. The "Reflex" concept was subsequently extended to deployments at bases in Spain, the United Kingdom, and in Alaska. In forward deployments to the Pacific an "Airmail" concept maintained alert B-47 aircraft in place on Guam, while aircrews were rotated to and from Guam at monthly intervals.[164] As SAC increased its force of intercontinental B-52 bombers, oversea bases became less vital to the accomplishment of the strategic air mission.[165] Speaking as a RAND expert Albert J. Wohlstetter argued in 1959 that overseas bases had so little warning time as to make them of little value in case of a general war. On the other hand, Air Force officers maintained that the continued use of these admittedly vulnerable bases gave additional flexibility and efficiency to the strategic attack, added complexity to the timing of a Soviet surprise attack, and permitted the B-47's to operate from ranges nearer to their targets. "The knowledge that SAC is a truly global force," pointed out Lieutenant General Walter C. Sweeney, Jr., Commander of the Eighth Air Force, "complicates Soviet targeting and dilutes his war effort." In view of the increasing danger of Soviet IRBM attack the Strategic Air Command began to reduce the size of the "reflex" deployment in August 1959, but both "Reflex" and "Airmail" would continue to maintain alert B-47's at oversea bases.[166]

As he was nearing completion of his long assignment as commander of the Strategic Air Command in the spring of 1957 General LeMay was dissatisfied with the rate of modernization of the strategic air arm, but he believed that the Strategic Air Command had made the plans which would permit it to maintain its effectiveness both as a deterrent and a war-winning force. Looking toward the era of intercontinental missiles, LeMay's plan required the development of an all-intercontinental force including ICBM's, maximum dispersal, and maximum ground alert.[167] Because it was concerned about finances and the maintenance of combat-ready capabilities the Strategic Air Command continued to question Air Force plans to put Snark and Rascal into operation. Snark seemed

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to be of questionable superiority to other strategic systems and Rascal appeared to be practically useless in an environment requiring alert forces. After attending a briefing in Omaha, Secretary of the Air Force Quarles stated on 9 February 1957 that "a tried and proven manned bomber force should not be reduced and replaced by an untried missile force. However, it is vital that the Air Force get on with development and procurement of missiles."[168]

Writing in the summer of 1957 shortly after he became Air Force Chief of Staff, General White agreed that the ballistic missile was "less flexible than the manned bomber" but he pointed out that "its addition will definitely add a considerable measure of flexibility to our forces as a whole." He reasoned: "Its reaction time and speed of flight are very valuable characteristics in a situation requiring immediate response to an attack. The ballistic missile will also permit greater versatility for our forces by relieving the manned bomber of those heavily defended targets where the cost of attacking with bombers would be too high and where precise accuracy is not mandatory. In considering the characteristics of the bomber and the ballistic missile, it appears that for many years to come an optimum force will make best use of both weapons."[169] Even though White believed that "there is no question that SAC as presently constituted is the only thing between us and oblivion and will be for a long time to come," he also believed that "the Air Force was late in realizing the potential of missiles" and that "the top level of the Air Force does not know enough about missiles." When he addressed an Air Force Commanders' Conference on 30 September 1957, White warned: "The senior Air Force officer's dedication to the airplane is deeply ingrained and rightly so, but we must never permit this to result in a battleship attitude. We cannot afford to ignore the basic precept that all truths change with time." He pointed out that money limitations would not permit an indefinite continuation of overlapping missile and aircraft capabilities. More thought should be given to missiles and to the effect that antiaircraft missiles would have on high-level bombing. White thought that Air Force officers had never respected antiaircraft artillery, and he directed SAC to begin a study of the potential effect of nuclear antiaircraft missiles on high-level bombing. White also stated that he wanted Air Force officers to stop criticizing Snark and Rascal. This was not intended to curtail individual thinking, but the Air Force would need to present a solid front on the subject of missiles. "With the advent of the guided missile," White emphasized, "the U.S. Air Force is in a critical era of its existence. It is essential that we all pull together in the effort to properly utilize this family of new weapons systems for the defense of our Nation."[170]

In his address to the Air Force commanders on 30 September, White presented an Air Force "credo" on missiles, and this statement was soon released to all major commanders and to the public as the USAF policy on missile development and employment. This policy statement read:[171]

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1. The USAF has long recognized the potential of missiles. According to current roles and missions the Air Force has the greatest need for such weapons.

2. Missiles and aircraft can be combined, capitalizing on the performance and characteristics of each, to create a formidable instrument of air power considerably greater than the use of missiles or aircraft alone. The creation of such an instrument is a primary object of the Air Force.

3. Missiles, as they are perfected, will supplement and complement the manned aircraft. However, to preserve the required capability and flexibility of operations, it is essential that the air force maintain a significant force of manned aircraft during the foreseeable future.

4. The Air Force has and is continuing to develop missiles for use in the strategic, tactical and air defense roles as fast as technology and the availability of funds will permit.

5. As rapidly as missiles become operationally suitable, they will be phased into units either to completely or partially substitute for manned aircraft according to military requirements.

During the 1950's General LeMay had demanded that new weapon systems must not be assigned to the Strategic Air Command until they were operationally perfected. In view of this demand as well as in an effort to provide the earliest initial operational capability for intercontinental ballistic missiles the Air Force had assigned the whole responsibility of readying missile squadrons to the Air Research and Development Command on 18 November 1955. Seeking to compress time schedules to the maximum the Western Development Division and its successor Air Force Ballistic Missile Division instituted a new concept of concurrent development whereby operating personnel were trained, base facilities were built, and the missiles were developed and tested all at the same time.[172] Several factors impeded this concurrent development planning. Base construction funds were hard to come by, and the siting of IRBM's in NATO countries required intergovernmental negotiations. In 1956 Secretary Quarles directed a "poor man's approach" or a stretch-out of programs to save funds. Planning had to be coordinated with SAC, and LeMay opposed any rigid initial operational capability plans that might freeze designs and commit missiles to quantity production before a first missile had been tested. Work was nevertheless begun on a "soft" missile base at Camp Cooke, California (subsequently Vandenberg Air Force Base) in May 1957, and in August the Air Force selected Warren Air Force Base, Wyoming, and Lowry Air Force Base, Colorado, for development as Atlas and Titan initial operational capability bases. With Air Staff approval, the Air Research and Development Command

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activated the 1st Missile Division at Camp Cooke on 1 April 1957 to supervise training and operational phases of the initial operational capability program.[173] By the autumn of 1957 the Air Force Ballistic Missile Division had the nucleus of an initial operational missile force in being, and at the Commanders' Conference in September General White told the new SAC Commander, General Thomas S. Power, that he wanted SAC to get "into the picture as soon as possible without 'rocking the boat' and upsetting the overall program." On 29 November White accordingly announced that he had transferred the 1st Missile Division to SAC, along with responsibility for the initial operational capability of both the ICBM and IRBM programs. The transfer of the 1st Missile Division to SAC, and the simultaneous establishment of an Office of Assistant Commander-in-Chief SAC for Missiles (SAC-MIKE) in Inglewood, California, became effective on 1 January 1958.[174]

After hearing General White's presentation at the September Commanders' Conference, General Power remarked that missiles ought to be kept in perspective lest an impression be created "that the bomber is through."[175] General LeMay shared this same fear. Appearing before a Senate investigating committee in December in what he described as an "atmosphere of sputniks and intercontinental missiles, when accusations and denials seem to be flying around," LeMay observed: "Our main deterrent power today is a manned bomber and a nuclear-weapons system. It is going to be our main deterrent and our main protection." Believing that "the proposals that are in the mill on increasing the missile program are ample for the time being, maybe a little bit strong," LeMay argued that the main danger lay not so much in the far future but in "not modernizing the force that we are depending on today to keep us out of trouble, not doing it fast enough."[176] To LeMay and Power the modernization of the Strategic Air Command required new manned aircraft as well as missiles.

Representing the culmination of some four years of preliminary studies and intensive design competitions, the Air Force awarded the North American Aviation Company a contract on 1 June 1957 to initiate development of a long-range Mach 3 jet interceptor to be designated the F-108. Following a similarly long and intensive study and design competitions, the Air Force awarded North American on 24 January 1958 another development contract for Weapon System 110A, a revolutionary Mach 3 intercontinental jet bomber that would be designated as the B-70. The two development programs were carefully designed to mesh and save developmental costs. The cost of developing common items such as engines, escape capsules, and fuel systems were to be spread between the two programs. It was planned that both new planes would enter the operational inventory by 1965 and would complement missile capabilities in the decade 1965-75. In this period the Air Force assumed that surface-to-surface strategic bombardment missiles would be vitally important but that because of uncertainties about their reliability, accuracy, flexibility of

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employment, and relative immobility the use of missiles would be limited, initially at least, to unhardened and accurately-located targets. The manned-bomber system would provide the only known means of destroying smaller, more fugitive, hardened targets that required accurate attacks with high-yield weapons. The manned weapon system would be usable in major conflict, in a limited war with limited weapons, and in lesser conflicts in which a simple show of force would be sufficient. "In addition," pointed out Major General Ferguson, Air Force Director of Requirements, "man provides discretionary capabilities for target discrimination, malfunction correction or override, timely evasion maneuvers and judgment in selection and employment of penetration aids. These attributes, coupled with the bomber's flexibility of employment (heavy payloads with mixed weapons, intelligence collection, damage assessment, best altitudes and penetration routes, recallability and recoverability) are important considerations to the probability of success in a strategic campaign."[177] Speaking of the B-70 and the Atlas in March 1958, Lieutenant General Irvine explained: "We think we need both. We think we cannot afford to pin the hopes of the nation on just 1 machine and 1 solution to the military mission. . . . From the standpoint. . . of what it costs to take out a target, it costs you more to take it out with an intercontinental ballistic missile than it does to take out a number of targets with bombers, plus the fact that you have control of the bomber force. You can start bombers toward the target and call them back. . . . I do not know how to show your teeth with a missile, particularly when you have it in the silos, and you do not want the enemy to know where they are."[178]

In the winter of 1957-58 Generals White and LeMay considered that the development of intercontinental ballistic missiles and the supersonic B-70 would take care of the future, but the immediate task was to do something more immediately to continue aircraft modernization and give protection to the Strategic Air Command. In the immediate aftermath of the Sputnik, Secretary McElroy requested the Joint Chiefs of Staff to study and recommend highly important items where defense could be augmented with additional funds. To meet this request the Joint Chiefs recommended only the items which they agreed were most important. Originally these items were to have been added to the fiscal year 1959 budget, but McElroy instead secured Eisenhower's approval to submit them to Congress in January 1958 as a supplemental appropriation for fiscal year 1958. This supplemental request totalled $1,270 million, of which $910 million was allocated to the Air Force. Much of the funding was designed to provide the Strategic Air Command with warning, dispersal, alert facilities, and additional personnel to stand the alerts. Of the $1,270 million, $219 million was to accelerate the SAC dispersal and alert program, $329 million was allocated to the construction of a ballistic missile detection system, and $683 million was requested to permit acceleration of the Atlas, Thor, Jupiter, and Polaris

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programs. In his original submission of items for the added program, White asked the Joint Chiefs to approve the construction of new bases for tanker aircraft in Canada and the Arctic; this request, however, was not accepted by the Joint Chiefs as a priority item and accordingly was not included in the supplemental request for fiscal year 1958 funds.[179]

The subject of aircraft modernization plans for the Strategic Air Command came under debate during the consideration of the military budget for fiscal year 1959. Already reduced to a total of 44 combat wings, the Strategic Air Command stood in danger of being "caught with 10-year old B-47's and B-52's." Since SAC's B-52 strength was fixed at 11 wings, the B-52 production line at Wichita was slated to close after fiscal 1958 procurement orders were delivered. The last B-47 was delivered to the Air Force in 1957.[180] The Strategic Air Command was also "tanker-limited." While in command of SAC, LeMay had proposed that new KC-135 tankers should match the new B-52 bombers on a one-to-one ratio, but in view of budget limits and with the expectation that with a little warning some bombers might be able to operate from oversea bases LeMay had reluctantly agreed with the Air Staff decision to procure B-52's and KC-135's on a three-to-two ratio. Even if the Air Staff had agreed to the one-to-one ratio, moreover, the ratio would have been difficult to have attained since the KC-135 was put into production about a year and a half behind the B-52.[181] At a meeting of the USAF Aircraft and Weapons Board in June 1957, a SAC representative continued to reject the proposal that his command be scheduled for six wings of range-limited but supersonic-dash B-58's. The Board nevertheless supported the B-58 because it was the nation's only hope for the attainment of a supersonic bombing capability prior to 1966 and because it feared that the B-52 might not be able to penetrate hostile defenses in the early 1960's. At another meeting of the Board in November 1957, however, the Air Force Directorate of Operations recommended additional B-52's rather than B-58's. General LeMay also indicated that he favored the B-52 over the B-58 because it could carry more electronic equipment and had an intercontinental range. Still the Office of Secretary of Defense had ruled against procurement of additional B-52's, and on 26 December General White made the final decision that SAC would receive some B-58's, the final number to be determined after operational testing. As a result of these decisions, the Department of Defense budget for fiscal year 1959 submitted to Congress in January 1958 contained no funds for additional B-52's but included the purchase of 47 B-58's at an estimated cost of $796.6 million. This initial order was intended to be a test quantity rather than a production order, and because of increased cost quotations the number of aircraft to be procured had to be reduced to 36 planes. While the budget hearings were in progress, LeMay emphasized that SAC ought to have one KC-135 tanker for each B-52 bomber, but the Air Force nevertheless continued to program the three-to-two bomber-tanker ratio.[182]

