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HISTORY OF THE STRATEGIC ARMS COMPETITION 1945–1972

Part I

Office of the Secretary of Defense
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HISTORY OF THE STRATEGIC ARMS COMPETITION 1945 - 1972

PART I

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FOREWORD

The Historical Office of the Office of the Secretary of Defense was asked to undertake this historical analysis of the strategic arms competition in the spring of 1974 with the expectation that the project could be completed in 18 months to 2 years. A comprehensive classified history was to be prepared, subsequently to be followed by an unclassified version as well. The latter was envisioned as a contribution to the public discussion of the strategic arms competition and related arms control issues. Then-Secretary of Defense James R. Schlesinger and others believed that the lack of sufficient historical knowledge and analysis of the strategic arms competition as it evolved from shortly after World War II to the early 1970s handicapped the critically important discussion of these issues.

The lengthy period of time ultimately required to research, write, and edit the history reflects the difficulties inherent in a project of such scope and complexity. Seven years after its inception, this classified history, the work of three respected scholars--Ernest R. May, John D. Steinbruner, and Thomas W. Wolfe--is ready for distribution. The authors have presented voluminous historical evidence, analyses, and judgments as to the nature of the strategic arms competition, the interaction process, the internal decisionmaking processes in the United States and the Soviet Union, and many other matters.

An unclassified version of this study is now in progress. Timely comments from readers of the present work are welcome and may be useful in the preparation of the unclassified volume.

A. W. Marshall

Preface

This study was undertaken at the direction of Secretary of Defense James R. Schlesinger in 1974. The OSD Historian acted as director of the project and general editor of the final study under the overall guidance of the Director of Net Assessment, Andrew W. Marshall.

The principal authors of the study are Ernest R. May, Harvard University, Thomas W. Wolfe, Rand Corporation, and John D. Steinbruner, Yale University and the Brookings Institution. The choice of recognized scholars from outside government to prepare the study reflected the Secretary's preference for an objective work as free as possible from an institutional point of view. Therefore, although commissioned, supported, and published by the Department of Defense, the study is not "official history." It represents the views of the authors rather than the Department of Defense. The authors do not concern themselves with what policy ought to be but with what it has been. The study should be regarded as a contribution by the authors to the continuing national discussion and analysis of the important strategic issues treated in the study.

Secretary Schlesinger prescribed the preparation of a thorough, objective, critical, and analytical history of the strategic arms competition between the United States and the Soviet Union since 1945, with emphasis on the long-term historical view. He asked also for careful reconstruction of the events of the first 10 to 15 years after World War II because of the seminal nature of the postwar period. The

history was to focus on the dynamics of the competition--the factors and decisions that underlay changes in the major strategic offensive and defensive forces since 1945. Secretary Schlesinger believed that placing the strategic arms competition in critical historical perspective could provide a more authoritative basis than has existed in the past for discussion and debate of strategic issues, and for analysis of interpretations, hypotheses, and myths pertaining to the subject. As the final product, he had in mind an unclassified version of the study.

The classified history provides a systematic survey and analysis of the period 1945-1972 with some additional information and observations regarding more recent years. A special effort was made to provide thorough coverage of the first dozen years after 1945 in the conviction that this period is essential to an understanding of developments during the 1960s and 1970s. Many basic patterns of relationship and interaction were established during this period and many decisions that established long-term trends and policies were taken by both sides to the competition. Presentation of the Soviet side of the competition was a major objective of the study and represents an important achievement in view of difficulties in acquiring information, both because of the secrecy of Soviet decision processes and consequent actions and the problems of recovering intelligence files and data for periods more than a few years back.

The objectives of the study include the following:

1. To permit testing of current hypotheses about the competition and the interaction process against a more complete historical record than has previously been available.

2. To characterize U.S. and apparent Soviet strategies for the arms competition.

3. To permit more and better comparisons and contrasts between U.S. and Soviet programs.

4. To improve our capacity for shaping U.S. programs and policies through a better knowledge and understanding of Soviet actions and responses to U.S. actions.

5. To help in the creation of improved models and new hypotheses about the competition based on the more complete historical record.

6. To help clarify thinking within the Defense community and the Congress and among the public interested in defense, arms control, and strategic issues.

Competition, in the basic sense of the term, has existed between the United States and the Soviet Union since 1945. There has existed in varying degree and intensity a sense of rivalry, contest, emulation, and struggle for superiority between the two in many of the interactions that are characteristic of relations between nations. This study has focussed on the nature and extent of the arms competition between the two countries, and particularly on those arms which are referred to as strategic. These are primarily long-range nuclear weapons and vehicles with which the two countries can directly threaten each other's homelands. But other weapons and forces of lesser range and power also had important strategic impact, especially in the earlier days, and had to be taken into account. These included not only medium and intermediate-range ballistic missiles and strategic defensive forces but also general purpose forces--sea, land, and air.

The search for similarities between the past and present is of vital importance, particularly on the Soviet side. Exacting analysis of the historical past can yield evidence of long-term trends and recurrent and repetitive cycles of behavior which assist our understanding of the present and our planning for the near future. It can add a greater measure of assurance, if not predictive capacity, to our actions. Technical observations made 15 or 20 years ago remain highly pertinent; they may even have far greater utility in the present than they had at the time they were made.

Similarly, the search for variations in behavior and programs, for the unstable as well as the stable, for constraints as well as initiatives, can lend illumination to hypotheses and models of the competition. To get at the interaction process between the United States and the Soviet Union, a major objective of the study, a consistent effort has been made to focus on the perceptions, assessments, and reactions of both sides.

Arrangement and presentation of so complex a subject has been difficult. Some observations about the form and content of the study may therefore be helpful. In part, such unevenness, imbalance, and duplication as exist derive from the multi-authorship of the study. There are variations in organization and structure between chapters, differences in breadth and depth of treatment, shifts in emphasis and focus, and differences in the manner and degree to which authors combine historical description and historical analysis. In part, these differences derive also from the amount and quality of evidence available to the authors. For the earlier chapters, the paucity and lack of quality of materials on the Soviet side

resulted in broader and more general treatment of the subject. For the period since 1960, the documentation is much richer and the focus narrower and more precise, particularly for the Soviets, where the concentration is chiefly on weapons, forces, and deployments.

The strengths and weaknesses of the study are largely the result of the availability or nonavailability of evidence, which was, of course, much harder to come by on the Soviet side. Accordingly, to present a comprehensive account of what happened, and to essay interpretations and judgments, it has been necessary, as in almost all analyses involving the Soviet Union, to resort to speculation and inference to build bridges to understanding and to fill gaps.

Special mention should be made of information drawn from intelligence sources. It should be borne in mind that intelligence data, particularly about weapon systems and military forces, is periodically revised and updated and therefore some of the information in this study may be subject to change.

Statistical data is drawn from a number of sources, among which some inconsistencies are inevitable. The OSD Comptroller prepared a special study on the U.S. defense budget from 1945 to 1976 which is the basis for much of the budget data in this study. Other statistical sources have been used to present budget information not found in the Comptroller study, including comparative U.S. and Soviet data.

There are a number of differences between statistical tables in the text and the appendices (chiefly Appendix 7), particularly with reference to forces and weapon systems. These occur principally because the data in

the tables in the text are compiled from a number of different sources which are not consistent in categorization or presentation of content. Thus, these sources use a variety of categories for presenting information on forces and weapon systems--total inventories, deployed forces and systems, systems on hand, ready forces and systems, etc. No single consistent set of data for all of the information required was available, and it was often necessary to compile new tables which, although they contain similar information, may be inconsistent with other tables in the study. These inconsistencies are not significant and do not affect the text. In spite of the differences between text and appendix tables, it was judged desirable to include the more comprehensive appendix tables because they provide useful and ready reference not available elsewhere in the study.

That the study is not exhaustive follows from the nature and scope of the subject. It would have been unmanageable if it had attempted to include all aspects--both U.S. and Soviet--of the strategic arms competition. Therefore, such important aspects as the political, diplomatic, and intelligence records have not been treated comprehensively. Many questions and problems remain to be answered. A great deal of sustained historical analysis must be done if we are to derive the fullest benefits from this historical approach.

Major supporting studies were prepared under the direction of the Army, Navy, and Air Force, by the Institute for Defense Analyses and the Rand Corporation, and by the Office of the Historian, OSD. These provided invaluable collections of data and points of view that contributed a great deal to the final study. A list of these materials is appended. The

authors conducted a large number of interviews with former officials and other knowledgeable persons, thereby greatly enriching their understanding and interpretation of the historical record. Research into original records by the authors and their assistants constituted a major part of the effort and lends increased authority to the final product.

So many people and organizations contributed to this project in some degree that it is difficult to be certain that all are acknowledged. Mention has been made above of the valuable studies prepared by the military services and research organizations, which involved scores of participants. Other important studies were prepared in the Office of the Historian, OSD. A comprehensive chronology of the strategic arms competition was compiled by Herman Wolk, Dean Stevens, Jack Shick, Col. Jack B. Shaw, USAF, and Alice C. Cole. Samuel R. Williamson and Samuel F. Wells, with the assistance of Steven Rearden, prepared special supporting studies for the earlier period. Frank Walter made an invaluable contribution to the later chapters on the Soviet side through his penetrating research into the intelligence records. Ronald Hoffman contributed a series of excellent research memoranda on continental defense for use in Chapter V. Particular acknowledgment is due Harold Poppe of the CIA for his indispensable efforts in facilitating the work of the authors and researchers.

Special thanks are owing to those who attended seminars and provided informed criticism: Paul Nitze, Robert W. Komer, Ray Cline, Spurgeon Keeny, John DesPres, Lt. Gen. Glenn Kent, USAF, V/Adm. Gerald Miller, Ronald Stivers, Henry S. Rowen, Graham Allison, and William W. Kaufmann. A large number of readers of parts of the manuscript provided helpful and constructive

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The administration of the project would have been impossible without the assistance of Col. Jack B. Shaw, USAF, Col. Dale L. Reynolds, USAF, and Sgt. Charles Hawley, USAF. Gloria Duarte typed most of the manuscript one or more times and performed remarkably in keeping track of a large variety of drafts and assembling the finished study. The final editing of the documentation fell to Alice C. Cole, who brought order out of chaos with her usual skill, rapidity, and tact.

Finally, Andrew W. Marshall, who provided general oversight of the project, was a model of patience, support, and understanding. His constant interest, encouragement, and constructive criticism kept the project always afloat and insured its completion.

Alfred Goldberg

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CHAPTER I

THE ORIGINS OF THE COMPETITION: THE UNITED STATES FROM 1945 TO 1948

When hostilities ceased at the end of World War II, a new world order was already emerging. Of all the participants, only the United States and the Soviet Union remained as world powers. The other prewar world powers -- Germany, Japan, France, and Great Britain -- were all reduced to second class status. The great change in the U.S. world role in the early postwar years occurred in part because of perception of the Soviet Union as an aggressive, expanding power which threatened all the non-Communist world, including ultimately the United States. The perception of the Soviet Union as the only major military threat, particularly in Western Europe, influenced U.S. national security policy. On the Soviet side, perception of the United States as the major rival and as a threat to the Communist world, exerted a similar influence. Rivalry between the two powers took many forms. The development of competitive military forces was merely one, and strategic weaponry came to serve as a leading measurement of their relative power and standing.