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At least a part of the Office of Secretary of Defense opposition to the procurement of additional B-52's arose from the belief that these planes would be vulnerable to Soviet missile defenses. Early in 1958 two separate developments promised to reduce B-52 vulnerability. The Strategic Air Command demonstrated that it would be feasible to conduct low-altitude attacks with the B-52's, thereby reducing the effectiveness of Soviet antiaircraft defenses. Following the award of a research and development contract on 16 September 1957, moreover, the North American Aviation Company made rapid progress in developing the GAM-77 Hound Dog missile. This turbo jet missile would allow B-52's to deliver nuclear warheads against hostile targets or defenses without entering defended areas. The B-52's would be able to carry Hound Dog missiles on pylons under their wings, thus augmenting their armament. On the basis of these new developments, the Air Force was authorized to submit an amendment to the fiscal year 1959 budget on 2 April 1958. As subsequently approved by Congress the amendment authorized the procurement of 39 additional B-52G aircraft at an estimated cost of $300.5 million. With these planes the Air Force was able to schedule one of the B-47's wings for conversion to B-52's, and the purchase order continued production lines in being for a possible 1960 reorder of additional aircraft.[183] When it was tested during 1958 the B-58 Hustler proved potentially useful. Although the supersonic-dash B-58 could not be adapted to air-alert tactics such as were being worked out for the B-52 force, SAC conceived that the B-58's were admirably suited for "Reflex" operations. They could be rapidly deployed to forward airfields overseas, from which by virtue of their high speed they could get over their assigned targets very quickly. The principal drawback to the B-58 continued to be its high unit cost. In order to conserve funds, the Air Force Directorate of Operations recommended cancellation of B-58 purchases in August 1958, but by this time General Power was willing to inform General White that: "The B-58 is a program vitally important to SAC and the nation."[184]

In an effort to clear up what appeared to be an apparent indecision as to its requirements, the Strategic Air Command stated on 7 July 1958 that basic Air Force programming ought to pursue objectives designed to secure: (1) the modernization of the bomber force; (2) the attainment of an effective ICBM capability as soon as possible; (3) the aggressive support of research and development of the most promising systems for the long term; and (4) the attainment of compatible alert and dispersal programs to insure maximum response to any situation. At this time, SAC criticized "the spoon feeding of many weapon systems in an attempt to satisfy the projected requirements of all agencies." While it recognized that parallel missile development programs might have been necessary to forward the state of the art, SAC now recommended that the time had come for the immediate termination of such programs as the SM-62 Snark, the GAM-63 Rascal, and the SM-78 Jupiter. In consonance

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with its force objectives, SAC recommended that the priorities in the procurement of weapon systems should be: (1) KC-135 tankers, (2) B-52G bombers with Hound Dog missiles, (3) B-58 bombers, (4) B-70 bombers, (5) SM-65 Atlas missiles, (6) SM-68 Titan missiles, and (7) Minuteman missiles.[185] Lending emphasis to this command letter, Power stated in February 1959: "No. 1 priority in SAC--and I am talking about the immediate future and taking full consideration of time--in buying this country military posture of deterrent value, is the KC-135 B-52G combination with the HOUND DOG missile."[186]

During the summer and autumn of 1958 the Air Force accepted only a part of the Strategic Air Command's recommendations. Unable to forecast the exact capabilities of intercontinental ballistic missiles, General White preferred to pursue a somewhat loose bomber procurement program that would add B-52's and B-58's to the SAC inventory in annual procurements, with two wings of B-47's to be retired for each modern B-52 and B-58 wing that could be organized. These annual procurements of modest numbers of B-52's and B-58's would ensure that the production lines were kept open. General Power was not happy with this program: he had begun to conceive that the Strategic Air Command might have to stress an air alert rather than a ground alert posture, and he wanted 20 wings of B-52's as soon as possible rather than the stretched out Air Force program.[187] Although the initial operational date slipped to December 1960, General White wanted to have one squadron with 30 Snark missiles in place at Presque Isle, Maine, because the Snark would be the world's first operational intercontinental missile and because it would confuse enemy defenses. As SAC had long urged should be done and in view of the fact that the B-47's would be phasing out, the Air Force cancelled the SM-63 Rascal program in November 1958; this program had cost $448 million and had not provided a useful air-to-surface missile. Further development on the ground-launched diversionary SM-73 Bull Goose missile--which had cost $136.5 million--was cancelled in December 1958. This missile would have been fired while the B-52's were proceeding to their targets and would have compounded the identification problems of Soviet air defense radars; it would not be useful if the B-52's began to operate from an air alert posture since once launched it could not be recalled.[188] In a speech delivered in September 1958, General White summed up the Air Force response to the missile crisis. "First," he said, "the missile threat did not invalidate our bomber strike force. For a long time to come, this force with its great range, its capacity to carry nuclear weapons of various size and yields, and its improved electronic countermeasures, could still perform the job it was designed to do. Furthermore, because of the human intelligence factor aboard, the bomber strike force has the added advantages of recall capability and greater flexibility in target selection and tactics."[189]

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From a purely theoretical viewpoint ground-launched guided missiles appeared to have unique qualifications that fitted them for employment in both air defense and tactical air warfare missions. A missile could maneuver more abruptly than a piloted aircraft, it had a greater range per pound of vehicle, it was capable of greater operational altitude, its automatic delivery system eliminated many human frailties and errors, and it could operate at speeds far superior to manned aircraft. A missile could also operate at night and in all kinds of weather without degraded capabilities. Since no pilot would need to be protected from a weapon's blast, a Bomarc could be provided with a large nuclear warhead. In a 24-hour air defense alert, manned fighter efficiency degenerated as men got tired, but a guided missile did not become fatigued and it did not wear out unless it were fired. In tactical employment, Matador missiles could be operated from widely dispersed field installations, thus augmenting security against hostile attack.[190]

But while missiles appeared to be well fitted to air defense and tactical air missions, few defense strategists agreed on the exact proportions of these missions that could eventually be performed with them. In September 1956 Major General Lindsay predicted that "only about thirty percent of tactical targets would probably be suitable for attack by guided missiles" but he thought that in the air defense mission guided missiles "may be capable of taking over a greater percentage of the job than in any of the other areas."[191] Appreciation for the unique qualities of the Matador tactical air missile led to its production and deployment to oversea theaters beginning in 1954, and during this same year the Air Force began research and development on an improved version of this weapon system which was designated as the TM-76 Mace. Speaking of the Matador in May 1956, however, Generaly Weyland said: "It is a supplement to, adds to, the flexibility, but it certainly does not replace the manned airplane."[192] But a month later General Taylor visualized that "the trend will be toward the substitution of the missile, the Army-controlled missile, for what we call close support of ground forces."[193] Asked to speculate on the future of manned fighter aircraft in February 1958, General LeMay replied: "I think their importance is going to diminish in the future, particularly in the tactical role--the fighter-bomber types, for instance. I think we are going to require a manned vehicle in the air defense role for some time to come."[194] Only two months later, Major General Ferguson wrote: "To an airman, the need for manned aircraft in tactical air operations is obvious. Tactical war is a war of movement. After fixed targets have been attacked, the problem is to seek out and destroy the moving targets. Often these targets are fleeting. They must be attacked as soon as they are observed, or they are gone. Here, missiles are of very limited use without necessary reconnaissance. The manned aircraft, on the other hand, carries with it both a reconnaissance capability to find the target and weapons to destroy it. The tactical fighter bomber is designed

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with the flexibility for attacking not only the fixed and pinpointed target, but also the target that must be located."[195] And in April 1958, Weyland had occasion to repeat what he described as his "long-held conviction that tactical surface-to-surface missiles, ballistic or cruise, can only be considered as a supplementary and secondary offensive tactical weapon to the manned airplane. Their actual tactical usefulness will be limited, will complicate the enemies' defense, but will be more psychological than tangibly destructive in value."[196]

One of the chief reasons for the confused thinking about the comparative values of missiles and manned aircraft in the air defense and tactical air missions arose from the fact that technological potentialities in both media were rapidly developing and posed a constant strain upon limited research and development funds that could be made available. In the early 1950's both air defense and tactical air units were equipped with first-generation jet aircraft that were procured in quantity during the Korean War. Possibly because of difficulties and costs arising from the quantity production of the F-100 Super Sabre before the plane was adequately tested, the Air Force pursued a very cautious porgram of procuring new fighter aircraft which Trevor Gardner described as a "fly-before-you-buy philosophy."[197] Because it had great confidence in the North American Company which had produced the F-86 Sabre and because it needed an improved day fighter to oppose vast numbers of Soviet MIG-15's, the Air Force put the F-100 Super Sabre into quantity production in mid-1953 before it was adequately tested. Since the fire control system on the Sabre had been satisfactory it was assumed that a similar system would be acceptable in the F-100 and no complete weapon system specification was written for the F-100. This was not to be the case, and trouble with the Super Sabre's fire control system proved costly to correct and delayed operational availability of the plane.[198] After this the Air Force was unwilling to gamble and followed the Cook-Craigie production plan quite methodically. Aircraft were put into production at a very low monthly rate for one or two years with a minimum of hard tooling, while engineering tests uncovered deficiencies enabling corrections to be fed back into the production line. This procedure reduced the risk of a loss of money which might occur if production tooling were created too early, but under it from four to six years could elapse before production could provide operational quantities of new aircraft. Only then could operational readiness testing begin. "It has been my unfortunate experience in the aircraft business," remarked Lieutenant General Irvine, "that you can test until you are black and blue in the face on a handful of machines, but you never know what you really have, you never get a real operational capability until you have a whole wing's worth, a tactical unit in operation and actually submit them to the test of a true military mission a number of times."[199]

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Even though the modernization of air defense and tactical air wings progressed slowly and methodically, the sharply increased costs of this new equipment, when added to the soaring costs of missile development, made it impossible for the Air Force to retain a modernized 137-wing force in being, once it was attained in June 1957, without promise of a substantially increased annual budget.[200] As a matter of fact the Air Force attained a 137-wing strength--which included 50 strategic, 32 air defense, and 55 tactical air wings--only by seizing upon the expedient of redesignating a strategic fighter escort wing as a fighter-bomber wing and by counting a Matador wing and four troop carrier assault wings as tactical air wings. Five fighter wings previously scheduled for organization under the 137-wing program were cancelled.[201] Reductions in force immediately followed the theoretical attainment of the 137-wing objective. By June 1958 Air Force strength was reduced to 117 wings, including 28 air defense and 45 tactical air wings, and continuing reductions were planned.[202]

The Air Force did not attempt to defend the reduction in air defense wings in terms of the development of either Nike or Bomarc missiles.[203] The severe cuts in tactical air strength, however, closely followed the Wilson memorandum of 26 November 1956 which stated that the Army should reexamine its requirements for air support as it continued to develop surface-to-surface missiles for employment within the battle zone. Admiral Radford justified the tactical air reductions as being "desirable and advisable" since a tactical air force based on "big fields in close proximity to the enemy is very vulnerable to destruction." "Missile support of the Army," he said, "is probably better dispersed and not so vulnerable."[204] Lieutenant General Irvine justified the deletion of light bombers from tactical air strength because they were duplicative of the new capability to be provided by intermediate range ballistic missiles.[205] General White was confident that "the Army with their Corporals, Honest Johns, atomic artillery, and so on, supplant the tactical capability that we have eliminated."[206] As has been seen, General Taylor actively urged the concept that the Army would prepare to perform an increasingly large proportion of its own support with organic missiles, but he nevertheless wished to ensure "that as the Air Force support goes down that of the Army's units is coming up proportionately."[207]

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When they talked about the subject, the top-level defense leaders tended to equate tactical air power with the support of ground forces, but to General Weyland, who was at the head of the Tactical Air Command, the experience of World War II and Korea had demonstrated that the close support of ground forces amounted to only 15 percent of offensive tactical air effort. "Attainment of air superiority through offensive operations and interdiction of

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communications systems," Weyland pointed out, "have always been and continue to be primary missions of theater or tactical air forces."[208] Within the Tactical Air Command it appeared that the portent of tactical nuclear weapons promised to accentuate the lessons of World War II and Korea. Experience obtained from the testing of Army and Air Force forces under nuclear battle conditions during Exercise Sagebrush in November and December 1955 tended to confirm the Tactical Air Command's thinking. "Air superiority," wrote Major General John D. Stevenson, the Tactical Air Command's Director of Plans, "has had a different meaning as a result of Exercise Sagebrush. No longer does the force with numerical air superiority alone necessarily enjoy air superiority. Air superiority cannot be established as long as the opposing force retains any bases from which to launch a strike force with an atomic capability. One of the most important lessons learned from the exercise was that the force initiating the attack attained a tremendous advantage. In fact in both tactical phases the force initiating attack was able to attain and maintain air superiority and to win the counterair war. Although initiating an attack is not recommended, an operational concept that will give friendly forces a chance of survival during the initial phase of a nuclear war is very much needed."[209]

Based upon the lessons of Korea and projected tactical air atomic warfare requirements, the Tactical Air Command conceived the need for the employment of a family of tactical air fighters in a forward area: fighter-bombers, day fighters (air superiority), and fighter-interceptors (all-weather). Experience indicated that each of these plane types ought to be able to perform the other's missions in the event of an emergency, but the same experience also indicated that it would be difficult, costly, and perhaps impossible to design and procure an all-purpose fighter.[210] In 1952, for example, the Tactical Air Command placed a requirement for a light-weight, high-performance day fighter that would be cheaper and yet able to out-perform heavily stressed fighter-bombers in air-to-air combat.[211] The conceptual difference between the tactical day fighter and the air defense fighter involved building into the former an ability to close on and destroy multiple air targets in fighter sweeps; the air defense fighter required all-weather capabilities and a high probability of single-pass destruction of hostile bombers and fighters.[212] The fighter-bomber weapon system was designed to destroy enemy targets during daylight hours and in good weather, but its limited, night, all-weather, and ordnance carrying capabilities established a companion requirement for a tactical bomber weapon system which was envisioned as a system that would provide a capability to perform missions previously handled by light bombardment and night intruder aircraft.[213] The Tactical Air Command also had a requirement for "a reconnaissance version of the latest day fighter. . . to obtain critical visual and/or photographic reconnaissance of targets, such as airfields

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and missile sites located in highly defended areas." While tactical air forces had in the past needed a reconnaissance version of a light bomber to perform all-weather and electronic reconnaissance, the Tactical Air Command believed that the advancing state of the art could enable these functions to be performed by an all-purpose reconnaissance fighter.[214]

Even before the Sagebrush maneuver the Tactical Air Command recognized that any aircraft based on forward airfields would be extremely vulnerable to enemy air attack, especially since the enemy would have to be accorded the privilege of the first strike. This vulnerability could be reduced by new concepts of tactical employment and by the development of new tactical air equipment. The tactical approach to the problem involved the establishment of a new concept of forward and rear bases, with a minimum number of highly alert air units kept in the forward areas and the bulk of the air units to be located at safer rear-area bases. Beginning a scheme of operations similar to the Composite Air Strike Force (CASF) concept in 1954, the Tactical Air Command kept two fighter squadrons of a fighter group in the United States and rotated a third squadron from the group to such combat airfields in Europe as Dreux and Chaumont in France and Aviano in Italy. Weyland felt that at the outset of hostilities in an oversea area, "One combat squadron, without its dependents, will actually have more combat capability than the entire wing would if it had the families and children around there to worry about." In an emergency or at the outbreak of hostilities the Tactical Air Command planned that the two squadrons from the United States would immediately deploy overseas to join the single squadron that was on the alert in the forward area.[215] The chief difficulty in developing this concept to its fullest was a deficiency in suitable tanker aircraft. In order to implement the CASF concept, the Tactical Air Command secured KB-29 boom-type tankers that were released as the Strategic Air Command converted its force to KC-97 and KC-135 tankers. The KB-29's that had been employed by SAC were not completely satisfactory: the Strategic Air Command could well employ flying-boom refueling equipment since its tankers normally refueled a single bomber at one time, but the Tactical Air Command needed drogue-type refueling which would permit several fighters to refuel from a tanker in one rendezvous. As soon as possible, the Tactical Air Command secured KB-50 tankers that were equipped with multiple refueling drogues. All of the tankers allocated to the Tactical Air Command were conventional aircraft, and, just as was the case with the Strategic Air Command, the Tactical Air Command's jet fighters actually needed jet tankers in order to accomplish refuelings at jet speeds at altitudes up to 35,000 feet. The jet fighters needed to operate at higher altitudes, and at such altitudes weather would not interfere with refueling operations.[216]

The development of new equipment offered some prospects for reducing the vulnerability of tactical air forces. As has been seen, Weyland considered that the Matador missiles which were deployed to

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Germany and Taiwan and the follow-on Mace missiles which were slated for service in Germany and on Okinawa added to the flexibility of tactical air forces since they could be directed at fixed targets such as ports and airfields and could be employed as necessary at night and in bad weather. But Matador and Mace were air-breathing "buzz-bomb" missiles and they could be intercepted and destroyed by an alert enemy. Weyland also favored the development of tactical ballistic missiles, but these missiles would lack flexibility and he could not consider them as substitutes for manned tactical aircraft.[217] The developmental concepts of vertical takeoff and landing (VTOL), short takeoff and landing (STOL), and zero launch (ZEL) aircraft promised to reduce the vulnerability of tactical air units, since these aircraft could be widely dispersed. Weyland was willing to accept the possibility that such aircraft might be eventually developed but he was not too sanguine about it. By the mid-1950's tactical aircraft were already up to a Mach 2 airspeed capability, and none of the "tail sitter" aircraft could promise anything like this potential performance.[218]

On the basis of a great amount of thinking, Weyland considered that the Tactical Air Command visualized an evolutionary program that would enable it to continue to perform tactical air missions in a nuclear age.[219] The success of the program would depend upon a continuing modernization of the force with new aircraft and with an appropriate expenditure of research and development effort. Seen in retrospect, however, the Tactical Air Command's program required too many different types of aircraft,[220] especially since research and development allocations for tactical air weapons systems enjoyed very poor priorities. As nearly as could be computed, only 8 percent of the Air Force research and development effort was assigned to tactical air weapon systems in fiscal year 1959.[221] Up until 1958 most fighter-bomber and tactical reconnaissance units were equipped with F-84F Thunderstreak and RF-84F Thunderflash planes. As a result of Weyland's strong protest that the F-84F required more powerful engines to perform an atomic delivery mission, the Republic production line was changed over in 1955 and the remaining planes on order there were turned out as F-84J Super Thunderstreaks.[222] While the F-100 was originally designed as a day fighter and the F-100A and F-100C continued in this role, the Air Force decided in 1955 to develop an F-100D which would have added provisions for the delivery of external ordnance and would serve as a fighter-bomber.[223] The fact that the F-100D's could double as day fighters made the designations of "fighter-bombers" and "day-fighter" wings questionable. In the autumn of 1957 moreover the Tactical Air Command was committed to deploy a fighter-bomber unit on rotation to Europe but was compelled to substitute a F-100D day fighter unit.[224] For these reasons effective in July 1958, the Air Force dropped the day fighter and fighter-bomber nomenclature in favor of a "tactical fighter" designation. The mission of a tactical fighter wing became one of either attack or defense. Released when the Strategic Air

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Command no longer required escort fighters, the long-range all-weather F-101C Voodoo and the RF-101 Voodoo photo-reconnaissance aircraft entered the operating inventory of the tactical air forces in May 1957. First flown in February 1954 the light-weight high-performance F-104 Starfighter air superiority fighter came into use in the Tactical Air Command in 1958.[225]

Although the trend was apparently not identified when it began in the post-Korean War years, the Air Force practice in selecting tactical air weapons moved away from the concept that produced aircraft designed and optimized for specific roles toward a principle of versatility in mission capability. Looking toward an all-weather tactical bomber and reconnaissance plane that could be available at an early date, the USAF Aircraft and Weapons Board recommended in November 1951 that an Air Force version of the Navy's A3D attack bomber should be utilized. The Air Force issued quantity procurement orders to this plane in 1952 and it was designated as the B-66/RB-66.[226] On the basis of a response to a qualitative operational requirement issued in April 1952 for a new tactical bomber to replace the B-66 in the 1958-63 time period, a development contract for an XB-68 was awarded to the Martin Aircraft Company.[227] The action was entirely unrelated at the time to the tactical bomber program, but in February 1952 the Republic Aviation Company proposed to develop an improved F-84X fighter-bomber. So many configuration changes were specified that the plane was designated as the F-105 when the Air Force awarded Republic a contract for its development in September 1952. Although the F-105 thus came into being without a preceding general operational requirement, it was expected to be the first aircraft specifically designed as a fighter-bomber. It was to have a Mach 2 airspeed and an ability to carry either nuclear or conventional weapons. A reconnaissance version of the plane was planned, and both versions were to be operational in 1958.[228]

When necessary design changes were made the B-66/RB-66 emerged as a virtually new airplane, bearing only a superficial resemblance to the Navy A3D. But the changes were not all satisfactory: an already developed K-5 bombing system, for example, had to be fitted into the already firm airframe, and the plane would never be suited for low-level operations. Poor results attained in the maiden flight on 28 June 1954, necessities for many modifications, program slippages, and shaky accomplishments brought the B-66 program to a verge of cancellation in May 1955. Finally in January 1956 the Air Force elected to procure only enough B-66B's to equip the light bombardment wing serving in Europe with these planes and to outfit the remaining aircraft on the order as RB-66 reconnaissance aircraft.[229] In these same years the RF/F-105 development program progressed slowly because of scant funding and program reductions, but the YF-105A performed well on its first flight on 22 October 1955 and was heartily endorsed by the pilots who subsequently flew it.[230] Seeking to find some suitable all-weather bombing aircraft after the Air Force restricted procurement of B-66's, Weyland proposed in

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June 1956 that the F-105 be developed in a two-place version with a modified K-5 bombing system in order that it might serve as an interim all-weather attack aircraft until the XB-68 was available.[231]

Based on the decision to develop intermediate range ballistic missiles the Air Force reviewed requirements for light bombers and cancelled the Martin XB-68 project on 3 January 1957. Weyland strongly protested against the elimination of all-weather attack capabilities in theater air forces, but General White reminded him that the Air Force could not invest in duplicative capabilities. White believed that tactical missiles should be employed against most fixed targets in a theater and that strategic bombers could destroy such targets as were not susceptible to attack by theater air forces. "Rather than develop a separate tactical air force all-weather bombing capability," White wrote on 17 May 1957, "I feel that a plan of complementary operations between tactical and strategic forces must be perfected, that we must reorient our concept of operations to integrate the capabilities of our allies, and that policies and guide lines must be accordingly revised." After a running exchange of correspondence, Weyland salvaged some concessions. As long as replacement parts permitted one wing of B-57's and one wing of B-66's could continue in the tactical air inventory. The Air Force also agreed to provide F-105's with all-weather attack capabilities.[232] Based on these decisions the F-105 Thunderchief was put into large scale production in the summer of 1957 as the designated replacement aircraft for F-84's, B-57's, B-66's, and F-100's.[233]

Although General White yielded some points to General Weyland during 1957, he continued to question whether the tactical air forces would have a continued validity in a missile era. Justifying the action by citing the increased effectiveness as well as the increased cost of tactical aircraft and the planned activation of four Army missile commands, White announced early in 1958 that the Air Force would be reduced from 117 to 105 wings during fiscal year 1959, mainly through the inactivation of tactical air wings.[234] At the same time that these reductions were put forth, Air Force program planners offered an informal proposal for a worldwide reorganization of tactical air forces. This study visualized that at the outbreak of a general war up to 500 tactical fighters and 144 tactical reconnaissance aircraft assigned to the Tactical Air Command might well be isolated in the United States, unable to deploy overseas or to contribute substantially to the war mission. The study recommended that the Tactical Air Command's assigned units be severely reduced, that oversea tactical air forces be augmented, that rotation of tactical air units from the United States to oversea areas be discontinued, and that the Tactical Air Command be reduced to a replacement training mission. The study was based on the key assumption that the Tactical Air Command could not position its tankers to support an emergency war plan mid-Atlantic crossing without conflicting with the deployments of the Strategic Air Command

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and the Military Air Transport Service.[235] Weyland protested the drastic changes contemplated in the study. He was willing to accept added training responsibilities, but he was not willing to give up the concept of worldwide tactical air mobility radiating from a central reservoir of strength in the United States. In response to Weyland's protests, White was unwilling to reject the planning study, but as had been the case with the tactical-bomber controversy an interchange of White-Weyland letters resulted in some strengthening of the tactical air position.[236]

The attention focused upon the problem of refueling tactical aircraft during worldwide deployments was wholesome. Tests had already shown that the Strategic Air Command's KC-97 tankers could be equipped with a boom-to-drogue adapter that would permit them to refuel either bombers or fighters. In February 1959 General LeMay directed that the Air Force would seek to establish a single fleet of KC-97 and KC-135 tankers equipped to serve all combat aircraft that required aerial refueling, and on 3 May 1960 the Air Force would establish this single tanker force under the management of the Strategic Air Command.[237] Early in 1959 Brigadier General Momyer, now the Tactical Air Command's Director of Plans, stated that the Tactical Air Command would attempt to move to a standardization of its aircraft. He noted that a "multiplicity of weapon systems had been a plague to the TAC inventory over the years." During 1959 the Tactical Air Command also perfected a new concept of tactical air power that hinged upon a clear distinction between the requirements for general and small war forces. The new concept visualized that theater deployed air capabilities ought to begin an evolutionary transition that would prepare them to perform general war missions. These missions could best be performed with missiles. Under the concept manned tactical aircraft would be returned to the United States and held in a central reservoir from which they could be deployed as necessary for the accomplishment of small war tasks or in support of a general war nuclear missile exchange. After being briefed on the new concept early in 1960 General White announced: "Our tactical air effort, both overseas and in the zone of interior, is a prime function for which manned aircraft will be needed as far into the future as I can see. We should retain for ourselves the truly flexible weapon system--aircraft--and turn over to our allies the relatively inflexible missile business."[238]

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As viewed by the Continental Air Defense Command--Air Defense Command the problem of providing an air defense system for the nation was essentially one of preparing forces capable of effective action against a series of rising plateaus of Soviet offensive capabilities. Active air defenses had to be maintained against a current plateau of Soviet threat, and forward air defense projections