When World War II ended in the summer of 1945, the United States held a great advantage over the Soviet Union in strategic air power. It had B-29 bombers which could reach targets deep in the Soviet Union from advanced bases and carrier aircraft able to attack Soviet coastal areas. It had a large inventory of conventional bombs, and it had the components for one atomic bomb and materials for others. Although the

Soviet Union possessed huge ground forces positioned near territory potentially of great or even vital interest to the United States, it had no bombers that could reach the United States and no nuclear weapons.

In the first 2 or 3 years after the war, the United States dismantled most of its military forces and did little to increase its stockpile of atomic bombs. In fact, as of April 1947, the Chairman of the new Atomic Energy Commission, David E. Lilienthal, informed the President that there were no atomic bombs available for immediate use.[1] Meanwhile, the Soviet Government invested heavily in a new long-range air force, an atomic bomb development program, and research on missiles.

In its broadest sense, competition may be said to have started at this time, when the Soviets began to seek what the United States already had. The strategic arms competition, a part of the larger competition, commenced soon after World War II, when the Soviets gave priority to strategic forces in their perennial quest to catch up with and surpass the United States.

For this reason, a history of the strategic arms competition ought to start with an account of Soviet actions. There are, however, three compelling reasons for focusing initially on Washington. First, one needs a sense of what the Soviets may have thought they were trying to catch up with.* Second, the initial period of competition involved changes in the United States which had no counterparts in the Soviet Union. The

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* For a discussion of Soviet perceptions, see Chapter III.

United States, for the first time, committed itself to a continuing role of active world leadership. Russia, on the other hand, had functioned as a world power for more than two centuries. Third, we know more about the United States. Without necessarily assuming that the two powers behaved alike, one can reconstruct the development of U.S. strategic forces and of ideas concerning their use and concerning competition with the Soviets and frame questions concerning parallel developments on the Soviet side, where the evidence is more fragmentary.

The Early Cold War

By the 1950s, the relationship between the United States and the Soviet Union was aptly characterized as "Cold War." It is not easy, however, to say when this Cold War commenced.

Viewed historically, U.S.-Soviet competition was almost inevitable. It had been prophesied more than a century before, in the 1830s, by De Tocqueville, who had remarked the underlying differences and potential antagonism between the two nations: "There are at the present time two great nations in the world, which seem to tend towards the same end . . . I allude to the Russians and the Americans. . . . Their starting-point is different and their courses are not the same; yet each of them seems marked out by the will of Heaven to sway the destinies of half the globe."[2]

Many of the characteristics of the Soviet state are derivations or continuations from the Czarist empire. Political despotism,

police terror, and limitation on individual liberties came directly from Czarist Russia. So did some imperialist and expansionist impulses. The maintenance of a large military establishment has been continuous in modern Russian history, and the Russian people are accustomed to living with it.

Antagonism between the United States and Soviet Russia can be traced back to the beginning of the Soviet regime in the Bolshevik Revolution of 1917. Commitment to an open society and fear of revolutionary change combined in the United States to produce strong ideological opposition to communism, even during the bitter years of the Depression. Not until 1933 did the United States formally recognize the Soviet Union and establish full diplomatic relations.

Between 1939 and 1941, in the era of the Nazi-Soviet pact, Americans scarcely differentiated between the two. After the Germans invaded Russia in mid-1941, Senator Harry S. Truman reflected a widely held opinion when he said that Nazis and Communists were equally evil and that the world would be well off if they destroyed each other.[3]

Recollection of this long-term unfriendliness dimmed during the short period when the United States and the Soviet Union were allies against the Nazis. Americans who had embraced the Russians as comrades-in-arms construed the militant Soviet behavior after the war as a sudden reversal. Had they had longer memories,

they would perhaps have perceived much of what was happening as merely a return to the traditional relationship. The suspension of most differences between the United States and the Soviet Union during World War II in the face of the mutual enemy had not really altered the underlying hostility.

In the first half of 1945, which saw the death of Roosevelt and the surrender and complete occupation of Germany, differences between the two states became increasingly apparent. The Soviets criticized American and British failure to include them in negotiations for surrender of German forces in Italy. They condemned the decision at the end of the war in Europe to terminate lend-lease.* The United States Government, for its part, took the Soviet Union to task for raising new questions concerning the constitution of the United Nations and for seeking to put Communists in control of Poland, Rumania, and Bulgaria. By August 1945, when Truman met with Stalin and Churchill at Potsdam, U.S.-Soviet relations were already visibly troubled.

At the end of World War II the U.S.-Soviet relationships dominated international politics. Britain, though a victor in the war, lacked the strength and will to play a large independent role. Most of Europe was in a state approaching chaos. On the other side of the globe, Japan had been conquered, and China was torn by civil war. Across the intervening

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* The decision was made in May but shipments were terminated only in August.

landmass, from the Mediterranean to the South China Sea, movements for national independence and for social or economic reform were producing turmoil. Almost everywhere the United States and the Soviet Union were in direct or almost direct confrontation. In Germany and Korea, their armies stood opposite one another. In Western Europe, the Middle East, and East Asia, Communists, under orders from or at least in league with Moscow, resisted the establishment or continuance of governments favorable to or favored by the United States, inspired to fervor by belief that the aftermath of war left bourgeois societies ripe for revolution. In Eastern Europe and other areas under Soviet influence, propertied and educated elites meanwhile sought support from allies in the American public, hoping desperately for rescue by the American government. These circumstances would probably have pitted the United States and the Soviet Union against one another even without fundamental ideological cleavage and a previous history of animosity.

In 1945-46, the year following Potsdam, American-Soviet differences intensified. Meetings of the Council of Foreign Ministers saw sharp exchanges and few concessions by either side. In December 1945, the United States publicly attacked the Soviet Union for failing to fulfill its commitment to withdraw from northern Iran. Spokesmen for the United States became less and less guarded in criticizing Soviet policy in Europe and in opposing any Soviet role in the administration of occupied Japan.

Still, the hopefulness of the war years persisted, even at high official levels. At sessions of the Council of Foreign Ministers, Secretary of State James F. Byrnes continued to seek working agreements with the Soviets. The U.S. Baruch plan for international control of nuclear energy, though full of reservations reflecting suspicion of the Soviet Union, had some conciliatory features, for it offered promise that the United States would voluntarily give up its monopoly control of what some commentators had already dubbed "the absolute weapon." Prominent U.S. figures continued to voice faith in future cooperation, among them former Vice President Henry A. Wallace, who sat in Truman's Cabinet as Secretary of Commerce. From the American standpoint, one could not yet accurately characterize the American-Soviet relationship as one of Cold War.

Only during the second and third years of peace, from the summer of 1946 to the summer of 1948, did this perception develop. Within the executive branch in the United States, consensus emerged that the Soviet Government intended to expand the domain of communism, that it had no inclination to compromise its aims for the sake of good relations with the West, and that it might therefore seize any safe opportunity to discredit, undermine, or overthrow any non-Communist government. Set forth elegantly and forcefully by State Department Soviet expert George F. Kennan in dispatches from Moscow in 1946, which circulated widely in Washington, this conception of Soviet behavior gained currency in officialdom.

In October 1946, George M. Elsey of the White House staff prepared a memorandum summarizing the thinking among officials and government experts concerned with Soviet affairs. Presented to President Truman over the signature of Clark Clifford, Special Counsel to the President, this memorandum equated Communists with Nazis and likened the challenge to that faced by the Western powers when they mistakenly appeased Hitler in the 1930s. It indicated that many of Truman's advisors and aides already felt concern that rapid demobilization of U.S. military forces, matched by no comparable demobilization on the Soviet side, was producing increasing disparity in power. It mentioned evidence that the Soviets were working to develop strategic weaponry and went so far as to say that the "United States must be prepared to wage atomic and biological war."

Those who might have argued differently had departed the government. Wallace had been fired in the early autumn of 1946. Byrnes was about to go, in part because he was thought to have offered too many concessions to Moscow. Loyalty-security investigations, which put in jeopardy the jobs of Federal employees who could be accused of ever showing pro-Soviet inclinations, discouraged questioning of the consensus from within the bureaucracy.

Somewhat more slowly, alarm manifested itself in Congress and among the public. In March 1946, when former Prime Minster Winston Churchill delivered his celebrated "iron curtain" speech at Fulton, Missouri, most

American newspapers expressed surprise, even though Churchill's criticism of the Russians was relatively mild and was bracketed by pleas for mutual understanding and cooperation. Soon, however, it became common for editorials to describe the Soviet Union in terms previously applied to Axis powers. Many candidates for office in 1946 campaigned as anti-Communists, and the November elections, giving the Republican Party majorities in both Houses of Congress, swept out almost all those in either party who had or might have displayed sympathy with the Soviets. Meanwhile, labor union leaders generally identified as "liberals" battled Communist elements in their own organizations and European Communist labor federations, which were rivals of non-Communist federations. Revelations, first in Ottawa and then in Washington, of Soviet wartime espionage in Canada and the United States served to convince many citizens that the Soviet Union had all along anticipated and prepared for postwar antagonism and that hopes for cooperation were chimerical.

In these circumstances, the Truman administration moved toward more resolute opposition to any further extension of Soviet or Communist influence. In June 1946, the President discussed with his defense advisors the possibility of remobilizing and sending 30 divisions to Europe if the Russians should attempt to extend their sphere in Germany. A few months later, when advised that the Soviet Union might make demands on Turkey which would jeopardize Turkish independence, the President authorized firm diplomatic support of the Turks. If the Soviets did not relent, Truman

said, he was prepared for war.[5] When the harsh winter of 1946-47 caused the British to conclude that they could no longer prop up Turkey and Greece, they asked the Americans to take over. The President delivered a dramatic message to Congress in March 1947, not only assuming these commitments but declaring, in what came to be called the Truman Doctrine, that the United States should back political elements anywhere in the world that were fighting against Communist subversion. Congress applauded his language and voted the aid requested for the Turks and Greeks. Much of the impetus for this policy derived from the situation in Greece, where the Greek Government was already engaged in a desperate struggle against guerillas supported by neighboring Communist states. U.S. military and economic aid helped defeat the insurgents after two more years of struggle.

In the summer of 1947, Byrnes's successor in the State Department, General George C. Marshall, put forward his famous Marshall Plan for large-scale economic aid to Europe. Although the offer included the Soviet Union and other Communist states, the expectation was that they would find American conditions unacceptable, since the primary purpose of the program was to alleviate economic and social problems in Western Europe, make non-Communist governments more popular and more stable, and thus frustrate the subversive designs of Communist leaders.

In spite of hardening American attitudes, U.S. policy still gave at least an appearance of flexibility. Marshall's offer to Communist governments was one evidence. Another was the relative caution with which the Administration moved toward setting up a non-Communist regime in the Western-occupied zones of Germany. Yet another was its policy

toward China, where Chiang Kai-shek's Nationalists were visibly losing ground before Communist forces. Even though American military planners thought that relatively small numbers of American advisors could assume direction of the Nationalist armies and perhaps turn the tide, and even though the U.S. Ambassador in China pleaded for such advisors, the Administration decided that rescue of Chiang was not worth the risk.[6]

The relationship between the United States and the Soviet Union became steadily more hostile. The Soviet government not only rejected Marshall's offer in the summer of 1947 but advised all Communist-controlled governments in Europe to do likewise. Presumably following guidance from Moscow, Communist parties in Western Europe ceased cooperation with bourgeois parties and resorted to demonstrations, strikes, and other tactics calculated to block successful economic stabilization. In Hungary, Communists seized complete control of a government in which there had previously been at least a pretense of representation of non-Communist elements. In Czechoslovakia, which supposedly had a model coalition regime, Communists forcibly ousted non-Communists from the government in February 1948 and ended most of the arrangements which had distinguished that state from others in Eastern Europe.