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had to comprehend successive plateaus of Soviet offensive capabilities. Since they were unable to forecast future technological capabilities, the air defense planners saw little choice other than to credit the Soviets with the ability to possess offensive capabilities that would be roughly equivalent to those that would be possessed by the United States at predictable intervals in the future. Air defense doctrine taught that the four major functions to be performed for a successful accomplishment of the mission were detection, identification, interception, and destruction. These functions would have to be accomplished in the minimum possible time, since air defense planners had to accept the probability that the Soviets would achieve tactical surprise and that the first warning of an impending attack would be generated within the air defense system.[239] Predicated upon national aims and objectives, the Air Force accepted the concept of providing an area defense for the continental United States that would: (1) Provide for the earliest tactical warning of impending attack to permit deployment of alert strategic offensive forces and to alert active and passive defenses. (2) Maintain continuous surveillance of attacking forces throughout the area of combat. (3) Apply maximum-effect weapons at the maximum possible distance from target areas. (4) Employ continuously increasing numbers and types of defensive forces as the attack progressed from a penetration of the combat zone toward the target areas. And (5) provide centralized control of the air battle over large geographical areas.[240]

During World War II the P-47 Thunderbolt and the P-51 Mustang had served as all-purpose fighters, but in January 1949 the Air Force Board of Senior Officers believed that it would be impossible to develop all-purpose aircraft in the future. This Board pointed out that F-80 and F-84 fighters were already marginal in their capability to intercept aircraft of the B-29 type, and that, based on the design analysis of a few B-29's that had been forced down in Russia during World War II, the Russians had built a copy of the B-29 known as the TU-4. The Soviets were building a long range air force around the TU-4, and the mission of American air defense would demand the development of a pure interceptor aircraft to be available by 1953-54.[241] Having determined that the new interceptor would be developed as a weapon system, the Air Force put its electronics and control system under development contract in July 1950 and initiated a design competition for the development of an air vehicle. As these decisions were being made the explosion of a Soviet A-bomb and the beginning of the Korean conflict demanded an immediate augmentation of United States defense against a Soviet TU-4 air attack capability, which might take the form of one-way missions flown against the United States. A temporary network of radars known as "Lashup" was rushed to completion in California and in the vital northeastern and northwestern sections of the nation. Other "islands" of air defense radar were established in Alaska and in the Northeast Air Command. Beginnings were made to a more

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permanent system of modern radars to replace "Lashup." On 10 November 1950 the United States and Canada agreed to construct a line of aircraft control and warning radars across southern Canada that would be known as the "Pinetree Line." In an interim action to provide defense against the TU-4 threat, the Air Force developed and procured F-94, F-89, and F-86D all-weather fighters for the Air Defense Command. The F-94 and the F-86D were adaptations of existing aircraft.[242]

The Air Force description of the pure interceptor aircraft which would be needed for service in 1954 as issued for design competition on 18 August 1950 displayed uncertainties as to the type of ground electronic environment in which the new plane--which would be designed to counter a Soviet B-47 (Badger) or B-52 (Bison) type threat--would be employed. The design requirements described a single-place plane that could operate in either local or area defense from 5,000-foot runways, have a radius of 375 nautical miles, and be capable of an altitude of 60,000 feet. The requirements description noted that manual techniques of aircraft warning and control would impose "intolerable" delays in a jet air age but did not attempt to describe the new ground environment that would be needed.[243] When the design competition was completed the Convair Aircraft Corporation was given a prototype development contract for the 1954 all-weather interceptor weapon system in July 1951. Late in 1951 the Air Force recognized that the design specifications for the 1954 interceptor were so advanced that they could not be attained by 1954, and it accordingly directed Convair to work toward the development of an interim interceptor to be known as the F-102A and to continue work toward an ultimate aircraft that would later be designated as the F-106.[244]

While work was beginning on the 1954 interceptor the United States substantially broadened the ground environment electronic systems in which interceptors would be expected to work. Many of the decisions about the ground environment were intergovernmental decisions, which could not be foreseen exactly in military planning. In order to provide additional early warning the Air Force won the right in 1951 to procure Navy-developed RC-121 airborne early warning and control aircraft that could cover the Atlantic and Pacific sea approaches to North America. In order to push radar defenses farther northward, Canada and the United States agreed in October 1953 to proceed with the construction of a Mid-Canada radar line, and, after extended study and controversy over costs, the United States decided early in 1954 to build the Distant Early Warning (DEW) line within the Arctic Circle.[245] The DEW and Mid-Canada lines were planned for warning rather than for the control of interceptor aircraft, but it was apparent that the ground electronic environment was being spread out over an area that could not be covered with a 375-mile radius-of-action F-102. The short range interceptor fitted into "island defense" rather than a broad area air defense. Recognizing these facts the Air Defense Command

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and the Air Research and Development Command began to visualize a requirement for a two-place long-range jet interceptor, and on 19 February 1954 the Air Force outlined requirements for such an aircraft. In June 1954 the Air Research and Development Command recommended that the single-place F-101 Voodoo, originally programmed as a long-range escort fighter for the Strategic Air Command, should be adapted into a long-range interceptor. The Air Defense Command was willing to accept the F-101, but the Air Force preferred to delay a decision until it could hold a design competition to get information on the possibility that an optimum long-range interceptor could be developed. Held in the summer of 1954 this design competition would stimulate interest that would eventually yield the design of the F-108, but it promised nothing that could soon be available. The Air Defense Command apparently wanted more than industry could provide prior to 1960 or later, unless the Air Force would be willing to accept a four-engine fighter of virtually the same size as an airborne early warning aircraft. Facing these facts the Air Council on 16 February 1955 directed the procurement of two-place F-101B Voodoo fighters to serve as interim long-range interceptors.[246]

In view of the importance of attaining the F-102/F-106 capability as soon as possible, the Air Force ordered the expedited development of the F-102. Early in the program the contractor was authorized to construct an initial quantity of 42 test aircraft and to tool up for a production of 125 a month. Even before the first F-102 was produced it was evident that the plane would be subsonic rather than supersonic. In cooperation with the Air Force and the Navy, the National Advisory Committee for Aeronautics had been studying supersonic flight, and a NACA scientist provided an area-progression rule that showed that an aircraft with a fuselage shaped in a "Coke bottle" configuration could sustain supersonic flight of the highest regime. By the time that Convair recognized that it would have to redesign the F-102 according to the area-progression rule, the first 10 vehicles were so far along the production line that they had to be built in the original subsonic configuration. The contractor then had to retool, but the next model was also unsatisfactory because it was too heavy. Four of the overweight versions were produced before the contractor was able to tool up a third time for the first acceptable version of the F-102 Delta Dagger, which made its first successful flight on 19 December 1954 and became operational in mid-1956. Development of the follow-on F-106 Delta Dart was slowed by the attention given to the F-102, but the F-106A made its first test flight on 26 December 1956 and the two-place F-106B was first flown on 9 April 1958. The F-106 was placed in quantity production in fiscal year 1957, when F-102 production was closed out. Viewed in retrospect the F-102 story revealed a long gap between perception of need and program accomplishment. The time from the establishment of the requirement in 1948 to the completion of the program in 1958 was ten years.

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The cost of the F-102 program was some $2.3 billion, and at least $30 million worth of tooling was said to have been discarded in the process of developing this plane.[247] In view of the gap that was going to exist before the F-102 and F-106 could become operational, the Air Defense Command accepted another interim interceptor. This was the tactical air superiority F-104 Starfighter, which had not been designed as a fighter-interceptor and possessed electronic equipment that was not compatible with the semi-automatic ground environment that the Air Defense Command was installing. Although reluctant to take the day fighter, the Air Defense Command recognized that it could get the F-104 without great delay, and in April 1956 it asked for six squadrons of the plane. While the F-104 was a flashy performer, it never met air defense requirements. In August 1957 the Air Force eventually limited F-104 programming to only two wings of aircraft and cancelled further production of the plane. At this time the Air Defense Command was rescheduled to receive only four squadrons of F-104's.[248]

At the same time that the Air Force was seeking an optimized interceptor aircraft it was also visualizing the requirements for a ground control environment that could handle a jet air battle. A modern jet bomber could cross the entire area covered by one radar in a very few minutes. The air defense rule of thumb thus visualized that the DEW line would provide the initial detection of the hostile attack, the mid-Canada line would confirm the attack and order an interceptor scramble, and the Pinetree line and the permanent radars in the United States would direct the interception.[249] Even before the full extent that the warning network would take had been determined, Air Force planners recognized that the supersonic speeds of jet aircraft demanded a new electronic means of handling the detection-identification-interception tasks. The old procedures by which personnel passed aircraft plots by voice and displayed information manually would be too slow for the jet air age.[250] Accepted conceptually by the Air Force in April 1953, the Lincoln Laboratory's semiautomatic ground environment (SAGE) system was built and tested in the Cape Cod area in 1953-54 and accepted for deployment throughout the United States. The Air Defense Command's SAGE plan looked toward the division of the continental United States into eight air defense regions with eight SAGE combat operations centers and 32 air defense sectors with 32 SAGE direction centers. The first SAGE installations would be located in the northeastern United States, then in the midwest, and then in the northwest and on the west coast. The remainder of the northern and west-central states would next be provided with SAGE installations, and then the southeast, the southern, the southwestern, and finally the central portions of the United States would be filled in. In view of the time and expense involved otherwise and the probability that an enemy would direct first strikes against U.S. strategic retaliatory forces, the Air Defense Command elected to locate its SAGE installations in shock-resistant, reinforced concrete buildings

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located above ground. Following the Air Defense Command plan to provide priority protection to the heavily industrialized sections of the nation, the first SAGE direction center became operational at McGuire Air Force Base, New Jersey, in 1957 and the entire SAGE system was scheduled for completion in March 1962. Utilizing large digital computers and digital data transmission equipment the centralized SAGE system would receive, display, and store information from many radars and flight control centers. The SAGE system would also provide air defense commanders with the capability to direct hundreds of interceptors and missiles against hundreds of targets.[251]

In the same years that new interceptors were under development and a modern ground environment was being laid out, the Air Defense Command increased its unit strength and moved toward the attainment of a family of four basic weapon systems to be employed against any type of hostile airborne threat. The family would hopefully include long-range interceptor squadrons, medium-range interceptor squadrons, medium-range interceptor missile squadrons, and short-range surface-to-air missile squadrons--all to operate within the SAGE.[252] The Air Force 137-wing program included 34 wings (102 squadrons) of fighter interceptors, of which 23 wings (69 squadrons) were to be assigned to the Air Defense Command and the others were to be committed to theater air forces. As the Air Force momentarily attained its 137-wing program in June 1957, the Air Defense Command attained its planned strength but two fighter interceptor wings scheduled for oversea service but not yet activated were deleted from the program.[253] During 1953-54 the Air Defense Command maintained that it would require, in addition to its manned interceptor squadrons, 53 Bomarc missiles squadrons for deployment around the nation's perimeters. In the first firm planning in 1955, the Air Force and the Air Defense Command agreed that 40 Bomarc squadrons would be a practicable objective. At Air Force prodding, the Bomarc objective was reduced to 36 squadrons in 1957, some of which would be located outside the United States.[254]

By 1954-55 the potential scientific advances in air defense appeared to promise a substantial breakthrough in the whole field of activity. "Our objective," stated Major General Yates in March 1954, "is to develop a completely integrated and automatic air defense network, including interceptor weapon systems, which will provide as effective a defense as is technically possible."[255] Speaking early in 1955 Major General Frederic H. Smith, Jr., visualized an annual expenditure of $7 billion for air defense and a total expenditure of $42 billion for the purpose by 1960. "Such a defense system against manned and unmanned air-breathing weapons systems should inflict an attrition rate of greater than 90 percent upon attacking forces of sizes up to 4,000 flying objects, unless the enemy achieves qualitative surprise."[256] Shortly before his retirement as Commander-in-Chief, Continental Air Defense Command, General B. W. Chidlaw was similarly optimistic in a letter to General Twining. "I am convinced," he wrote on 28 May 1955, "that an air

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defense capability which will furnish a comparable deterrent to aggression to that poised by SAC can be achieved, if we put our heart into it."[257] By 1955 the Air Defense Command possessed a good system to meet the threat of the TU-4 offensive, and there was optimism that the air defense system could continue to outdistance the Soviets.

Unfortunately the Soviets achieved "qualitative surprise" and demonstrated on 1 May 1955 that their offensive capabilities had risen to a new plateau much sooner than had been anticipated. "We now have a good system to fight the TU-4," observed General Partridge, who became Commander-in-Chief, Continental Air Defense Command, on 20 July 1955. "Unfortunately the Russians came along a little more rapidly than we anticipated in their technical developments, and they introduced the jet bombers and the Bear more rapidly than was forecast." Partridge also warned that "the defenses which we are . . . planning. . . take care of the Soviet threat up through the manned bomber, but the Soviets are said to be building an intercontinental ballistic missile, and we must somehow devise a defense against this type of attack."[258] The immediate air defense problem in 1955-56 concerned the development of capabilities to counter the Soviet Bison and Bear, both of which would likely possess a stand-off missile capability equivalent to the Hound Dog. With one aerial refueling, the Soviet Bear, moreover, would be able to fly a circuitous route that would evade existing early warning lines in the Arctic. Since it was a turboprop aircraft, the Bear would not only have a very long range, but it would also be able to operate effectively at low altitudes.[259] After he had assessed the new Soviet bomber capabilities--which would be magnified once they developed intercontinental ballistic missiles--General LeMay observed: "The best thing that the Air Defense Command can do for SAC is to provide warning time. That is the most important thing they can do for us."[260] Less optimistic than his predecessors about the kill capabilities of the Air Defense Command, General Partridge returned to a more limited concept of air defense. "As a matter of doctrine," he stated in April 1956, "we believe that the best defense is a good offense, and we believe that our primary mission in the Air Defense Command is to defend the bases from which the Strategic Air Command is going to operate. . . . We believe also that we have to provide a reasonable, an equitable protection for the key facilities, the population centers and our industry. . . . We believe, however, that our primary objective is to convince the enemy that he should not attack, and if we can deter the enemy from attacking, we have achieved a 100-percent air defense."[261] Partridge continued to emphasize the deterrent aspects of air defense. "First of all," he said in 1957, "we want to be so strong, from an air defense point of view, that the enemy will be deterred from the decision, that fateful decision, to attack. . . . The second thing we're trying to do is to insure our survival in the event we are attacked."[262]

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The Department of Defense decision to meet the challenge of Soviet Bison and Bear aircraft by increasing procurement of B-52's and permitting some dispersal of the Strategic Air Command increased the importance of the warning function provided by the Continental Air Defense Command. While Partridge was willing to provide the Strategic Air Command with as much warning as was possible, he also believed that the Air Defense Command should be provided with a remote air defense weapon system that would permit it to intercept and destroy approaching Soviet bombers before they could launch stand-off bombing missiles. In a search for means to provide air cover over naval forces at sea and for beachhead assaults, the Navy commenced studies in 1955 of an Eagle-Missileer system composed of a subsonic long-endurance control and warning Missileer aircraft which was to be equipped to launch high-performance, long-range, air-to-air Eagle missiles.[263] The Air Force had this same option to develop a huge missile-firing interceptor as a remote air defense weapon system, but Partridge questioned whether anyone could determine how to fight an air defense plane outside of the air defense ground environment.[264] The North American Aviation Company had been studying the problem of remote air defense for several years, and when its approach appeared feasible the Air Force awarded the company a letter contract to begin development of a long-range Mach 3 jet interceptor on 1 June 1957. This plane would be designated the F-108, and, as it was conceived, it was to be a two-place, two-engine stainless steel plane that would maintain a Mach 3 speed. It would be designed to carry a pair of new GAR-9 missiles, which would be able to be fitted with either nuclear or conventional warheads. Its range and speed would give it ability to police the DEW lines, but it would have an electronic system that would be able to work either inside or outside the ground environment. If operated beyond the ground environment, a number of F-108's would probably fly together in a line-abreast formation, laterally separated by about the range limits of their self-contained airborne intercept radars, and from this disposition the individual planes would pick up anything ahead of them, lock onto their targets, and effect destruction of the targets with their missiles.[265] The problem of combatting Soviet bombers at longer ranges and at lower altitudes also affected the continuing Bomarc development program, for the Bomarc A was conceived to be a missile with a 125-mile range that would be effective up to 60,000 feet but would be relatively ineffective at low altitudes. While the Bomarc A continued in development, the Air Force directed that a Bomarc B would also be developed that would have a range of action of over 400 miles and would be capable of dealing with a low-altitude threat.[266]

When Partridge reached retirement age and yielded command to General Kuter on 1 August 1957, the North American Air Defense Command was well along on its way to being able to counter the Soviet Bison and Bear threat. The DEW line was nearing completion, SAGE was becoming operational in the northeastern United States, and

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the Air Defense Command was converting to Century-series jet interceptors. Because of the added expense of these planes as well as their greater combat capabilities, the Air Force had programmed a cut in its air defense strength to 28 fighter-interceptor wings (83 squadrons) by 30 June 1958, and, since four Bomarc A missile squadrons were scheduled to become operational in fiscal year 1959, it planned to reduce the air defense fighter-interceptor strength to 27 wings (80 squadrons) by 30 June 1959.[267] In order to permit this reduction, however, the Department of Defense had agreed to a plan whereby 12 Air National Guard wings would be equipped with all-weather interceptors and 8 with day-fighters to augment the Air Defense Command.[268] Once again the United States air defense proved to be a step behind Soviet technological capabilities, since the Soviet Sputnik revealed that the enemy could soon possess an intercontinental ballistic missile capability. Quite shortly, moreover, American intelligence recognized that the Soviets had concentrated on the development of missiles and had never produced the number of Bisons and Bears that had been within their capability to produce after 1955-56.[269]

In response to Sputnik the Air Force immediately began the construction of two ballistic missile early warning system (BMEWS) sites at Point Clear, Alaska, and Thule, Greenland. Other than for this action, and for the planned reduction in Air Defense Command strength, General LeMay urged that immediate changes should not be made in the North American Air Defense Command. "Our studies now indicate," he explained, "that even when the ballistic missile becomes very efficient, that the most efficient attack will be a combination of the manned vehicle and the ballistic vehicle, using the best characteristics of both weapon systems." Speaking to a question on air defense requirements in December 1957, General White explained that the Strategic Air Command was "perhaps the major contributor to the air defense, because these forces will hit the enemy at his point of launching." More particularly on the subject, he continued: "We need to complete the extension of the DEW line. We need to improve our radar. . . . We need to get on with the more advanced and more sophisticated interceptor system, such as Bomarc. We need to keep modern. . . our manned fighter-interceptors, and we must develop an active weapon against ballistic missiles. . . . I think those are the essentials of the requirements of air defense, and we must get on with it."[270] During 1958 White continued to defend SAGE. "The SAGE system," he said, "will permit us to meet the combined manned jet aircraft and air-breathing missile threat as one concise problem rather than as a series of various problems. . . . Even on into the future, SAGE will prove valuable because the forces of the future will undoubtedly be mixed forces--that is, composed of various types of weapons--subsonic, supersonic, and hypersonic."[271]

Although the Air Force successfully secured continued budgeting for its air defense programs in fiscal year 1959, a number of factors began to affect air defense programming during calendar years

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1958-59. In January 1958, Secretary McElroy remarked that he was "not enthusiastic about the solution we have among roles and missions . . . in the area of continental air defense" and revealed that the Joint Chiefs of Staff were reviewing the matter. As has been seen, the Congressional appropriation of military construction funds for fiscal year 1959 called upon the Secretary of Defense to determine what missile or combination of missiles would be employed in a given area. Early in 1959 McElroy again stated that air defense continued to be a field in which the Department of Defense was having difficulty making decisions.[272] In March 1959 Senator Symington was very critical of the fact that the Air Force was "spending $5.5 billion every year to defend against. . . bombers, but. . . not spending enough to maintain a position in the modern weapons of reasonable equality with what we agree the Russians are probably doing. . . . We are cutting down on producing Atlas and on producing supersonic B-58's, and so forth, and yet we are still spending $5.5 billion annually to defend ourselves against something which we know the Russians are cutting down very heavily on and haven't many of."[273] Despite these criticisms, the Air Force continued to program air defenses for fiscal year 1960 that would defend against a mixed aircraft and missile attack. Fighter interceptor strength would be reduced to 25 wings, but this reduction was justified by the increased effectiveness of Century-series interceptors, and increase in number and effectiveness of air-to-air missiles, and the acquisition of an initial operational capability with Bomarc A missiles.[274] Rather than sacrifice funds required for the development of the Mach 3 interceptor, the Air Force elected to procure no additional manned interceptors in fiscal year 1960.[275] Construction of BMEWS installations in Alaska and Greenland was funded. Work on the SAGE system was to continue, with some changes caused by new technology. The first SAGE installations had employed vacuum tubes and had been too large and bulky to be easily hardened, but the development of transitor electronic components permitted more compact and efficient installations. Early in 1959 the Air Force approved a plan to continue to develop the SAGE system around 10 supercombat centers which were to be hardened and 27 direction centers.[276]

While the Air Force was thus prepared to make some reductions in air defense requirements, it was not prepared for the full extent of the reductions that would be demanded during calendar year 1959. In its report on the fiscal year 1960 military construction bill, the Senate Armed Services Committee concluded that Nike systems were virtually obsolete and should not be funded, but the House Armed Services Committee, on the other hand, held that Nike was operational and less costly than Bomarc and recommended severely reduced appropriations for Bomarc. In the absence of military agreements on air defense requirements, Secretary McElroy's civilian staff drew together the Master Air Defense Plan which was officially issued on 19 June 1959. As has been seen, this Master Plan generally

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confirmed Air Force concepts of air defense requirements, but it nevertheless included a severe reduction in Air Force fighter-interceptor squadrons over the next several years; the reduction of Bomarc to a total of 16 squadrons in the United States and 2 in Canada, all to be deployed in a peripheral setting rather than in depth; and a limitation of SAGE to 8 supercombat centers and 22 direction centers. It recommended that the Army's Nike Zeus anti-missile missile be continued in research and development and that a third BMEWS installation be constructed at Fylingsdale, England.[277] The Air Force did not reclama the Master Air Defense Plan, but another development in the summer of 1959 caused General White to spend "many sleepless nights." In Department of Defense budget guidance for fiscal year 1961, White was told that funds could not carry both the development of the F-108 Mach 3 interceptor and the B-70 Mach 3 bomber, if indeed they could carry the development of either of them. When presented with the problem, the Air Force Weapons Board recommended that the F-108 be continued in development, but the Air Force Council subsequently reversed the recommendations of the Weapons Board and recommended that the B-70 should be funded for continued development. In making his personal decision General White reasoned that a long-range fighter interceptor would be vitally needed as long as the Russians had a capability to make bomber attacks with stand-off missiles, but he decided that the F-108 would be cancelled and the B-70 kept in development. Explaining his decision, White said: "I based that largely on what would be the greatest threat to the Soviet Union, and, hands down, the B-70 wins that argument."[278] Even though the F-108 was technically feasible and a long-range interceptor would be vital to continental air defense, the Air Force cancelled the F-108 development program on 23 September 1959. Development of the fire control system and the GAR-9 missile was permitted to continue on a reduced scale for possible use in some other airframe.[279]

"Somewhat of a revolution," General White noted, "took place in the air defense field under the Department of Defense master air defense plan. . . . I think the No. 1 point. . . is that the technology and the enemy threat are constantly changing. I think it is fair to state it takes time, maybe too much time, for some of the implications to seep into all the brains that have to work on these things." White also noted that in a strict sense the Commander-in-Chief, North American Air Defense Command, should have borne the responsibility for making necessary weapon systems recommendations to the Joint Chiefs of Staff, but he also asserted: "Somebody has to step up to these problems, and it devolves in a military sense upon the Chief of Staff of the service to take the initiative. . . in the light of the overall picture--the integrated threat; the moneys available; the weapon systems which are present and forth-coming; and the light of other threats."[280] Based on this reasoning, the Air Force stepped up to the problem of translating the Master Air Defense Plan into system requirements. White charged Major General H. M. Estes, Jr., Air Force Assistant Deputy Chief of Staff

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for Operations, to study changes in air defense programs necessary to respond to the Master Air Defense Plan. In this evaluation, Estes drew heavily for technical assistance upon the Air Defense Systems Integration Division/MITRE Corporation. Individuals from the North American Air Defense Command/Air Defense Command also provided technical information, but Estes observed: "We did not ask them specifically for their detailed ideas for the very simple reason we knew already their ideas would not coincide with ours with reference to reductions." Beginning in mid-February 1960, Estes assembled the some 100 technicians who had been working upon separate phases of air defense systems, and the group went into the exact technical status of every single component of the air defense system, when the component could become operational and how much it would cost. The group attempted to project an air defense system that would be effective against a combined missile-bomber threat at the earliest possible time with a minimum expenditure of dollars. The Estes group completed its work in late February 1960, after which Estes briefed the group's recommendations to the Air Force, the North American Air Defense Command, and the Air Defense Command.[281] While the Estes group was functioning, General LeMay established another board of general officers to maintain a continuous evaluation of the Bomarc. This board made evaluation reports in November 1959 and January 1960. Working independently, another ad hoc panel of scientists provided evaluations of the Bomarc B to the Secretary of Defense.[282]

Since evaluations of air defense requirements were underway within Department of Defense, the fiscal year 1961 departmental budget submitted to Congress in January 1960 represented interim changes recommended by the six-months old Master Air Defense Plan. The Air Force desired to reduce air defense wings from the 27 in being on 30 June 1959 to 23 on 30 June 1960 and to 20 on 30 June 1961. By 30 June 1960, 4 Bomarc squadrons were to be operational, and it was planned that 8 Bomarc squadrons would be in operation by 30 June 1961. Altogether the Air Force wanted to bring 16 Bomarc squadrons into the air defense inventory. SAGE was programmed for 8 super-combat centers and 22 direction centers.[283] Seaborne extensions of the DEW line--picket ships and "Texas Towers"--would be eliminated, but airborne control and warning aircraft would continue to function.[284] On the same day--14 January--that the new Secretary of Defense, Thomas S. Gates, Jr., and General Twining appeared before the Sub-committee of the House Committee on Appropriations to defend the budget, Soviet Premier Nikita Krushchev announced that the Soviet Union would depend upon ballistic missiles and was stopping development of manned bombers. While skeptical of the Soviet announcement, Gates and Twining agreed that air defense requirements ought to be kept under study. "Maybe the Russians will eliminate their air threat completely," Twining remarked. "We do not know. We certainly ought to keep watching this and not spend money on air defense unnecessarily."[285]