The coup in Czechoslovakia made more of an impression in the United States than almost any other event in the early history of the Cold War. It vividly recalled Hitler's successful takeover just before World War II. It was seen as proof that no deals or compromises with Communists could ever work. Even though Yugoslavia's defection from the Soviet camp a few months later elicited from Moscow violent words but little action, the Czech

coup continued to be read by many as signaling an intention by the Soviet Union to take the offensive before the Western Europeans regained strength.

Reinforcing this view was Soviet action in June 1948 sealing off all road and rail communications with Berlin, where the United States, Britain, and France had sectors of occupation. Offering the Western powers an apparent choice between acquiescence or a resort to military force, this Berlin blockade was seen as a trial of will and determination comparable to those repeatedly provoked by Hitler in the 1930s. Apprehension spread that, as in the 1930s, the outcome might be a new world war.

Service Planning, 1945-48

Prior to 1948, the developing rivalry with the Soviet Union remained almost exclusively political in character; U.S. military programs seemed to be largely unaffected.

Although the future Air Force remained part of the Army until September 1947, the Army and Navy went their separate ways. Indeed, they were so separate that Secretary of War Robert P. Patterson told a congressional committee in 1946: "There is no way you can get . . . an overall view of the national defense. You ask me questions about the Navy, and I say I do not know, and I do not. . . . you have to operate in the dark." Planning with regard to future military forces went on

more or less independently within each of the Services. Some of this planning commenced before the end of the war, and assumptions and force projections developed not only before the Cold War but even before Hiroshima and Nagasaki continued to exert influence for some time after the war.[7]

The Army's plans were the most coherent even if, in the end, the least realistic. They envisioned a future war somewhat like the European war of 1939-45. Conditions would be different in that initial air bombardment would hamper both sides. Nevertheless, the crucial phases of the war would once again entail industrial and military mobilization, movement across the seas of large expeditionary forces, and, eventually, the conquest of territory by infantry supported by armor, artillery, and land-based or sea-based tactical aircraft. Army plans gave a rough order of priority to the following: (1) ready ground forces suitable to deal with emergencies and to serve as cadre for rapid mobilization -- ideally around 25 divisions; (2) universal military training or some form of peacetime selective service that would make it possible to mobilize quickly a trained army of several million men; and (3) development of new vehicles, ordnance, and aircraft that might be produced in quantity when mobilization came.

Assumptions in the Navy were not dissimilar. Initial postwar plans drawn up in 1943 took it for granted that the task of the Navy in a

future war would be, first, to clear the seas of enemy submarines; second, to safeguard and transport ground forces moving to distant theaters; and, third, to provide seaborne air and artillery support for ground force operations. Not entirely discounting the possible effect of initial strategic bombing, these plans made a case for maintaining larger ready forces than would be needed if the United States could mobilize as safely and slowly as in the two world wars. They called for a "balanced fleet" built around a minimum of 12 attack carriers, a variety of supporting surface ships, and 80 submarines.

Some airmen in what subsequently became the Air Force held a different view of the future. The most powerful group of high-ranking officers came from the bomber forces. Although there were differences among them over bombing policy -- whether to emphasize military/industrial targets or urban targets -- there was general agreement that nuclear airpower was likely to be decisive in a future war. The first phase could well be the only phase, with the side more damaged at the outset having no choice but to surrender to the side less damaged. If it did not, its conquest would require little more than a mopping-up operation by ground forces.

Tactical airmen tended to think in terms of battlefield airpower; their influence showed in plans for a postwar Air Force which included

fighters, tactical bombers, and transport aircraft. Ideally, the planners agreed, this Air Force should consist of 138 groups. Forced to take realistic account of the money that might be available, they settled on a practical objective of 70 groups. Of these, 20 would consist of heavy and medium bombers for strategic air operations; 40 would consist of fighters, tactical bombers, and reconnaissance aircraft; the remainder would be made up of transport planes.

Since none of the Services received the money it requested in any of the immediate postwar fiscal years, each had to pare planned force levels. The Army had to retreat from the notion of maintaining 25 divisions in peacetime. The Navy had to plan on having only 8 attack carriers instead of 12, and the Air Force had to reduce its projected strength from 70 groups to 55, sacrificing primarily transport groups while preserving the balance between bombers and fighters. The general assumptions and force plans of the Services, however, remained essentially unchanged.[8] Until 1948, Service spokesmen going to Capitol Hill to defend funding requests showed little evidence of being influenced either by the accelerating Cold War or by an awareness that Hiroshima might have marked a revolutionary change in the nature of warfare. In retrospect, the proposed programs seem more appropriate for 1938 than 1948.

Part of the explanation is that leaders in the Services were preoccupied with occupation duties and especially with demobilization. The magnitude of their tasks is barely suggested by numbers. Between

1 July 1945 and 1 July 1948, the Army went from almost six million to a little over half a million. In operational ships and aircraft, if not in personnel, the Navy and Air Force shrank correspondingly. The sheer effort of moving men and materiel back to the United States, processing discharges, and destroying, selling, or storing supplies, equipment, ammunition, guns, vehicles, and the rest demanded most of the military's time and attention. While demobilization was in progress, the Services found it difficult to focus in any organized way on questions relating to possible future wars.

More important still, the leaders of the Services were engaged in intense debate with one another about the future organization of the military establishment. During World War II, a number of people in Congress and in the Army had become convinced that the nation would be better off with one unified military Service. In general, Army officers saw merit in there being a single chief of staff and general staff. With few exceptions, Navy officers had the opposite reaction. They feared that a unified high command would be dominated by ground force officers and airmen who lacked adequate appreciation of the importance of seapower and what the maintenance of seapower entailed. The central interest of Army airmen was to gain independence, and they were of two minds as to whether this would be furthered more by some form of unification or simply by creating a third, coequal Service.

Dispute over unification continued from 1945 to 1947. Although Truman originally leaned to the Army view, he was moved by some of the Navy's arguments. Concluding also that the Navy had strong congressional and public support, he accepted a formula endorsed by Navy Secretary James V. Forrestal, and Congress incorporated this formula in the National Security Act of 1947. It vested in a Secretary of Defense "general direction" of the National Military Establishment, consisting of separate Army, Navy, and Air Force Departments. It also formally established the Joint Chiefs of Staff, theretofore a body without a legislative charter, to perform collectively the tasks of an overall chief of staff. In amendments based on experience, Congress 2 years later provided that the Secretary of Defense head a Department of Defense of which the three Service Departments would be components, and that the fourth member of the JCS be entitled Chairman and be served by a small staff.

Many other issues remained unresolved. The Army and the Air Force still differed over their respective responsibilities for air operations. Although they agreed that artillery and fighter-interceptors both had roles to play in air defense, they disagreed as to the most desirable mix of the two and as to whether operational command should

lie with gunners primarily concerned with target destruction or with airmen concerned also about the survival of pilots. The Navy and the Air Force, meanwhile, differed even more violently concerning seaborne aviation. World War II had seen fliers within the Navy win a decisive victory over their long-term rivals, the champions of battleships and cruisers. Dominating all naval elements but the submarines, the naval fliers believed that carrier-borne aircraft could not only control the seas but could and should provide most of the air support likely to be needed by the American ground forces in the initial stages of any foreseeable future war. To Air Force aviators, on the other hand, carriers seemed an extravagance -- highly vulnerable and serving almost no purpose that could not be served more cheaply and effectively by land-based planes. Since bombers and fighters were gaining steadily in range, they could, in the Air Force's view, ensure control of the air over most, if not all, the sea lanes and provide most, if not all, of the support required by expeditionary forces. Though not going so far as to advocate the scrapping of all carriers, Air Force planners proposed that the Navy confine itself to operating surface vessels, including carriers, while the Air Force assumed control of all aircraft, including any that might operate from seaborne platforms. The gap between the two Services could hardly have been greater.

For a year following passage of the National Security Act, the top officers of the Services were locked in conflict over language

that would define their respective roles and missions. Long special sessions held by the Secretary of Defense with the JCS at Key West, Florida, in March 1948, and at Newport, Rhode Island, in August 1948, finally produced ambiguous compromise language which assured the Navy of control over carrier aircraft and of a mission not confined exclusively to attacks on targets at sea, while at the same time assigning the Air Force primary responsibility for strategic air operations.

Battles over unification and definition of roles and missions occupied much of the time and energy of leaders in the Services during the whole period prior to the middle of 1948. In the circumstances, it is understandable that they did not devote much attention to review of postwar force plans which, in any case, the President and Congress seemed little disposed to implement.

That plans and force projections continued largely to ignore the development of nuclear weapons is also understandable if one notes all the uncertainty which existed concerning such weapons. Since information about the bomb, its design, and its effects was very closely held, scarcely more than a handful of military officers knew enough to think in practical terms about how the weapons might be used. For a few years, too, it appeared that strong international

controls might be imposed on the use of atomic weapons. Well after the end of 1946 when the Soviets finally rejected the Baruch Plan, planning papers in the Pentagon and State Department continued to discuss international control as a live possibility. Not until 1949 did it become the accepted assumption that this would not be the case.[9] The few officers who did have knowledge of nuclear weapons had to assume in any case that they would remain very scarce and pose problems in operational use, for fissionable material was thought to be rare; the processes for converting it into actual bombs were complicated, delicate, and time-consuming; and the bombs themselves were expected to remain large, clumsy, and inaccurate. Since the atomic bomb dropped at Bikini atoll in 1946 missed its target of captured and surplus ships by a wide margin, knowledgeable military and naval planners could hardly recommend heavy dependence on nuclear weapons.

A further complicating factor was the slowness with which a postwar nuclear weapons program developed. The Army had managed the wartime Manhattan Project but had made little effort to retain it, chiefly because it did not consider it an appropriate function and because it feared political complications. Moreover, there was strong agitation in Congress and among scientists for civilian control of nuclear energy. In mid-1946, Congress authorized creation of a civilian Atomic Energy Commission (AEC), with a General Advisory Committee and a Military Liaison Committee to provide it with advice, respectively from scientists and military and naval officers.

It was early 1947 before this apparatus began to function. Since many facilities had meanwhile shut down and many scientists and engineers had gone off to industry or academia, the new AEC inherited a program in shambles. The commissioners needed time to plan and thus were slow to begin prodding the military establishment to specify needs and wants for nuclear weapons.