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In January 1960 Secretary Gates and General Twining were willing to stand behind the fiscal 1961 air defense program, but following the completion of the Estes study group's work General White appeared before the Subcommittee of the House Committee on Appropriations on 24 March to submit a reappraisal of air defense programs. Since study had shown that the planned degree of hardening would be expensive yet inadequate fully to protect the supercombat SAGE centers, White desired to eliminate the 8 supercombat centers and to limit the SAGE programs to 3 combat centers and 22 direction centers. On the best scientific advice he could get, White believed that Bomarc A and B would work, but he proposed to cut Bomarc procurement off with the 10 squadrons that were already funded. These squadrons would be deployed to defend the industrial area of the northeastern United States and southeastern Canada--8 squadrons would be sited in the United States and 2 in Canada. These reductions would save an estimated $500 million in the fiscal 1961 budget, and White asked authority to apply this money to accelerate deveopment of the MIDAS satellite system that was designed to detect hostile ICBM's at the earliest possible moment after they were launched, to speed construction of the second and third BMEWS installations, to procure additional Atlas missiles and to accelerate the development of a mobile Minuteman missile, to improve the capabilities of Century-series fighter interceptors, and to continue technical development for an advanced fire control and missile system for a long-range fighter interceptor.[286]

In justifying the Air Force proposal to divert funds previously committed to air defense to offensive purposes, General White explained: "Of course, our philosophy is based on the fact that offense is the best defense. . . . I am perfectly certain that. . . air defense could absorb the national budget, and . . . still could not guarantee 100-percent defense. So, in the final analysis, it is a matter of judgment at what level you balance out between offense and a minimum adequate defense." Major General Estes summed up the North American Air Defense Command's requirement for "a mixed force of weapons, each of which has the capabilities which are not directly attainable in the other type of weapon, to take on any attack." "Manned interceptors," Estes said, "complement Bomarc by having capabilities that are unique in having a human operator aboard. The manned interceptor provides the only means in peace time for positive identification and in war it is flexible in terms of redeployment to meet threats in different areas and in capability for reattack. The interceptor can kill one bomber and then go on to kill a second. It can be recovered, refueled, and rearmed to again enter the battle. . . . On the other hand, if only a force composed of fighter-interceptors were available in a given area, the commander would not have as great a capability at low level, and his ability to concentrate a mass of interceptor weapons in a small area against a mass raid would be degraded to the extent that aerial nuclear blast would affect his interceptor pilots."[287]

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In recommending revisions to the national air defense program, White considered that the Air Force had "cut through some of the inhibitions" and the "'clinging' to concepts" and was providing a program that looked realistically to the future. "While I recognize," he said, "the threat of the air-breathing bomber exists as of today as the most important, most deadly threat against this Nation, it is quite obvious that the Intercontinental ballistic missile is to become the predominant threat to this Nation."[288] White testified that the new air defense program had been approved by the Air Staff and by the Joint Chiefs of Staff, and Secretary Gates assured Congress that President Eisenhower had reviewed and approved the revisions in air defense.[289] At Colorado Springs where he commanded the North American Air Defense Command, however, General Kuter did not agree that the new air defense program served national requirements. According to White, Kuter urged that the Bomarc and fighter-interceptor programs be continued at full strength, that the manning of air defense units be the responsibility of full-time Air Force personnel rather than alert Air National Guard crews, that the F-108 development program be reinstated to oppose the Soviet air-launched missile threat, that the supercombat centers be built, and that Nike-Zeus be produced as the only immediately prospective anti-ICBM defense.[290] During the spring of 1960 Congress also displayed doubts about the recommended air defense revisions. The House of Representatives eliminated all funds for Bomarc not already committed and added funds sufficient to purchase enough F-106's to equip two additional fighter-interceptor squadrons. The Senate, on the other hand, voted funds for even more fighter-interceptors and restored Bomarc program cuts made by the House, plus granting additional funds to provide two Bomarc bases in the northwestern United States. In a conference committee, Congress agreed to vote $100 million for additional F-106's and $244 million for Bomarc missiles. These amounts were approved in the Department of Defense Appropriation Act of 1961, but on 9 August 1960 Secretary Gates issued the decision that original appropriation requests had provided substantially for air defense, including "buy-out" procurement of Bomarc B missiles and improvements of existing interceptor aircraft, and that the additional appropriations would not be used.[291]

The Department of Defense and the Air Force considered that the air defense revisions of 1960 marked a recognition of the "imminent shift in the air threat to our security from aircraft alone to ballistic missiles and aircraft."[292] At the helm of the North American Air Defense Command, however, General Kuter continued to disagree with the downgrading of defense. "The course of aerospace defense," he stated as he was retiring from the Air Force on 31 May 1962, "is a rather spotty course. . . of slow starts and some quick stops. . . marked by a series of efforts to close gaps--gaps that have been created by advances in offensive weapon systems." As he looked backward Kuter observed that air defense had been moving

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rapidly ahead in 1957 and had almost closed the gap on Soviet offensive capabilities, but he thought that these efforts to comprehend Soviet offensive capabilities had been suddenly halted in 1959. Kuter urged that the nation was able to produce and urgently required a long-range Mach 3 manned fighter-interceptor. He also urged that the Army's Nike-Zeus missile ought to be put into production for operational deployment, since it was the nation's only available anti-ICBM defense system. "We know full well," he said, "that we must have complementary strategic offensive and North American defensive forces to present a credible deterrent or to ensure national survival should general war occur."[293]

3. Origins of Aerospace Doctrine in the Air Force

In a reminiscent remark about "presputnik days," Major General Bernard Schriever recalled that "'space' was a nasty word in certain circles."[294] At first, however, the subject of space was more amusing than anything else, at least to the public. When Secretary Forrestal disclosed in his first annual report as Secretary of Defense made during 1948 that the Air Force and Navy were studying earth satellite vehicles, amused journalists asked: "Will America possess moons of war?"[295] As has been seen, the first RAND study completed for the Air Force in 1946 indicated the feasibility of an orbital earth satellite which would be launched by the MX-774 Hiroc missile's booster, but these early RAND studies emphasized the scientific value of earth satellites rather than their military worth. Believing that progress in booster technology might reduce the individual cost of satellites, General Vandenberg signed a policy statement that the Air Force was the service that had "logical responsibility for the satellite." After reviewing Air Force and Navy satellite studies, however, the Defense Research and Development Board's Committee on Guided Missiles reported on 29 March 1948 that insufficient thought had been given to the military worth of such vehicles and that, in any event, the cancellation of the development of the MX-774 missile would delay orbital flight. The committee further recommended that "the only activity directed toward satellite vehicles as such should be a continuation of the Project RAND studies of the utility of a vehicle."[296]

Authorized to continue satellite studies, the RAND Corporation was able to report by April 1951 that "pioneer reconnaissance and weather reconnaissance are suitable with the resolving power presently available to a satellite television system."[297] In view of the reinstitution of the long-range ballistic missile development program in 1951-52, the Air Force directed RAND to proceed with studies of components for a satellite reconnaissance system, and on 16 March 1955 it issued a general operational requirement for the development of WS-117L, Strategic Reconnaissance Weapon System.[298] After receiving and evaluating proposals from several major contractors, the Air Force selected the Lockheed Aircraft Corporation as the

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prime manager for WS-117L and issued a contract in 1956.[299] Other factors were involved, but the need to establish military worth was significant cause for the nearly ten-year lapse between first conception and initiation of research and development on a satellite reconnaissance space system.

Another line of development which would lead the Air Force to the fringes of space originated in the waning months of World War II from a general recognition that the nation lacked basic knowledge about supersonic flight. From the date of its establishment in 1915 the National Advisory Committee for Aeronautics had accomplished practically all of the fundamental and basic research in aerodynamics and propulsion for the benefit of the Army, Navy, and civil aviation. Except for unusual cases where results of potential military significance were withheld, the NACA promptly published the results of the investigations that it conducted in its laboratories at Langley Field, at Cleveland, Ohio, and at Moffet Field, California. During World War II, NACA had served as the "silent partner of U.S. airpower." Its high-speed airfoil principle, for example, had been employed on the P-51 Mustang to delay the formation of compressibility "burbles," thus enabling the Mustang to withstand high-speed dives of over 600 miles an hour. As World War II was ending, however, NACA's chairman, Dr. Jerome C. Hunsaker, warned that "the reserve of knowledge available when we entered the war, and without which victory would have been greatly delayed, has been exhausted. . . . As with the Wright brothers at the first flight, we stand at a new frontier where research to establish the scientific principles and laws governing high-speed flight will determine our future in the air."[300]

Although NACA accomplished fundamental and basic research, this research did not normally include the development of specific aircraft or equipment. Looking toward supersonic flight explorations, the Army, Navy, and NACA agreed that the Army or the Navy would fund research vehicles, the contractor would provide initial flight tests, the Army or the Navy would determine the military applicability of the vehicles, and, after that, a test vehicle would be turned over to NACA in order that its tests might provide data to be published for the entire aviation industry. In order to begin supersonic flight probes, the Air Technical Service Command issued authorities for two supersonic airplane projects on 5 and 6 March 1945. The first project authorized the Bell Aircraft Company to fabricate three test aircraft that would have speeds greater than Mach 1 and which would be powered by alcohol-liquid oxygen rocket motors. The second project with the Douglas Aircraft Corporation involved a design study of a supersonic airplane. The Bell plane would subsequently be known as the XS-1 and later the X-1 and was to be the first of an X- or research series of aircraft.[301] Launched from an airborne B-29, the X-1 aircraft made its first powered flight on 9 December 1946. Further refinements enabled the conventionally structured X-1 to break the sound barrier on 14 October

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1947 with Captain Charles E. Yeager as its pilot. Learning lessons from the X-1, the Army Air Forces contracted with Bell on 27 November 1945 to build two X-2 test planes, with monel metal fuselage and stainless steel sweptback wings that would permit them to attain very high speeds. The first of these planes accidentally exploded in the bomb bay of a B-50 on 13 May 1953, but in test flights at Edwards Air Force Base, California, the second X-2 exceeded speeds of 1,900 miles per hour and attained an altitude of 126,200 feet.[302] In this same period the Douglas Aircraft Company built several models of a D-588 Skyrocket plane under Navy contract. These rocket-powered planes were tested at Edwards and eventually turned over to NACA. Flying a D-558-II aircraft on 20 November 1953, NACA test pilot Scott Crossfield achieved a record speed of 1,328 miles per hour, thus becoming the first man to penetrate Mach 2.[303]

During the spring of 1952 NACA's Committee on Aerodynamics recommended that the several NACA laboratories begin to study problems likely to be encountered in space flight. As a result of these studies, the Committee on Aerodynamics endorsed a proposal to build a Mach 7 research airplane that would be able to explore the fringes of space. Since NACA was not authorized to procure such an experimental plane, Dr. Hugh L. Dryden, who was now its chairman, proposed to the Air Force and Navy on 9 July 1954 that these services should procure the plane for cooperative testing. Favorable to the project, the Department of Defense authorized the Air Force and the Navy to finance the needed aircraft development. After a design competition administered by the Air Force, a letter contract was issued to the North American Company on 18 November 1955 providing for the purchase of three rocket-powered X-15 aircraft and the modification of a B-52 which would be used to launch them. The memorandum of understanding regarding the X-15 provided that NACA would exercise technical development with advice and assistance from a Research Airplane Committee which included Air Force and Navy representatives. In final accounting the development of the X-15 would be extremely costly, and the Air Force would be called upon to provide the great majority of the needed funds. Following delivery to Edwards Air Force Base the X-15 made its first powered flight on 17 September 1959. When equipped with alternate engines an X-15 flown by Air Force Major Robert M. White attained a record altitude of 314,750 feet on 17 July 1962. Another X-15 achieved a speed of 4,105 miles per hour on 27 June 1962. Each X-15 flight furnished data for the design of high-altitude hypersonic operational aircraft and also provided data on the physiological and psychological reactions of man in flights along the fringes of space.[304]

While the X-series aircraft were not designed in any way to become weapon systems, Air Force developmental planners were familiar with work that had been conducted in Germany during World War II by Dr. Eugen Sänger and his assistant, Dr. Irene Bredt. Working independently of the Peenemunde ballistic missile people, Sänger had

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prepared plans for the use of a V-2 rocket as a second stage for a boost-glide manned vehicle that would be launched from Germany, rise above the atmosphere, and then glide back into the atmosphere and become a very long range bomber capable of circumnavigating the earth and bombing New York. The German government did not give serious consideration to the boost-glide rocket bomber, but both the Russians and the Americans captured interesting data relative to the Sanger concept. Employed as a consultant to the Air Materiel Command in 1947, Dr. Walter Dornberger carried the boost-glide concept to the Bell Aircraft Company in 1950 when he left Air Force employment and entered private enterprise. In April 1952 Bell approached the Air Force with a proposal to undertake a research study on a manned, boost-glide bomber missile which it called "Bomi." After considerable argumentation within the Air Force, the Wright Air Development Center completed a contract with Bell on 1 April 1954 calling for a study of an advance bomber-reconnaissance system.

Based on favorable results from the Bell study the Air Force issued a general operational requirement for a hypersonic strategic bombardment system on 12 May 1955, but research and development planners nevertheless doubted the advisability of investing scarce funds in such a system. The satellite reconnaissance system merited priority funding, and the X-15 research aircraft project could well provide data regarding the re-entry of a manned orbital vehicle into the atmosphere. In March 1956, the Air Force therefore concluded another study contract with Bell for a research study visualizing a piloted boost-glide reconnaissance weapon system to be known as "Brass Bell." This reconnaissance system was to be kept separate from the bomber-missile, now to be known as the rocket bomber or "Robo." In November 1956 the Air Research and Development Command stated a system requirement for a hypersonic weapon research and development supporting system called "Hywards." This vehicle was to serve as a test craft for the development of subsystems to be employed in future boost-glide systems.[305]

The significance of advanced boost-glide systems was enhanced on 15 February 1956, when Lieutenant General Power, then commander of the Air Research and Development Command stated that Soviet technological progress was so marked that the United States ought to stop considering new and novel projects and start developing some of them. During fiscal year 1957, however, the Air Force was able to allocate no funds for a manned glide-rocket. In April 1957, however, the Air Force directed the Air Research and Development Command to consolidate Hywards, Brass Bell, and Robo into one project, and the resultant product provided by this command on 10 October 1957 was a Dyna-Soar (a compound of "dynamic soaring") program that appeared feasible for accomplishment in three stages: Dyna-Soar I, an experimental glider; Dyna-Soar II, a reconnaissance vehicle; and Dyna-Soar III, a bombardment system. On 15 November 1957 the Air Force approved the Dyna-Soar development plan and allocated research and development funds for the hypersonic glider

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test vehicle. Early in 1958, the Air Force additionally reduced Dyna-Soar to two stages: Dyna-Soar I continued to be the unmanned experimental space glider, while Dyna-Soar II would be a composite manned bomber and reconnaissance system. The Soviets also appeared to be working on the basis of Sänger's original ideas. In 1958 a Soviet aviation journal referred to a Russian glide-bombing system capable of attaining an altitude of 295,000 feet and of striking targets at distances up to 3,500 nautical miles.[306]

Shortly after World War II the Air Force also began to make a number of studies and experiments concerned with the problem of maintaining life at hypersonic speeds and very high altitudes. In 1946 the Aeromedical Laboratory at Wright-Patterson Air Force Base joined with the National Institute of Health in upper-atmosphere experiments at White Sands/Holloman Air Force Base, New Mexico. Insects, fungus spores, and later small animals were sent aloft in V-2 and Aerobee rocket capsules to reveal the effect of cosmic radiation and life at high altitudes. By November 1948 the Air Force School of Aviation Medicine had held a symposium on "The Medical Problems of Space Travel," and in February 1949 it organized a Department of Space Medicine. The Aeromedical Laboratory began the development of a T-1 pressure suit in 1943, and the suit saved the life of a test pilot in 1951 when the X-1 lost its cabin pressure on a high altitude flight. The X-15 required an even more sophisticated full pressure suit, and the boost-glide vehicles would need a habitable cabin. Looking toward design of space capsules, the Air Force employed "High Man" manned balloon flights. The first High Man flight occurred on 2 June 1957 when Captain Joseph W. Kittinger reached an altitude of 95,000 feet. The second flight on 19 August 1957 carried Major David G. Simons to 102,000 feet and remained aloft for more than 32 hours.[307] Some of these ventures occasioned heavy-handed sarcasm, but each of them sought to develop more knowledge about man's role in a space environment.

* * * *

During the late 1940's the Army did not officially share the Air Force and Navy interest in space satellites, but even at this time Dr. Wernher von Braun was a foremost publicist for a manned space station. By the autumn of 1944, von Braun was advancing a proposal that a complete space station could be built in 10 or 15 years at a cost of about $4 billion. He believed that the nation that first possessed a space station would be in a position to rule the earth. When Secretary Wilson was queried about earth satellites and space platforms at a news conference on 16 November, he said that he knew nothing about U.S. military scientists working on plans for a space platform or earth satellite and would not be alarmed if the Russians built one first. He was quoted as adding: "I would rather keep my feet on the ground, figuratively speaking as well as physically speaking. I don't know that anyone knows how you would rule the world with a space station. It is a little dreamy,

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I think." A month later at another news conference, when told that the Russians might orbit a satellite before the United States, Wilson retorted: "I wouldn't care if they did."[308] Already on record as opposing "boondoggling research," Wilson told newsmen on 6 June 1955 that he considered the military research and development effort to be fully adequate. Speaking in his usual candid fashion, he went on to describe research and development as like drilling for oil. "The smart people in the oil business," he said, "try to drill their holes in a likely place, so the money that is given to the Defense Department, I like to see spent in an area. . . of some use to us. And maybe some other place in the nation's budget could go the money for fundamental research, I don't know. I don't care what happens to some of the minor things."[309]

Air Force leaders shared von Braun's belief that the development of missiles would provide the booster capability needed to place satellite weapon systems in orbit. In an address in San Diego in February 1957 Lieutenant General Schriever stated that "about 90 percent of the developments in the ballistic-missile program can be applied to advancing in space, satellites and other vehicles." Recalling this address somewhat later, Schriever remarked: "And so, from a technological standpoint, it is, I think, a normal transition to step from these ballistic missiles into satellites, moon rockets, going to planets."[310] General White also conceived that "missiles are but one step in the evolution from manned high-performance aircraft to true manned spacecraft; and, in the force structure of the future. . . we will have all three systems."[311] One of the reasons that the Air Force desired to develop the rigid structured Titan as an alternate to the Atlas was a belief that the more sophisticated Titan would be the "prime vehicle. . . for getting large vehicles and apparatus into outer space." Except for certain "long-haired" research and development men, however, Lieutenant General Irvine suggested in December 1957 that there was an insufficient awareness that the ballistic missile was "only a short step in the evolution of advanced weapon systems." "There is too much feeling. . . in the minds of the people in this country and in Government," Irvine continued, "that we air staff folks are perhaps just a little bit crazy when we talk about these modern machines."[312]

Although Air Force leaders saw a hopeful relationship between first generation military missiles and eventual space technology, this view was not shared by the Department of Defense or President Eisenhower. In its report of 14 February 1955, the Technological Capabilities Panel of the President's Science Advisory Committee recommended top priorities for the development of ICBM's and IRBM's. It also noted that space satellites would be important in the near future as instruments of reconnaissance, but it believed that no satellite as then conceived could be employed as an offensive weapon. If a space vehicle released a bomb, the bomb would not fall to earth but would continue in orbit in the wake of the satellite.[313] When he discussed security matters in a report to the American

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people on 13 November 1957, President Eisenhower explained the criteria that he desired to use in regard to space projects. "If the project is designed solely for scientific purposes," he said, "its size and its cost must be tailored to the scientific job it is going to do. If the project has some ultimate defense value, its urgency for this purpose is to be judged in comparison with the probable value of competing defense projects."[314]

Highly critical of the Department of Defense criteria for weapon system development, Dr. von Braun charged in December 1957 that military requirements for missiles were narrowly conceived in terms of "a limited end item" and that such development became "a dead-end street." As warheads got lighter the trend in the Department of Defense was to build smaller, less-powerful boosters. "It is very significant. . .," von Braun thought, "that the development of. . . large rocket engines. . . was not approved by anybody simply because there is no need for these engines within the framework of the existing and approved missile systems." He urged that large and powerful rocket engines which could not be immediately justified in terms of military worth would be required to boost manned vehicles into outer space.[315] To Secretary McElroy on 29 January 1959, however, the fact that Soviet rockets had more thrust than American missiles seemed "beside the point" from a military point of view, but he agreed that it was significant in regard to space." "We have an adequate thrust," McElroy said, "to take a warhead on an ICBM range to selected targets in the Soviet Union. If you have twice that much thrust, it doesn't help you, from a missile standpoint. It does, of course, help you from an outer space standpoint. . . but it is not of real importance in the ICBM capability."[316]

At the same time that the Department of Defense favored the commitment of defense research and development money to the perfection of low-risk weapon systems of definite military worth, President Eisenhower also hoped that a peaceful regime could be maintained in space. Before and after becoming President, Eisenhower often expressed an ideal of enforced peace through arms limitations and disarmament.[317] Accepting an arms control concept that the United States should retain its nuclear power and yet make it clear that its purposes were peaceful, Eisenhower took advantage of an assembly of world leaders at the Geneva Summit Conference in July 1955 to propose an "open skies" worldwide inspection plan for the prevention of surprise attack. At the conference table Eisenhower proposed that the United States and the Soviet Union would exchange "a complete blueprint" of their military forces and each would facilitate the other's aerial reconnaissance of their countries. Eisenhower believed that such a step would "convince the world that we are providing as between ourselves against the possibility of great surprise attack, thus lessening danger and relaxing tension."[318] Eisenhower's proposal at Geneva assumed an

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immediate relationship to proposals that had been made in October 1954 by a committee of the International Council of Scientific Unions for the launching of small scientific satellites during the International Geophysical Year which would begin on 1 July 1957 and conclude on 31 December 1958. The Soviet Union had announced on 15 April 1955 that it had established a Special Commission for Interplanetary Communications and would produce "a remote controlled laboratory to circle the earth as a satellite and establish opportunities for observation of a hitherto inaccessible character." After Eisenhower returned from Geneva the White House announced on 29 July that in 1957-58 the United States would launch small space satellites, probably instrument-bearing, that would circle the earth each 90 minutes at a height of 300 miles.[319]

Critical of the open skies proposal from the first, the Soviets would finally reject it early in 1956 when disarmament negotiations reached another stalemate. While the open skies proposal was in conception and under consideration, however, it had important effects upon U.S. space policy. In view of the growing interest in scientific satellites, von Braun had proposed in June 1954 that a Redstone missile should be used to launch a small slug into orbit.[320] Since a Redstone was successfully test fired on 24 May 1955, it appeared to be the most practical booster for launching the American IGY satellite. At a meeting on 26 May, however, the National Security Council expressed the opinion that because of the soon-to-be-proposed open skies offer the American scientific satellite ought not to be launched into orbit by a military missile. In the Department of Defense, Assistant Secretary Donald Quarles directed the services to submit plans for a scientific satellite and established a committee of scientists and engineers to evaluate the proposals. When these proposals were at hand, the committee evaluated them during June and July 1955. For their part, the Army and Navy favored acceptance of an Orbiter project to be boosted by the Redstone missile, but the Navy suggested an alternate plan calling for the use of a modified version of the old Viking test missile that was free from military implication. The Air Force was not able to make a serious proposal for the IGY satellite that would not inferfere with the progress of its ICBM program. After evaluating the proposals, the committee was said to have believed that the whole satellite project was actually premature, but on 4 August it nevertheless reported that a small satellite could be put in orbit during the IGY period. The committee noted that use of an Atlas booster would give the greatest assurance of success, but it respected the Air Force belief that such an employment of the Atlas would interfere with the ICBM program. The majority of the committee recommended use of an improved Viking missile that would be known as Vanguard. A minority of three committee members recommended that the booster system for the IGY satellite should use the existing Army Redstone rather than depend upon a development

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of the Vanguard.[321] The Department of Defense approved the Vanguard proposal over the objections of the Army, which warned that time consumed in developing the missile might enable the Soviets to launch the first satellite. Following procurement of a test quantity of improved Redstone missiles--known as Jupiter C--Lieutenant General Gavin again proposed that one of the missiles be used to launch a scientific satellite. On 15 May 1956, however, Gavin received a personal admonition that: "The Redstone and Jupiter missiles will not be used to launch a satellite."[322]

Even though the Soviets refused to accept the open skies proposal, Mr. Harold Stassen, who was serving as Eisenhower's Special Assistant for Disarmament, continued to believe that some measure of aerial inspection could contribute to the control of arms. "I do believe from our studies," he said in June 1956, "that if a measure of inspection, particularly against surprise attack, can be obtained, on a basis that must be mutually lived up to or its violation would be immediately discovered, that such a system combined with a moderate, sustained alert, armed strength will give a greater likelihood of security and peace than either an all-out arms race on the one extreme or a complete inspection system and comprehensive disarmament on the other."[323] In the Air War College Evaluation Division a study prepared by Colonel Martin B. Schofield and entitled "Control of the Use of Outer Space" was completed in August 1956. This study pointed out that the "use of an earth satellite as a reconnaissance vehicle would provide intelligence data of the highest order of coverage and reliability." Satellites that could fire missiles from orbital positions could also be developed, and such an "airborne ICBM" would be extremely hard to defend against since speed, time, and direction of approach would be in favor of the offensive weapon. Although missile-firing satellites appeared feasible, Schofield recommended the establishment of international controls over space. "The presence of a variety of devastating military forces, of many sovereign states, constantly deployed throughout international space," he noted, "may not be conducive to peaceful living. . . . It might be more sound for the United States, because it may have an early advantage in the exploration of space, to use its position of influence to the best advantage by strongly advocating a form of international control over the use of space."[324]

In his State of the Union message delivered to Congress on 10 January 1957, President Eisenhower renewed his proposal for the open skies inspection system and additionally called for the establishment of international control over space. "We are willing," he said, "to enter any reliable agreement which would. . . mutually control the outer space missile and satellite development."[325] Four days later Henry Cabot Lodge, U.S. Ambassador to the United Nations, presented a more detailed version of space control to the General Assembly. Speaking on 25 July 1957, Stassen reiterated the need to establish control over experimentation with objects

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travelling through outer space. He warned that the situation was perilously close to that of 1945-46 when the Soviet rejection of the Baruch plan for the control of atomic weapons had led to an international nuclear race. He hoped that the same mistake would not be made in the development of space vehicles, which would involve an equal and perhaps an even greater danger to mankind.[326]