Given demobilization, debate over unification and roles and missions, and the state of atomic energy programs, the Services deferred efforts to make realistic plans for future wars or to consider the possible implications of the nuclear revolution. Although committees within the JCS organization, representing all the Services, began studying these subjects as early as December 1945, their work yielded only tentative concepts, never formally approved by the Chiefs. There was no joint emergency war plan until the very eve of the Berlin crisis in 1948.[10] Nor were there even Service plans going much beyond those developed during the late stages of World War II. In March 1948, the Chief of Staff of the new Air Force received from his Aircraft and Weapons Board a report that the Services lacked plans for strategic bombing operations employing nuclear weapons and did not even have an adequate program for developing appropriate forces.[11]

The small research and development budgets of the Services, to be sure, were funding work on future strategic weapon systems. All were

committed to the principle voiced by General Eisenhower when he was Chief of Staff of the Army in 1946: "We must be superior to any nation on any kind of weapon or equipment which we need."[12] While no actual effort was justified in terms of Soviet programs that needed to be paralleled or defended against or even anticipated, each Service had in development one or more weapon systems which it justified in part or in whole in terms of potential for posing a strategic threat to the Soviet Union. The Army hoped eventually to have not only defensive surface-to-air missiles but also very long-range surface-to-surface missiles. As early as mid-1946, the Navy represented its projected carrier force as "a most suitable means of waging atomic bomb warfare," and in late 1947, it justified its plans for a nuclear-powered submarine partly in terms of its prospective capability as a platform for launching a 500-mile-range "strategic guided missile" or providing terminal guidance for a longer range land-launched missile.[13]

Except in such research and development, however, the U.S. military establishment cannot be characterized prior to 1948 as engaged in a strategic arms competition with the Soviets or as a force within the United States Government promoting such competition. On the contrary, evidence concerning actual U.S. military programs -- procurement, deployment, budgetary allocations, and overall force posture -- in the period 1945-48 can only be construed as indicating little national urge toward competition in armaments, strategic or other.

The Development of Deterrence[14]

Outside the military establishment there was, however, a developing body of doctrine which would provide a rationale more elaborate than General Eisenhower's simple principle of superiority in a strategic arms competition. It revolved around the concept of deterrence.

In 1946, Bernard Brodie and four other social scientists published a book entitled The Absolute Weapon. Although the contributors differed among themselves, they agreed that the atomic bomb required massive changes in assumptions not only about actual warfare but about peacetime relations among rival powers. One of the authors contended that the bomb could serve for "determent." Fear of it could be sufficient to prevent any ambitious state from embarking on or even risking a general war.[15]

The fundamental idea did not seem new. Especially in the Navy, but in the other Service as well, many officers had trouble understanding the novelty of what came to be called "deterrence" because they had long believed that the United States could secure peace by maintaining and displaying ready military forces and the will to use them. But the concept of nuclear deterrence, as it took form, was distinctive in assuming that a government could face destruction of its own natural life even though it reckoned itself able, in conventional terms, to win a war, that is, to defeat an opposing power's armed forces and to conquer some or all of its lands.

So long as the United States retained a nuclear monopoly, the novel features in this theory of nuclear deterrence did not become fully apparent. They were not to be widely appreciated for many years. In the early postwar period, many Americans seized upon "deterrence" as signifying only a situation in which the United States deterred war by the threat of its atomic arsenal.

This notion of deterrence had profound appeal. The public accepted the general proposition that the United States should not revert to isolationism, that it bore responsibility for preservation of world peace, and that this responsibility required greater military readiness than in the past. At the same time, great uncertainty prevailed as to the economic future. Fear of a new depression alternated with fear of runaway inflation, and except among a handful of convinced Keynesians, the assumption prevailed that the proper role of government was to get its budget into balance. The levels of preparedness recommended by the Services seemed to the President and Congress to be far too costly. The President preferred to emphasize maintenance of a base for mobilizing a large army.

Despite polls indicating that a majority of the public approved of universal training, Truman could not convince the Congress. Many Representatives and Senators sensed that their constituents would eventually turn against a program that would come to seem a peacetime draft. Many also questioned whether preparing for long-term mobilization of several million citizen soldiers was the most effective means for meeting the nation's global responsibilities,

for even Army witnesses waffled on whether UMT would be preferable to maintenance of regular divisions.

In the spring of 1946, Congress displayed some independence in dealing with the Administration's defense proposals, even though both Houses had large Democratic majorities and some disposition persisted to help a new President through a difficult period. UMT legislation did not pass. Though the draft was extended for the sake of filling billets in occupation forces, the basic law was so amended as to handicap any efforts by the Army to maintain effective combat units. The Military Affairs, Naval Affairs, and Appropriations Committees of the two Houses registered their preferences in votes trimming funds for the Army proper while granting all that had been asked for the Army Air Forces, gratuitously increasing funds for nuclear activities still administered by the Army, and awarding the Navy not only the money requested by the Administration but some of the additional sums needed for forces which had been vetoed by the President and his Bureau of the Budget. For the most part, naval airpower benefited. Congress thus showed an early disposition to favor emphasis on nuclear weapons and airpower as opposed to creating a base for large-scale manpower mobilization or maintaining combat-ready ground forces.

After the elections of November 1946, with the Republican Party controlling both the House and Senate, all Administration proposals received unsympathetic treatment. Not only did a UMT bill once again fail

passage, but the draft was terminated altogether, and the House Appropriations Committee made deep cuts in funds for both the War and the Navy Departments.

The committee's action to reduce by 10 percent the allocation for aircraft procurement was reversed on the floor by a coalition of Democrats and members of the Republican majority. The Senate then voted not only to restore all other reductions in the Air Force budget but to provide more money for it than the Administration had asked. Both Houses showed favor to the Air Force while sharply curtailing funds for the other Services, and the legislative record made it clear that members thought that, in doing so, they were buying bombers that would carry atomic bombs.

The Senate impaneled a committee under Senator Owen Brewster of Maine to consider what should be the nation's policy with regard to airpower. To some extent, the formation of this committee was also influenced by ongoing Navy-Air Force debates. Certainly the committee's hearings provided one arena of contest for spokesmen of the two Services. Meanwhile, Truman named a parallel Presidential commission, headed by Thomas K. Finletter, to survey the same set of questions. In large part, Truman's objective was to preserve executive prerogative and to protect himself in case potential campaign issues should arise. The Finletter commission's hearings, however, provided yet another arena for the interservice struggle.

At the time, the outcome of work by these two bodies did not seem wholly foreordained. The Bikini tests had seemingly demonstrated that carriers were not necessarily vulnerable to atomic bombs and that the existing bombs could not be delivered on any target with assurance of accuracy. As Secretary of Defense Forrestal summarized the situation in early 1948, the case for heavy investment in land-based strategic air forces was shaky. The medium-range B-29 remained the best Air Force bomber. The B-50 might prove to be a better plane, but would have no greater range. While the B-36 could span an ocean, it was slow, clumsy, and required a 10,000-foot runway with 40 inches of subsurface construction. The 4,000-mile radius B-52 was at least 4 years from being operational and might not pass its tests. Close scrutiny, Forrestal implied, could create skepticism as to whether bombers and atomic bombs represented a realistic deterrent.[16]

In fact, the Brewster and Finletter groups by the beginning of 1948 HAD both concluded that these weapons could and would serve such a purpose. The only major difference between the two was that the Brewster Committee endorsed procurement of both land-based and sea-based bombers, while the President's appointees advocated chiefly investment in the Air Force.

The two bodies were not unaware of the points cited by Forrestal. Indeed, Air Force and Navy witnesses had called attention to every shortcoming in each other's forces. Members of the committees were convinced, however,

that the Soviets would not hesitate to expand their domain by threat or by use of military force. The Finletter commission identified 1953 as a point of particular peril when Russia would have recovered most of the strength sapped by the war and when -- unless steps were taken in the meantime -- America's inventory of weaponry would largely have disintegrated. Members of the two bodies could see no means of successfully deterring Russian expansion other than by threat of large-scale nuclear attack.

Given the newness of the theory of deterrence, the two groups not surprisingly confused the question of how to prevent war with the question of how to fight a war should deterrence fail. Said the Brewster committee, ". . . the capability of the United States most likely to discourage an aggressor against attack upon this Nation, most effective in thwarting such an attack if launched, and most able to deal out retaliation to paralyze further attack is air power."[17] Both bodies, of course, had the recent congressional debates in mind. They could not realistically consider alternative approaches to preparedness. The major practical question before them was whether to present a strong case for ready air forces, and they chose to do so.

The reports of the two groups, however, reinforced a tendency already present in Congress and the country to regard the strategic nuclear bomber for practical purposes as the primary weapon which the

United States needed. The reasons for this tendency were apparent. Since the probable enemy was far away, huge in extent, and largely landlocked, offensive operations other than aerial bombing appeared difficult if not impossible. In spite of the mixed verdict of the U.S. Strategic Bombing Survey,[18] Air Force bomber advocates stoutly maintained that the initial phase of a new war would be its decisive phase, and the atomic bomb lent weight to this thesis. Legislators and other leaders of opinion, trapped between dread of Soviet communism on the one hand and dread of deficit spending on the other hand, were receptive. Moreover, if such public funds as were spent for defense went chiefly for aircraft, maximum economic-political benefits would accrue, for aircraft production employed large numbers of workers in California, Texas, Washington, and Missouri and, in addition, created demand for engines, parts, steel, and aluminum, the production of which employed large numbers of people in Michigan, Illinois, Ohio, Pennsylvania, New York, and other populous states.

Evidence of public and congressional responsiveness to the notion that the long-range bomber was the sovereign deterrent and war-winner had some impact on the Services. The Navy's growing emphasis on possible strategic operations by its carrier-based planes and nuclear submarines has already been noted. The Air Force likewise called more and more attention to its strategic forces. Though not changing the balance between bombers and fighters in its force projections, it assigned to the Strategic Air Command all long-range bombers and some fighters and

other aircraft. Also, Air Force headquarters made a deliberate decision not to segregate the small number of bombers adapted to carry atomic bombs but to label the entire bomber force as a nuclear strike force.[19]

Even though American military forces had not by 1948 made any significant adaptation to either the Cold War or the nuclear era, doctrine and force posture were edging toward concentration on one type of war with one specific enemy, establishing thus a framework in which comparative strength in strategic armament would seem to be the central determinant of national security.

CHAPTER II

THE EVOLUTION OF U.S. STRATEGY AND FORCES, 1948-50

The years 1948-50 saw four convergent developments moving the United States toward conscious competition with the Soviet Union which would emphasize the comparative level of strategic offensive weaponry. First, because of Soviet moves interpreted as possibly preparatory to military action against Western Europe, the United States formally committed itself to fight in defense of that region. Second, because of that commitment and the attendant sense of crisis, the military Services began seriously to consider the possibility that war with the Soviet Union might break out within the next several years. Third, in spite of the commitment to Europe, a consensus that the Soviet Government was bent on some form of expansion, and intelligence estimates rating the Soviet Union as a formidable military power, the Administration continued to assign priority to a balanced budget at some sacrifice of military readiness. A movement to reverse priorities gathered strength slowly. Fourth, administrators, scientists, and engineers achieved advances opening a prospect that nuclear weapons could be had in large quantities and in packages of widely varying size and yield.

Progress of the Cold War

The most important political consequence of the crises of 1948 was acceptance by the United States of a formal, long-term commitment to defend Europe. President Truman interpreted the Czech coup as possibly portending a Soviet attempt to score gains in Europe by threatening to use or even using military force. He apparently did not think it likely that the Soviets would actually move their armies. He did, however,

have before him evidence of nervousness on the part of Western Europeans and American representatives in Western Europe, and he and his foreign policy advisors concluded that this nervousness could best be quieted if the United States signaled that it would meet force with force. Hence, Truman went before Congress in March 1948, reiterated his determination to prevent the subjugation of free governments, and asked for reinstatement of selective service, enactment of universal military training legislation, and a supplementary appropriation for defense. At the time, he had in hand no specific proposals from the military establishment. His impulse was more to make a political gesture than to accomplish any particular change in military posture.[1]

The President and his advisors were prompted in part by knowledge that Western European governments were already discussing among themselves a possible defensive alliance. American officials were giving them every encouragement to take this step and even hinting that, if the alliance materialized, the United States might later become a party to it. The United States had breached its doctrine of avoiding entangling alliances in 1947 when the Senate accepted the Rio Treaty in which the United States joined other American Republics in pledging collective defense of the Western Hemisphere. Exploratory conversations with senators, particularly Arthur H. Vandenberg of Michigan, a former isolationist converted to belief in collective security, persuaded Secretary Marshall, Under Secretary Robert A. Lovett, and others in the State Department that the Senate might take the further step of consenting to an entangling alliance with Europeans. The condition precedent, however, was that the Europeans themselves demonstrate solidarity and determination.

This hope was partially fulfilled in March 1948 when 5 European governments (Britain, France, Belgium, Netherlands, and Luxemburg) signed the Brussels Treaty. One possible obstacle crumbled shortly afterward when France, which had frequently followed an independent line, joined Britain and the United States in agreeing to grant independence and sovereignty to a non-Communist West German government. Outcries in Moscow against the Brussels Pact and the new West German regime helped meanwhile to keep alive a sense of high tension between West and East. And in early June 1948, Senator Vandenberg gratified his friends in the State Department by securing a vote of 64 to 4 in the Senate for a resolution implicitly endorsing United States adherence to the Brussels Pact.

Hard on the heels of the Vandenberg Resolution came the Berlin crisis. Momentarily, there passed through Washington a sense that war might actually be at hand. In view of all his earlier bold statements, the risk of undoing the prospective American-European alliance, and the fact that he was starting his campaign for a second term, Truman scarcely considered abandoning Berlin. At the same time, he showed no inclination to test the blockade with an armed convoy. Instead, he elected to try maintaining a communication and supply route through the air lanes which had not yet been closed off. At moments between June and September he and his advisors feared that the Russians were about to interrupt the airlift and force upon them a more painful choice. Among the expedients which they adopted in hope of preventing such Russian action was an ostentatious transfer of one group of B-29s to a base in occupied Germany and two groups to bases in the United Kingdom. Although these groups did not

include any of the planes specially prepared for carrying atomic bombs, Moscow was expected to get the message that outbreak of war could bring nuclear attack on the Soviet Union. Secretary Marshall and others later concluded that this message had been received. [2] That conditions did not become worse and that a negotiated settlement appeared possible encouraged an inference that the nuclear threat had been decisive.

The Berlin crisis eased somewhat, but the airlift went on. Truman surprised almost everyone by winning the election. Not long after he began his new term, the North Atlantic Treaty was signed -- on 4 April 1949. While the treaty was under debate in the Senate, negotiations over Berlin came to a successful end, and road and rail connections reopened. In an atmosphere less charged with tension, some skepticism surfaced about the projected European alliance. Dean Acheson, who had replaced an ailing Marshall as Secretary of State, had the duty of defending the treaty. Reflecting the consensus within the executive branch, Acheson offered categorical assurance that the United States would not have to maintain troops in Europe. In rounding up votes, Vandenberg cited Acheson's words. He and others contended that the security of Europe would be assured as long as the Russians knew that the United States had sworn to defend other members of NATO and had the atomic bomb in its arsenal. [3] The Senate finally accepted the treaty on 23 July 1949.

In the Far East, 1948-49 saw the final disintegration of Chiang Kai-shek's position on the Chinese mainland. He and the remnant of his army withdrew to the island of Taiwan in 1949. In response to congressional and public accusations that the Administration had passed up opportunities

to prevent the success of the Chinese Communists, Secretary Acheson at the end of 1949 issued a documentary "White Paper," defending the thesis that Chiang's regime had been too weak and corrupt to be saved. Leaders in the Administration believed -- erroneously as it turned out -- that the "White Paper" would put an end to debate. In the spring of 1950, the President made plain that the United States would not attempt to defend Taiwan if the Chinese Communists pursued Chiang there. Meanwhile, the Administration proceeded with plans to end the occupation of Korea, leaving a shaky authoritarian regime in control, and to sign, with the concurrence of other wartime allies, but not of the Soviet Union, a peace treaty with a now reconstructed Japan. Reflecting discussion in the National Security Council, Secretary Acheson outlined the general position of the United States in a speech to the National Press Club in January 1950 in which he described the defense perimeter of the United States in Asia as including only Japan and the Philippines.

In the Middle East, a long period of conflict had temporarily ceased in 1949 after the new Jewish state of Israel secured its borders by force and obtained recognition from most of the great powers. Against the risk of renewed conflict between Arabs and Jews, possibly creating opportunities for Soviet meddling, the United States, Britain, and France issued a tripartite declaration in May 1950 pledging themselves to preserve the existing boundaries among Middle Eastern states.

In the spring and summer of 1949, there was a growing feeling that perhaps the Cold War had passed its peak. Stalin's retreat on the issue of Western access to Berlin had been widely interpreted as evidence that

the Soviet Union had recognized the recklessness of challenging the West. Headlines in newspapers and questions at Presidential conferences increasingly concerned themselves with domestic rather than international issues. With much attention focused on the trial in New York of Alger Hiss, a former State Department official accused of having perjured himself in denying that he passed secrets to Communists in the 1930s, it appeared that even concern about communism was turning inward. One index of the shift was a regular Gallup survey of public opinion of the possible desirability of increasing the size of the military establishment. In February 1948, before the Czech coup, 61 percent were reported to favor enlarging the Army, 63 percent to favor enlarging the Navy, and 74 percent to favor enlarging the Air Force. In February 1949, with the Berlin blockade still in effect, the comparable percentages were 56, 57, and 70.[4] The fact that more than half the respondents wanted across-the-board increases and more than two-thirds wanted an expanded Air Force evidenced continuing concern. On the other hand, the trend seemed plain.

In September 1949 came Truman's announcement, subsequently confirmed from Moscow, that the Soviet Union had exploded a nuclear device. The news should not have caused surprise. Scientists had always conceded that the Soviets would eventually be able to build a bomb. Estimates as to when they would accomplish this feat had varied, with some date in the early 1950s generally thought most likely. The Soviet achievement came a little sooner than expected. The President and other Administration spokesmen played down its significance. After a few days, the press did likewise.

Speaking for the JCS, Army Lt. Gen. Alfred M. Gruenther was to comment

within less than 5 months that the Soviet test marked a moment in history comparable to Pearl Harbor or Hiroshima, for it signaled the vulnerability of the United States to surprise attack "of infinitely greater magnitude than that of 1941." [5] In retrospect, this assessment seems not far off the mark. Nonetheless, the apparent immediate effects were slight. The most visible was public surfacing of internal governmental debate over the scale of America's nuclear weapons program and the issue of whether or not to proceed with the development of a hydrogen bomb, the latter concluding with a terse announcement by the President on 31 January 1950 that he had directed the AEC to develop such a bomb.

Despite uproar over the "loss" of China, the shift away from interest in the outside world seemed to continue. In February 1950, in a speech at Wheeling, West Virginia, Senator Joseph R. McCarthy of Wisconsin publicized the thesis that the foreign problems to which Truman had responded since 1945 were largely to be explained as the work of Communist sympathizers hidden in Washington and were to be remedied not by alliances, aid programs, or military preparations but by investigation and purge of the executive branch. Although the outbreak of the Korean War at the end of June was to reawaken public awareness that there were woes in the world not all of America's making, "McCarthyism" was to retain popular appeal for years to come.

War Planning

Within the military establishment, the years from 1948 to 1950 saw serious consideration of the question of what the United States might do if war with the Soviet Union actually occurred.

In the first half of 1948, Service intelligence estimates credited the Soviets with 175 divisions, the best 40 of which were thought to be so positioned and equipped that they could at any time strike in force across western Germany and into the Low Countries and France. Backing up these ground forces were thought to be 9,000 fighter planes, 1,800 air defense interceptors, many with jet engines, and a large number of B-29-type bombers. In addition, the Soviets were supposed to have 279 submarines, some of new types, at least 4 and perhaps 19 of which were captured vessels of Type XXI, capable of long-range, long-submerged operations. [6]

At that time, in the season of the Czech coup and the Berlin blockade, the United States had virtually completed demobilization of its wartime forces. Although some occupation functions continued, the military establishment had largely completed its transition to a peacetime footing assumed to be permanent. Total military manpower was below 1.5 million. The Army's ready reserve force for dispatch abroad consisted of two and one-half divisions. The Air Force and Navy together had approximately 6,000 fighters of which 375 were specifically designated for air defense; 1,000 were jets. The Air Force retained 567 B-29s, supplemented by 45 B-50s. [7] Thirty-two of the B-29s could carry atomic bombs but, as the Berlin crisis was to make evident, no preparations had been made for basing these planes or bomb assemblies within range of Soviet targets. [8] According to the current intelligence estimates the Soviets had overwhelming numerical superiority in every category except naval vessels and atomic bombs.

Yet the military establishment had now to consider seriously what should be done in the event that war broke out in the near future. In the

spring of 1948, the JCS approved their first postwar emergency war plan, code-named HALFMOON. Actually a composite of separate Service plans developed during prior months, it gave a clear indication of the pessimism with which all the Services viewed the prospect of entering into combat with the forces allowed them by the existing realities of American politics.[9]

The HALFMOON plan assumed that Russian armies would overrun most of Europe in 50 days. Although the American and British navies might be able to keep open the sealanes, American and Allied fighter forces would be unable to prevent punishing air bombardment of the United Kingdom. The plan called for retreat by U.S. occupation forces and an effort, which might or might not succeed, to hold a line somewhere on the Continent, perhaps at the Pyrenees, while Navy carriers moved into the eastern Mediterranean to block a Soviet move against the Cairo-Suez region.

Strategic bombing was the only offensive action which the plan could posit. Army planners assumed gloomily that any chance of retaining a foothold on the Continent depended on bombing that would slow the westward march of the Red Army, but neither the Navy nor Air Force segments of HALFMOON offered much hope that this would, in fact, occur. The Navy could promise only token raids against targets in the southern U.S.S.R. The Air Force had to acknowledge that it could not launch strategic bombing until the war was well underway. Since the plan was prepared before the Berlin crisis, the B-29 force was all in the United States* and not within bombing range of the Soviet Union. Not only were few of the B-29s fitted to carry nuclear weapons but only a limited number of bomber crews were

* With the exception of one rotational squadron in Germany.

fully trained for such missions.[10] In addition to putting the right planes and crews at forward bases, the Air Force would have to obtain nuclear and nonnuclear components from the AEC and transport them abroad. It would also have to move one or both of the only two fully trained assembly teams. With everything in place, a team needed 24 to 36 hours to put together a bomb. On the assumption that air bases on the Continent would be overrun almost immediately and that those in the United Kingdom would become untenable within [redacted] the Army, with Navy backing, was to move into Iceland and Pakistan so that the Air Force could have alternative bases within range of major Soviet targets. The Air Force estimated initially that [redacted] calculating that their destruction would cut Soviet industrial production in half. As of the time when the plan was adopted, however, the Air Force Strategic Air Command (SAC) lacked data and SAC bomber pilots had no target folders.[11]

Although contingency planning can be academic, that of 1948-49 had an unusual degree of realism because of the succession of crises commencing with the coup in Czechoslovakia. Senior officers perceived how ill-prepared their Services were for a war that at times seemed just about to commence. Concurrent staff work on a possible war 5 or more years in the future helped to link contemplation of current shortcomings with thought about budgets and future force goals. Although successors to HALFMOON were developed in joint committees, each of the Services studied the issues independently.