In his Air War College evaluation study on space Colonel Schofield had believed that the United States was in a position to adopt a positive stand on international control because it "presumably enjoys a lead in the current evolution of scientific achievement."[327] The Soviets not only displayed little interest in establishing international controls over space during 1956-57 but they would be the first nation into space effective with the orbital flight of Sputnik I on 4 October 1957. The real tragedy of the situation was summarized by Lieutenant General Gavin: "We have the scientific talent and we have the brainpower, the industrial capacity. . . . The failure was in decision-making, making the wrong decisions."[328] In the opinion of Dr. Clifford C. Furnas, who had become Assistant Secretary of Defense for Research and Development on 22 November 1955, the Soviets had been permitted to get ahead of the United States in space because of the decision to develop a "peaceful" Vanguard rather than to use the military Redstone as a booster for a scientific satellite. Even with maximum effort Furnas believed that it would have been difficult to expedite the Vanguard program, but he later remembered that the Department of Defense had not considered the Vanguard IGY satellite project to be of "first importance" and had allowed only a "dribbling release" of requisite funds to it.[329]

* * * *

Apparently failing to recognize that administrative policy favored the establishment of international controls designed to secure a peaceful regime in space, Lieutenant General Schriever forcefully asserted in his address at San Diego in February 1957 that the United States ought to move ahead and establish space superiority. "In the long haul," he maintained, "our safety as a nation may depend upon our achieving 'space superiority.' Several decades from now the important battles may not be sea battles or air battles, but space battles, and we should be spending a certain fraction of our national resources to insure that we do not lag in obtaining space superiority."[330] On the day following this address Schriever discovered that "'space' was a nasty word" since he recalled that he received instructions forbidding him to use the word "space" in any of his speeches. General Power, Commander of the Air Research and Development Command, also learned that it was "inappropriate" for an officer in a responsible position to speak on the military potential of space.[331]

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Breaking the silence on space matters in the aftermath of Sputnik, General White defined the Air Force's perspective at what he described as the "dawn of the space age" in an address to the National Press Club on 29 November 1957. "Whoever has the capability to control the air," he said, "is in a position to exert control over the land and seas beneath. I feel that in the future whoever has the capability to control space will likewise possess the capability to exert control of the surface of the earth. . . . We airmen who have fought to assure that the United States has the capability to control the air are determined that the United States must win the capability to control space. In speaking of the control of air and the control of space, I want to stress that there is no division, per se, between air and space. Air and space are an indivisible field of operations. . . . It is quite obvious that we cannot control the air up to 20 miles above the earth's surface and relinquish control of space above that altitude--and still survive."[332] In numerous appearances before Congressional investigating committees in the winter of 1957-58 White continued to emphasize the continuum of air and space. He foresaw the use of weapons in space, both offensive and defensive. While he confessed no "personal expertness in the matter," he believed it would be possible for a man to go to the moon.[333] In similar appearances, Assistant Secretary of the Air Force (Research and Development) Richard E. Horner, and Lieutenant General Donald L. Putt, Air Force Deputy Chief of Staff for Research and Development, strongly argued that the moon possessed valuable potential as a military base. "We should not regard control of the moon," Putt added, "as the ultimate means of insuring peace among the earth nations. It is only a first step toward stations on planets far more distant--in turn, from which control over the moon might then be exercised." In summation, Putt said: "The conquest of space--or, at least, its denial to an enemy--is vital to continued United States security. . . . Within the framework of deterrent force as we exercise it today, space flight soon will be employed to great advantage. And eventually, space superiority will become the primary factor in assurance of world peace."[334]

To the leaders of the Air Force space technology represented a logical progression in the development of Air Force technology. "The Air Force," said Secretary Douglas, "has been engaged in explorations of outer space and all of the associate technical fields since the end of World War II. . . . The techniques and actual developments involved in the X-15 are one path to man's flight into space." Douglas recalled that no one at first had perceived the military worth of the airplane and asserted: "We must press forward with projects for the weapons of day after tomorrow, more advanced missiles and aircraft for flight outside the atmosphere, and satellites even though we cannot foresee precisely their employment." To General White "almost everything in space" fitted into the Air Force mission. "We foresee," he said, "that we are not only going

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to have manned bombers and missiles, but that eventually we will have manned space vehicles as combat weapons in the future."[335]

The assertions by General White and others that the United States needed to establish military capabilities in space seemed at odds with President Eisenhower's national space-for-peace policy. Conceptual studies made in the Office of the Air Force Deputy Chief of Staff for Plans and Programs also indicated that "control of space" would be a far more complex matter than control of the air. The techniques for control of the air had rested on an air force's capability to destroy air bases, to intercept enemy aircraft in flight, and to destroy planes by antiaircraft fire. Aircraft possessed great maneuverability. For the foreseeable future, however, space vehicles would be confined to the general vicinity of courses or trajectories selected at the time of their launchings. They would travel at extremely high velocities and would lack any great degree of maneuverability.[336]

In a major speech delivered to the Air Force Association's Third Jet Age Conference in February 1958, General White indicated that he had given thought to the space-for-peace policy and to means whereby control might be exercised in space. White said:

> The United States must win and maintain the capability to control space in order to assure the progress and preeminence of the free nations. . . .
>
> You will note that I stated the United States must win and maintain the capability to control space. I did not say that we <u>should</u> control space. There is an important distinction here. We want all nations to join with us in such measures as are necessary to ensure that outer space shall never be used for any but peaceful purposes. But until effective measures to this end are assured, our possession of such a capability will guarantee the free nations liberty. It does not connote denial of the benefits of space to others.
>
> In the past, when control of the seas was exercised by peaceful nations, people everywhere profited. Likewise, as long as the United States maintains the capability to control space, the entire world will reap the benefits that accrue. . . .
>
> There has been some discussion concerning whether or not the military should handle all United States activities in space. Under our form of government, I do not feel that this is really a problem. Over-all civilian control will be exercised, and rightly so. However, space research and development efforts and space operations must give due consideration to the military aspects.
>
> This is necessary because until other ironclad methods are devised, only through our military capability

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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. . . .

To control space we must not only be able to go through it with vehicles that travel from point to point, but we must be able to stay in space with human beings who can carry out jobs efficiently.

I look upon the Air Force's interest and ventures into space as being logical and natural as when men of old in sailing ships first ventured forth from the inland seas.

As these ancient seafarers' knowledge of the inland seas increased and they learned more about the elements, they built larger ships and ventured farther away from land. The achievement required men who had learned the many things there were to know about the inland seas. Similarly, ventures into outer space require men who know the air. There are no barriers between air and space. Air and space are an indivisible field of operations.

The Air Force progress toward space has been evolutionary--the natural development and extension of speed, altitude, and sustained flight. These qualities have been our stock in trade throughout the fifty years of Air Force history. We have strived continually to fly faster, to fly higher, and to remain airborne longer. . . .

The evolutionary process which has brought the Air Force to its high state of development is not going to change in direction because there are additional challenges in space. Aeronautics and astronautics are closely allied. . . .

I feel that a dangerous trap lies ahead of us if we partition our space efforts. We must have centralized direction of our national efforts to attain the best results from available resources, talent, and experience. Excessive duplication of effort would not only be a most severe economic drain on our country, but would waste energy and time. . . .

Once we attain the space capability, a lack of centralized authority would certainly hamper our peaceful use of space and could be disastrous in time of war. Failure to properly coordinate peaceful space activities under common direction could cause confusion, might result in wrong decisions, and would be a safety hazard. In war, when time is of the essence and quick reaction so necessary, centralized military authority will surely be mandatory.

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> A strong consideration as far as military space operations are concerned will always be the necessity for the fail-safe concept. A substantial proportion of our forces must maintain the capbility to make last-second decisions. This is one reason I am convinced that man in space will be a most important factor.
>
> Ninety-nine percent of the Earth's atmosphere lies within twenty miles' altitude above the Earth. To assure effective operations, there can be no division in responsibility between the control of the air up to twenty miles above the Earth's surface and the space above it. Air Force facilities, communications, and experience exist now for centralized control of operations in the Earth's atmosphere. This capability can easily be extended beyond the Earth's atmosphere as our operations in space develop.
>
> Before I close, I want to stress that I cannot conceive that mechanical gadgets will control space. Man will develop the equipment, send it off, and bring it back. On many occasions, and probably more than we envision now, man will fly the equipment. The point here is that man's judgment and skills will always be needed.

In his address White also pointed out that "the United States' capability to control space could ultimately approach absolute deterrence." This was true because reconnaissance eyes in outer space would permit "immediate warning of hostile action on the surface of the Earth" and would allow "much faster reaction on our part. . . which is not only quick, but strong and selective." In response to a question as to how space could be controlled, White responded: "One of the ways to control the sea in time of war and stress is the blockade. . . . I think the same thing conceivably could apply to exiting from the Earth's natural envelope into space." It would probably be better to seek to control a hostile nation's access to space than its reentry into the atmosphere. "You couldn't have reentry," he said, "if you kept people from getting out there."[337]

Although there was a general recognition that Air Force studies of space "had only scratched the surface of the problem,"[338] the Air Force had made a good start in rationalizing a new "aerospace" doctrine. On 29 October 1957 an editorial prepared by the Secretary of Air Force Office of Information's Internal Information Division first combined the words "air" and "space" when it referred to "air/space vehicles of the future." The word "aerospace" was apparently coined by Dr. Woodford A. Heflin of the Air University's Research Studies Institute who published an Interim Glossary, Aero-Space Terms, on 12 February 1958.[339] In view of the new

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thinking, the Air Policy Branch, Air Force Deputy Chief of Staff, Plans and Programs, proposed on 25 April 1958 that Air Force Manual 1-2, United States Air Force Basic Doctrine, should be revised. The Air Policy Branch proposed that the new doctrine should state that air power had "moved naturally and inevitably to higher altitudes and higher speeds until it now stands on the threshold of space operation." A new term "aerospace" meaning "air and space" had come into being, and "aerospace power" was its manifestation. The Air Force was the military agency predominantly responsible for aerospace doctrine just as in the past it had been responsible for air power doctrine. In aerospace the Air Force could not expect to enjoy the situation earlier referred to as a desired dominant position through control of the air. Instead, aerospace power would desirably possess "the capability to exercise the initiative in space: its purpose would be to operate in space and maintain control in space, not of space." Maintaining "general supremacy in aerospace" would be a desirable function quite similar to the function of gaining and maintaining "general air supremacy" that was assigned to the Air Force by law. The Air Policy Branch also suggested that the new doctrine should include the statement: "The positioning of aerospace power geographically and/or astronautically may have dominating significance in peace or war."[340]

The concept of "aerospace" caught on rapidly within the Air Force. In an article published in August 1958, General White remarked that Soviet air power was being rapidly expanded into "aerospacepower."[341] When he appeared before the House Committee on Science and Astronautics on 3 February 1959, White stressed the word "aerospace" throughout his prepared statement, and then defined it by stating: "The Air Force has operated throughout its relatively short history in the sensible atmosphere around the earth. Recent developments have allowed us to extend our operations further away from the earth, approaching the environment popularly referred to as space. Since there is no dividing line, no natural barrier separating these two areas, there can be no operational boundary between them. Thus air and space comprise a single continuous operational field in which the Air Force must continue to function. This area is aerospace. . . . Total aerospace power includes manned and unmanned air-breathing vehicles, spacecraft, and satellites and ballistic missiles."[342]

Congressional reaction to "aerospace" was somewhat less than unanimously enthusiastic. Chairman John W. McCormack of the House Committee on Science and Astronautics described "aerospace" as "a very sweet term, a very all-embracing term."[343] "Boys," Representative Flood exclaimed, "the Air Force has come up with a new phrase, 'Aerospace.' That is a beauty. . . . That means everybody is out of space and the air except the Air Force. . . . They have now staked out a claim to 'aerospace.'"[344] To Undersecretary of the Air Force Malcolm A. MacIntyre, however, "aerospace" was not a catchword but an attempt "to identify, in a single word, the continuous operational

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field in which the Air Force must function as technological progress permits us to operate farther and farther away from the earth's surface." MacIntyre denied that the Air Force claimed exclusive jurisdiction in aerospace. "In the use of the word 'aerospace,'" he explained, "there is no intention on the part of the Air Force to claim aerospace as an exclusive medium of our particular service. We recognize that the other services also have an interest, or, in the military parlance, requirements that can or should be met in the expanded medium of aerospace. However, each service's interest, or requirements, is justified only to the extent to which it enhances its ability to perform its particular missions."[345] In its final definition incorporated in the revision of Air Force Manual 1-2 issued on 1 December 1959, the Air Force stated: "The aerospace is an operationally indivisible medium consisting of the total expanse beyond the earth's surface. The forces of the Air Force comprise a family of operating systems--air systems, ballistic missiles, and space vehicle systems. These are the fundamental aerospace forces of the nation."[346]

Except for the recognition that "control in aerospace" was apt to require different techniques from those practiced in gaining and maintaining "control of the air," the Air Force viewed the atmosphere and space as one realm and saw no reason why the Key West definitions of strategic roles and missions should not continue to guide the organization of the Armed Forces. The Department of Defense, the Army, the Navy, and significant portions of the civilian scientific community differed with the Air Force positions on aerospace and aerospace power. The resolution of these diverse views would have a substantial impact on national organization for defense and for the utilization of space.

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