In the Air Force, attention went chiefly to the question of how a strategic bombing offensive might be speeded up and made more effective.

Up to this juncture, SAC had not played a large part in Air Force planning. It had been established within the Army Air Forces in March 1946 as part of a reorganization accompanying demobilization and preparation for independence from the Army. In December 1946, it had been made responsible to the JCS. In practice it remained an entity of the AAF and later of the Air Force, for its personnel were all from that Service and its operational orders came from the Air Force Chief of Staff acting as executive agent for the JCS. Its initial commander, Gen. George C. Kenney, was merely one officer whom Air Force headquarters consulted (and sometimes did not consult) in the course of debates about future force structure, the operational use of nuclear weapons, and plans for coping with the possibility of war. [12]

With the Czech and Berlin crises giving sudden reality to planning exercises, SAC began to take a more prominent role. It was just beginning to analyze its potential operational problems and in May requested data from Headquarters USAF about such elementary factors as minimum safe altitude for dropping atomic bombs and potential radiation effects on escort and reconnaissance craft. In August, it received the air portion of HALFMOON (HARROW) for coordination and further development. [13]

After about a month of study, SAC proposed a set of objectives, chief among which was that SAC gear itself to deliver 200 atomic bombs within 48 hours after the outbreak of the war. The targets were to be chosen with a view to crippling Soviet industrial power and also reducing to a minimum the Soviet capability for launching air strikes against the United States. As a first move toward this objective, SAC recommended

rapidly stepping up the training of assembly crews. Except for setting delivery of 100 bombs as the interim objective, the Air Force Chief of Staff approved these recommendations. [14]

By the end of the year, assembly capability had risen to 10 bombs a day, and the JCS had approved an effort to train enough crews so that this rate could be doubled by the end of 1949. [15] In the meantime, Lt. Gen. Curtis E. LeMay, one of the most aggressive commanders in the Service, had been recalled from Germany in October 1948 to succeed Kenney as Commanding General, SAC, and the highest officers in the Air Force had spent an entire week at Maxwell AFB, Alabama, in December 1948 receiving detailed briefings on SAC's capabilities and aspirations. At the same meeting, SAC received top priority on Air Force resources. [16]

By March 1949, LeMay had not only set in high gear a refitting and training program making SAC truly combat ready but had developed an independent SAC war plan, which called for atomic strikes on 70 Soviet industrial complexes within the first 2 weeks of a war. [17] Supporting analyses suggested that this plan might require formations of 300 planes, 50 of which would be atomic bomb carriers and 250 escorts. All in all, 450 aircraft would be kept in constant readiness. For the time being, they would be forward-based B-29s. As soon as possible, however, they would be longer range, heavier B-36s and higher speed B-50s. To extend the range of both bombers and escorts and to make SAC less dependent on vulnerable forward bases, there would be a matching fleet of tankers for air-to-air refueling. [18]

As evidence that SAC was to get what it asked for as soon as possible, Air Force headquarters made program changes during 1949, canceling orders for a number of tactical aircraft and substituting an order for two more groups of B-36s. Other elements of the Service also suffered cutbacks to permit acceleration of the conversion of B-29s to tankers and to hasten development of the new, all-jet medium bomber, the B-47. The highest level of the Air Force had accepted the major objective of equipping, manning, and basing SAC so that it could deliver a massive nuclear offensive in the first few days of a general war.[19] The long-range bomber had clearly become the dominant weapon within the Service.

In the Navy, no single trend of thought about a possible war predominated, either before or after the exercise of putting together the HALFMOON plan. In large part, the carrier-centered "balanced fleet" had been an instrument designed to wrest control of the western Pacific from Japan. While most naval officers considered it the best possible instrument for controlling the seas, they had some difficulty with the question of how it might be used against the Soviet Union, a continental power with no ocean domain and few approachable sea frontiers.

Three rather different lines of thinking manifested themselves. In earlier years, the Navy's General Board had been the principal body for considering broad strategy and long-term force posture. During World War II, it had gone into eclipse. Afterward, it was reconstituted and during 1947-48 it produced some papers concerning a possible war with Russia. On the whole, the Board concluded that the Navy could not have a role such as it had played in World War II. Its primary function would be to control

the sealanes so that supplies and ground and air forces could be transported to continental theaters of operations. Its secondary function would be to provide air support to forces fighting near the coast and to bomb some accessible targets in the U.S.S.R.[20]

The office of the Deputy Chief of Naval Operations for Operations offered a contrasting line of thought which envisioned the Navy's playing more than a supporting part in a Russian war. In the initial phase, it would not only sweep the seas of enemy submarines and prevent conquest of the United Kingdom and other island bases off the European coast but would secure control of the eastern Mediterranean. This would be the decisive theater, for the United States and its allies could land amphibious forces in the Black Sea region and there engage the Soviet Army on its home ground. At least until the lodgments had been made, carriers would provide most of the necessary air support. Ground-based bombers, flying across western Europe or operating from Mediterranean bases secured by the Navy, would disrupt Soviet production and communications but have as their chief assignment the distraction and attrition of fighter aircraft that might otherwise oppose amphibious operations and subsequent sea-supported ground operations. According to this concept, the capability for strategic bombing would take second place to a naval capability for controlling the water and air between the Dardanelles and Suez.[21]

Elsewhere in naval headquarters, particularly in the offices of the Deputy Chiefs of Naval Operations for Air and for Special Weapons,* emerged the third line of thought -- that strategic bombing with nuclear weapons

*The DCNO (Special Weapons) was in existence for only 13 months, from October 1945 to November 1946.

could play a critical part in a war with Russia but that the Navy could perform such a mission better than the Air Force. The Bikini tests of 1946 indicated that carriers could be made safe against anything except a direct or near hit from an atomic bomb and that the inaccuracy of the bomb reduced the likelihood of such a hit. If nuclear weapons remained scarce, the Soviets would not waste their meager stockpile on elusive naval targets. Carrier-borne U.S. aircraft could, however, deliver atomic bombs on Soviet targets. P2V Neptune seaplanes had the capability. The new AJ-1 would be able not only to perform the mission but, unlike the Neptune, to make a return landing on a carrier, and AJ-1s were to become operational as early as 1949. Although acknowledging the AJ-1 to have deficiencies, the Navy's strategic bombing advocates argued that Air Force bombers had more serious shortcomings, not least of which was their dependence on vulnerable fixed bases. Their conclusion was that carriers and carrier-based bombers deserved priority among forces to be developed and kept in readiness.[22]

None of these three groups acquired the kind of dominance within the Navy that SAC was gaining within the Air Force. While the General Board lacked wide influence, its views were too well reasoned to be utterly ignored. Arguing essentially for a balanced fleet suited to a wide range of contingencies, many of which were unforeseeable, officers in Operations made a case for fighting in the Black Sea region, more for illustration than for prescription. Many officers in Air and Special Weapons felt ambivalent, for they, too, feared the unforeseeable, wanted the Navy to retain a range of capabilities, and recognized the risks to the Service entailed in conceding possible value to strategic bombing. Moreover, the

upper levels of the Navy contained yet other varieties of opinion. Some officers in the submarine service, the Bureau of Ships, and the Bureau of Ordnance were convinced that the Navy's future hinged on development of nuclear propulsion and submarine-launched missiles.[23] While the Air Force focused on securing priority for SAC, the Navy sought joint plans that would leave many options open. In HALFMOON and its successors the Navy accepted the assignment of clearing the seas and securing forward bases but insisted that maintenance of control over the eastern Mediterranean have high priority and inserted language which prevented the strategic bombing task from falling exclusively to the Air Force.

Army planning was to some extent a function of planning by the other Services. Except for a role in air defense, Army operations in the early phases of any new general war would depend on the extent to which Air Force bombing sapped Soviet capabilities for rapid ground force deployments in adjacent areas, Air Force and Navy fighters could provide local air control, and the Navy could establish a sea train for reinforcement. Tending to make worst case assumptions about the actual capabilities of the other Services and of the NATO allies, Army planners adopted the view, evident in HALFMOON, that prospects were dim for retention of a foothold anywhere on the Continent or even in the United Kingdom. Insofar as they indicated any hope for effective strategic bombing, however, they seemed to regard land-based bombers as more likely to be effective than carrier-based bombers. They looked to the Navy chiefly to bring supplies and reinforcements and to evacuate American troops in the event that no ground could be held. At an earlier juncture, when Iran had been thought a possible scene of crisis,

Army planners had worked with the Navy on schemes for operations in the eastern Mediterranean. In 1948-49, however, they displayed lack of enthusiasm for the notion of landings in the Black Sea region. Army contributions to joint planning thus tended to reinforce the Air Force case for SAC rather than the Navy case for the carrier fleet. [24]

Budgets and Forces

Although the Services had to think of war as a real possibility, they were not offered even a prospect of having significant additional resources with which to prepare for war. When the President reacted to the Czech coup by asking Congress to reinstitute the draft and augment the defense budget, he had not examined specifics or considered exactly what additional forces he wanted. When he learned that current new spending could commit him to higher and higher budgets in future fiscal years, he recoiled, authorizing Forrestal to seek $3.5 billion of additional appropriations, but in categories that would not jeopardize maintenance of a rigid $15 billion ceiling for fiscal year 1949. As a result, the principal Administration proposals involved short-term increases in military manpower levels. These proposals then came under attack in Congress, with many members asking what good it would do to increase U.S. ground forces since they would never match Russia's 175 divisions or to build up surface naval forces in the face of the fact that the Soviet Union had no navy to engage or significant sealanes to be severed. Airpower did stir some enthusiasm on Capitol Hill. After denying the Administration some of the money it had asked, the Republican-controlled Congress -- against the wishes of Republican leaders in the House -- voted an extra $822 million for the express purpose of speeding aircraft construction. [25] Despite public opinion

polls endorsing preparedness, the Services had to assume $15 billion to be an absolute limit for all fiscal year 1950 defense expenditures, including stockpile purchases, and a limit that Congress might diminish.

Simultaneously. the Services found themselves for the first time answerable not just to specialized examiners in the Bureau of the Budget and to congressional committees inclined to focus on details rather than on overall force posture but to a Secretary of Defense who had responsibility for presenting to the President and to Congress a unified budget for the national military establishment. Moreover, the unified budget sent to the White House would be reviewed by the Bureau of the Budget and by congressional committees now reorganized in consonance with changes on the executive side, with the erstwhile Military Affairs and Naval Affairs Committees merged as the Armed Services Committee and with each chamber's Appropriations Committee having a single subcommittee to deal with defense expenditures. In the circumstances, it was much more difficult than in the past for the Services to preserve differing conceptions of defense priorities and to develop overlapping or competing capabilities.

The Air Force protested the President's budgetary rulings, saying that they jeopardized the attainment of the 70-group goal endorsed by the Finletter commission and by many members of Congress. Air Force Secretary W. Stuart Symington complained that the staff of the Secretary of Defense showed favoritism toward the Navy. Meanwhile, he made a direct challenge by sending to his opposite number in the Navy a memorandum saying that atomic bombs were sufficiently scarce so that they should be reserved for "targets of the greatest strategic significance," pointing

out that the Air Force had primary responsibility for strategic air operations, and concluding: "There is no justification for development on the part of the Navy of special equipment, or organization, for the purpose of dropping atomic bombs." Though the Secretary of the Army did not join in this particular challenge, he did send the Secretary of Defense a formal memorandum arguing that the advent of the atomic bomb reduced the importance and value of the surface fleet.[26]

Up to this time, the Navy had been counting on developing postwar forces consistent with its various conceptions of the nation's possible defense needs. It envisioned launching flush-deck "supercarriers" much larger than carriers of the Midway-class, capable of handling jet aircraft of widely varying weights, including AJ-1s and other planes fitted for carrying atomic bombs. Before the crises of 1948 provoked serious joint war planning, the Navy had obtained authorization from the President and Congress to proceed with a design so that construction of the first supercarrier could commence in fiscal year 1949. At this time the Navy was expecting to keep afloat 12 attack carriers, retiring some of the Essex-class when supercarriers began to enter the fleet. From the Navy's standpoint, this was not enough, but it was equivalent to the Air Force's getting along with 50 groups instead of 70 and meanwhile replacing the B-29s with B-36s.[27] The reaction of the Air Force and Army to the President's directive on the FY 1950 budget ceiling suggested that the supercarrier or the 12-carrier force or both might be in jeopardy. Hence the Secretary of the Navy and naval officers counterattacked by raising questions in the Pentagon and the Budget Bureau as to whether the Air Force

B-36 could actually get to the Soviet Union and deliver atomic bombs anywhere near their assigned targets.[28]

Secretary of Defense Forrestal, himself a former Secretary of the Navy, asked the JCS for an analysis of what the United States could accomplish by strategic nuclear bombing and how it would affect the capacity of the Soviets to wage war. Although an Air Force officer, Lt. Gen. Hubert R. Harmon, headed the committee charged with this task, the Chief of Naval Operations succeeded in getting terms of reference which ensured that the estimate would be cautious, for the committee was enjoined to look only at the bombing projected in HALFMOON and to consider only direct effects, not secondary effects such as fire and panic. Called for in October 1948, this report was not ready until May 1949. It partially satisfied the Navy's hopes by saying that nuclear bombing might well halve the Soviet Union's industrial production but would not bring about its defeat and would not prevent it from conquering all of Europe. The Air Force, however, objected to these findings as based on insufficient investigation and succeeded in getting yet another study commissioned.[29]

Naval officers in JCS committees meanwhile defended the theses that maintenance of control over the eastern Mediterranean would be a crucial task in a war and that carrier task forces in those seas and in the western Pacific could effectively bomb targets in the Soviet Union. In the face of the President's budget ceiling, it was evident that the United States could not prepare adequately both for these operations and for the strategic bombing campaign outlined in the plans emanating from SAC. Army members of JCS committees indicated their verdict that SAC's plans were more

promising. The chief Army planner, Lt. Gen. Albert C. Wedemeyer, announced his view that the emergency war plans should be changed to provide for no U.S. operations in the eastern Mediterranean, even if the result were loss of Middle Eastern oil. That region should be left to the British, he said, while the U.S. Navy concentrated on supplying and supporting ground forces in Western Europe and the western Mediterranean. In the actual new emergency war plan developed in the spring of 1949, the Army relented to the extent of including control of the Cairo-Suez area as an objective to be pursued, if resources were available; but it was clear that joint war plans would not provide a justification for forces tailored to Navy conceptions of U.S. strategic force needs as distinguished from Air Force/SAC conceptions of those needs.[30]

Another forum in which the Navy pleaded its case was a committee which Forrestal had created to review the working of the 1947 National Security Act. Headed by New York banker Ferdinand Eberstadt, who had played an important role in developing the 1947 act, it had a mandate to review strategic as well as organizational issues, and the Deputy Chief of Naval Operations for Air, Vice Adm. Arthur W. Radford, laid before it in detail the Navy's view of how a war might progress. He attacked frontally the notion of a decisive initial phase in which strategic bombing would all but vanquish the enemy. There could be little such bombing at the outset, he contended, and not much more during the succeeding phase of counter-offensive buildup. Only in the last stages, when American and Russian forces were grappling on land, would large-scale strategic bombing be effective. Radford based his argument in part on findings of the U.S.

Strategic Bombing Survey and in part on the thesis that a major function of strategic bombing was to draw off enemy fighters that might otherwise be covering ground forces. In effect, Radford contended that the atomic bomb was merely a bigger bomb, that it could not be counted on to win a war, and, this being the case, that it would be an inadequate weapon for deterrence of war. [31]

The Navy presentation, together with evidence concerning current deficiencies in the capabilities of SAC, had some impact on the Eberstadt committee. At any rate, its report to Forrestal in November 1948 emphasized the fact that existing land-based bombers required forward bases which might or might not be tenable and that enemy air defenses might prove effective against them. It called for maintaining a powerful carrier fleet, at least for the foreseeable future. [32]

Assertions and insinuations by Navy representatives prompted some questioning in the Office of the Secretary of Defense, the Bureau of Budget, and the White House. The Defense Comptroller, Wilfred J. McNeil, had long before advised caution about heavy investment in B-36 forces, given the bomber's weight, slow speed, and possible vulnerability, and Forrestal had told Truman of the bomber's deficiencies in performance. Bureau of the Budget Director Frank Pace urged the President to reflect on the larger issue of whether he wanted to risk placing himself in a position in which, in a crisis, strategic nuclear bombing might be his only military option. Troubled by Forrestal's questions and perhaps by Pace's, Truman obtained from the Air Force Chief of Staff and other Air Force officers briefings on the plans and capabilities of SAC. He was told that the JCS had specified as the number one and number two tasks

for the military establishment defense of the United States and "reduction of enemy industrial productivity below that level required to support his war-making effort." (Actually, JCS documents defined the second task more ambiguously and wordily as "a powerful air offensive against selected vital elements of the Soviet war-making capacity, exploiting all capabilities therefore, and taking advantage of available atomic weapons to the extent necessary in the over-all effort to obtain the most rapid and efficient achievement of the National War Objectives." [33]) Truman was also told "primary responsibility for both of these is charged to the Air Force." He was assured that only 4 of 14 strategic bomber groups would consist of B-36s; the rest would be B-29s suitable for missions involving conventional instead of nuclear ordnance and that much of the remainder of the existing or hoped-for Air Force would defend home territory. [34]

Not wholly satisfied with what he heard, the President pressed and pressed again for a formal estimate by the JCS of the probable effects of strategic nuclear bombing conducted by the forces available or projected. Because of the disinclination of the Chief of Naval Operations to endorse any conclusions going beyond those of the Harmon report, and the equally strong disinclination of the Air Force Chief of Staff to endorse those conclusions, the President's questions went unanswered even when, after 7 months' delay, he asked plaintively for at least interim conclusions. He was told that a committee of the Weapon Systems Evaluation Board, headed by Lt.Gen. John E. Hull, would report in January 1950 and that Hull was reluctant to return a preliminary opinion. He would eventually be told by Hull's group that 75-80 percent of the bombers would get through, destroying one-half to

two-thirds of the targets--but he did not receive this report until June 1950.[35]

In the meantime the Services fought to a conclusion of sorts the battle over budgetary priorities. Leaders in the Navy had early recognized that the President's ceiling would not allow both progress on the first supercarrier and preservation of a surface fleet with 12 carriers. They had chosen to keep the supercarrier project and cut back to eight active carriers.

Only with difficulty and with the acceptance of reductions in other forces had the Navy succeeded in keeping eight carriers as a target. Forrestal, acting as Solomon, had partitioned the $15 billion budget into almost equal shares for the Services, but Congress reacted coolly to his allocations. Though both again under Democratic control as a result of the 1948 elections, the two Houses ended the session by trimming back Administration requests for both the Navy and the Army while, like the Republican-controlled Congress of 1948, adding $800 million to what the President had asked for the Air Force. Representative Mahon explained the prevailing opinion by saying, "We greatly diminish the likelihood of World War III when we prepare ourselves to strike a quick and deadly blow at the very heart of the potential enemy. . . . The only force under heaven that can now deliver the quick and devastating blow is the United States Air Force. I say without hesitation that our first line of defense is the Air Force."[36]

While Congress acted on the FY 1950 budget, the defense establishment worked on that for fiscal year 1951. In the beginning of 1949, the President decreed that FY 1951 defense spending should not exceed

$13 billion. In March, he let Forrestal go and replaced him with Louis Johnson, a former Assistant Secretary of War, giving Johnson the mission of keeping the total defense budget as low as possible. Acting on a suggestion made earlier by Forrestal, Truman also recalled to active duty General of the Army Dwight D. Eisenhower to function, in effect, as arbiter among the Services and chief budget adviser to the new Secretary.[37]

Upon taking office, Johnson asked for a review of major development and procurement projects. Finding both the Air Force and the Army opposed to the Navy's supercarrier, he peremptorily ordered its construction cancelled. Eisenhower had already expressed misgivings about the ship. After scrutinizing what was left in the Navy's force plans, Johnson ruled that the budget would permit maintenance of only six carriers. In June 1949, discovering that outlays still threatened to exceed the $13 billion mark, he recommended a cutback to four carriers.[38]

Dismayed by these developments, naval officers protested, but unavailingly. In the summer of 1949, some of them decided to take their case to the public. Through leaks to the press, followed by testimony before the House Armed Services Committee, they made an open attack on the strategy and force structure toward which the United States was gravitating.[39]

On Capitol Hill, the issues received their first airing because middle-level civilians and officers from the Navy charged publicly that the B-36 represented a poor investment and that Air Force procurement of the plane had shady aspects. Press coverage concentrated on the second accusation, which turned out to have no substance. The testimony of senior naval

officers made clear, however, the existence of profound differences in opinion between the Services. A subsequent series of hearings, running into the autumn of 1949, enabled them to state their case.

Naval officers used the occasion to question whether strategic nuclear bombers represented either the best deterrent or the primary force to keep in readiness for the initial stages of an actual conflict. Said Radford, " . . . there is no short cut, no cheap, no easy way to win a war. We must realize that the threat of instant atomic retaliation will not prevent it, and may even invite it." He went on to declare that the United States should prepare to win a war "and win it in such a way that it can be followed by a stable, livable peace." [40]

To the extent possible within constraints set by security considerations and concern for the sensibilities of allies, Radford and other Navy witnesses asked how the United States would defend or liberate Western Europe and other vital areas if its primary weapon was the strategic nuclear bomber. If the United States relied chiefly on the threat of strategic bombing to deter aggression, they warned, the aggressor would need only to effect a successful surprise attack on bomber bases and nuclear weapons stockpiles in order to gain free rein. This strategy could encourage war rather than prevent it.

Rear Adm. Ralph A. Ofstie, one of the Navy's few experts on nuclear weapons, cautioned Congress and the country against exaggerating the military or political value of nuclear bombs:

> The idea that it is within our power to inflict maximum damage upon the enemy in a short time without serious risk to ourselves creates the delusion that we are stronger than we actually are. This, in turn, becomes a constant temptation for policy makers to overcommit themselves, to make commitments actually impossible to fulfill.[41]

Neither in the first hearing nor in the second did Navy witnesses follow a common or even coherent line. Some attacked strategic bombing on ethical grounds while others merely claimed that the Navy could do it better than the Air Force. Radford and Ofstie risked self-contradiction by arguing both theses.

With some justification, the press characterized the hearings as part of an "admirals' revolt," prompted largely by budget cuts, the cancellation of the supercarrier, and evidence that the Air Force was supplanting the Navy as the nation's first line of defense. Even though the second round of hearings continued, publicity declined after the Secretary of the Navy, the Chief of Naval Operations, and a number of lesser officers resigned or were retired or reassigned. In the end, the effort succeeded in making more widely known the weaknesses of the B-36 and exposing some issues to public view. It did not, however, rescue any Navy program or alter trends in strategy and force posture. Radford was to concede before the hearings ended that the Navy's effort at persuasion had failed.[42]

While the new Chief of Naval Operations, Adm. Forrest P. Sherman, and others who took high positions in the Service continued to champion an increase in carrier strength and development of the supercarrier, they abandoned any effort to challenge the principle that strategic nuclear

offensive forces deserved priority in the force structure. Instead, they concentrated on developing the Navy's capability for contesting SAC's monopoly of the strategic offensive mission.

The Army had all along conceded priority to strategic nuclear offensive forces. Conceivably, Army planners could have argued that well-positioned ground troops would more effectively deter Soviet aggression and certainly serve more effectively to defend territory, if aggression occurred. At the time, the Army possessed most of the available intelligence about the Soviet order of battle. It held most of the maps, aerial photographs, and other materials covering the Soviet Union which had been captured from the Germans. Through agencies in occupied Germany, it conducted most of the interrogation of people who had been in the Soviet Union or Eastern Europe. It ran a certain number of secret agents in areas occupied by the Soviets, and it intercepted a significant number of signals and radio communications exchanged among Soviet posts and commands. From these data Army officers could have deduced that many of the alleged 175 Soviet divisions were shells and that a number of the divisions in Eastern Europe counted as combat ready were in fact no more so than were American occupation units.[43] If so, they could perhaps have devised plans calling for a more modest force than the 50 American and Allied divisions ordinarily posited as necessary to hold a line in Europe against the Soviet Army. Probably, however, the fate of the President's universal military training program, together with budgetary pressures that made questionable the maintenance of even two combat-ready divisions and recognition that Europe was by no means the only vulnerable area, inhibited Army consideration of strategies that would give ground forces priority over strategic air forces.

The overall level of U.S. military spending up through the end of fiscal year 1950 evidenced little competition with the Soviets. Although spending was much higher than before World War II, the President, Congress, the military, and most American commentators perceived it as providing no more than minimal preparedness, not even keyed to keeping up with the Russians in lines where intelligence estimates described them as possessing or threatening to possess a lead. It is a reasonable inference that the budget reflected an assumption shared within the national political leadership that rivalry with the Soviet Union was more political and economic than military and that there was no occasion for U.S. participation in an arms race.

Within tight budgetary constraints, however, U.S. force posture was beginning to show a competitive character. Prior to 1948, the Services had prepared plans much as in the years after World War I, taking account of a wide range of conceivable developments. The crisis of 1948 and subsequent events caused them to engage in some comparatively urgent and realistic planning for large-scale direct conflict with the Soviet Union. Limitations on funds and time, combined with conflicts between and among the Services and mounting congressional enthusiasm for airpower in preference to other types of military power, led to acceptance by the Air Force and Army and after a struggle, by the Navy, of the principle that priority should go to ready strategic nuclear offensive forces -- specifically, to SAC. And within SAC these forces were tailored to the prime contingency of a massive attack on centers of population and industry in the Soviet Union delivered as soon as possible after the onset of war. Since SAC's requirements regarding numbers, types, and

characteristics of aircraft were all guided by this objective and by intelligence concerning Soviet air defenses, a generally noncompetitive defense budget was internally so allocated as to put the United States in a posture of enterprising competition to maintain a lead over the Soviets in strategic weaponry.

The Nuclear Program

Concurrently, important changes were occurring in the nation's nuclear weapons and nuclear energy programs. After the AEC came into being in early 1947, AEC Commissioners and their various advisors had needed a year or so to assess what might be done. Recognizing that a key problem was shortage of fissionable material, they eventually took some hesitant steps to increase the supply. In particular, they began to offer bonuses for new finds of uranium. At the same time, they began to recruit new personnel and to screen more carefully those who had stayed on. In the various AEC laboratories, research was encouraged on improvements in processing and in weapons design and on development of nuclear powerplants for naval vessels and aircraft, but debate at the Commission level remained inconclusive. They were not short of money. The President indicated to Commission Chairman David Lilienthal that he would support any reasonable request. In fact, when presented with his initial submission, Truman asked Lilienthal if he was sure that a billion dollars would be enough.[44] The Joint Committee on Atomic Energy served as a forceful advocate for the AEC on Capitol Hill. The Commissioners simply found it slow work to decide which directions they wished to follow.

Early in 1948, the AEC agreed that production of adequate fissionable material for weapons should have first priority, with development of aircraft

and submarine propulsion systems second and energy for industrial use third. Since the JCS -- not yet seized with serious war planning -- expressed satisfaction with planned production levels, the Commissioners concluded that their top priority program required nothing more than relatively slow-paced construction of an additional reactor at Hanford. They expected AEC laboratories to devote most of their resources to propulsion research.[45]

Meanwhile, however, results of the 1948 Eniwetok tests showed that U-235 was much more usable than had been supposed and that substantially more numerous and more powerful bombs of varying designs could be produced from already available fissionable material. These conclusions led engineers and scientists in the AEC to press for improvements in production facilities and new efforts in weapon research. The test results had still more effect on the growing number of military officers familiar with nuclear matters, for these officers became able, almost for the first time, to argue that nuclear weapons could actually be tailored to operating requirements and produced in quantity. The effects of missionary work within the Services became apparent by the end of 1948 in new communications from the JCS, now at work on war plans, asking the AEC to increase significantly the production of fissionable material.[46]

Responding to these requests, pressures from within, and the general Cold War atmosphere, the AEC in 1949 reactivated the gaseous diffusion plant at Oak Ridge, built alongside it an enrichment plant to double its output, hurried work toward two new reactors at Hanford, and established three additional laboratories (Brookhaven on Long Island, Knolls in

Schenectady, and Mound in Miamisburg, Ohio) to join Argonne, Clinton, and Berkeley in pursuing research on improved production. The Los Alamos laboratory received a go-ahead for further research and development on weapons, and research on propulsion systems was once again remanded to secondary priority.[47]

These new efforts had scarcely commenced, however, before they stalled. Much of the upper-level management of the AEC became preoccupied during the spring and summer of 1949 with congressional hearings on a series of ill-founded charges leveled against Chairman Lilienthal by Senator Bourke B. Hickenlooper. Before these hearings had concluded, another diversion came in the form of challenges to the Commission's plans from both the Pentagon and the JCAE.

Although part of the prompting for the new AEC program had come from the JCS, these new undertakings by the AEC did not arouse undiluted enthusiasm in the defense establishment. Naval officers feared potential effects that would give the Air Force an advantage in the debates over budgets and strategy then nearing their climax. Some were also concerned because of the importance they attached to development of propulsion systems. Partly as a result, the JCS lodged some new requirements which the AEC viewed as unrealistic. Meanwhile, Chairman McMahon of the JCAE asked if the scale of the AEC effort was truly adequate. All this evidence of uncertainty contributed to a decision by Truman to appoint a special subcommittee of the NSC to review the entire nuclear program. From July to October 1949, when this review was taking place, the AEC had to continue to mark time.[48]

In the latter part of 1949, the jam ended. With the Soviet nuclear test having been detected, the NSC subcommittee appointed by Truman gave strong endorsement to the AEC plans. In the meantime, the JCAE advocated an even greater expansion of production and research not only on new fission weapons but also on a fusion bomb. Willingly on all points except the last, the Commission adopted the Joint Committee's advice. It was then compelled by the Presidential decision of January 1950 to proceed also with research on fusion.

In the first half of 1950, the nuclear program therefore had brisk momentum. Additional supplies of uranium were arriving. Oak Ridge and Hanford were rapidly enlarging their capacity to produce fissionable material. Construction of new facilities at Savannah River, S.C., offered prospects that fusion research could progress without impeding output of fission bombs. Los Alamos had gotten the warhead weight down from 10,000 pounds to 8,500 pounds and was at work on designs for lighter and smaller weapons.[49]

As the JCS and Service staffs conducted planning exercises and developed budgets in the aftermath of the admirals' revolt, they did so in increasing awareness of the AEC's actual and potential capability for supplying them with usable nuclear weapons. By the spring of 1950, the number of people in the military establishment with access to nuclear secrets had risen to 30,000.[50]

The flow of information to the designers of aircraft and other potential carriers of nuclear weapons had become much more free. Although actual stockpile numbers continued to be known only to very few, there was growing confidence that nuclear weapons might turn out to be more readily available than previously imagined. Military men in the know were also beginning to perceive that nuclear weapons could be produced in a variety of shapes and sizes.

In the early years of the nuclear program, it was generally taken for granted that most weapons produced would be for Air Force bombers, and Air Force officers had worked with engineers at Los Alamos to redesign the bombs tested at Bikini so that they would have greater accuracy and be produced in shapes and quantities suitable for the B-36. The 8,500-pound warhead grew out of such cooperation.[51]

Meanwhile naval officers sought weapons suitable for carrier aircraft. Only gun-type warheads had the requisite dimensions. The Air Force objected vehemently to using fissionable material in gun-type weapons because their efficiency was so much less than that of implosion weapons. Between April and October 1948, however, the Navy succeeded in reaching an understanding with Los Alamos for production of the gun-type Mark 8. Before the spring of 1950, when the Mark 8 reached the test stage, the engineers at Los Alamos were able to promise implosion devices (the TX-5, TX-7, and TX-13) small enough to be fitted to carrier planes. One, the TX-7, was to be built by Douglas Aircraft and tailored for the Douglas A2D, which would be a follow-on for the AJ-1.[52]

By early 1950, the Army, too, had become a bidder. Army ordnance was developing a 280 mm. cannon, and the AEC designed a gun-type TX-9 warhead

to fit it. Again, the Air Force protested, but again its protest was unavailing.[53] Smaller, lighter weapons had become possible because, after the Eniwetok tests, scientists at Los Alamos had exploited the hydride principle. [redacted]

Thus by June 1950, it appeared certain that nuclear weapons production would expand. Whether or not the AEC succeeded in developing a hydrogen bomb, it seemed sure of being able to make weapons with higher yields. Also, the AEC promised eventually to produce much smaller and much lighter weapons.

Except for the acceleration of research, production, and the development of new facilities after the Soviet test of August 1949, the U.S. nuclear weapons program proceeded quite independently of any known or suspected occurrences on the Soviet side. The AEC itself displayed little interest in what the Soviets might be doing. Only the Air Force had deemed such intelligence important enough to deserve a strenuous collection effort. In 1947-48 it developed a routine for air sampling without which the first Soviet test might have gone undetected, and it advocated in joint bodies that high priority go to acquiring relevant information of other

types, but the Navy and Army successfully resisted this latter effort.[55] Advances made by the AEC prior to 1950 derived from scientific and technological enterprise not seriously influenced by any sense of international competition.

The Hydrogen Bomb[56]

The decision to develop a fusion weapon was taken outside the AEC and indeed ran contrary to its advice. The scientific concept was not new. It had been the basis of one line of research during World War II. One of its champions, then and afterwards, was the physicist, Edward Teller. In the period of renewed nuclear research and development after 1948, Teller became an ardent lobbyist for an intensive effort to prove the feasibility of controlled fusion and thus create a super weapon. He made converts of some other scientists, some people in the military establishment, and Chairman McMahon of the JCAE.

The General Advisory Committee of the AEC, however, unanimously opposed a concentrated effort such as Teller advocated. Headed by J. Robert Oppenheimer, this committee questioned whether a weapon could actually be produced, noted that work on it would consume a significant share of the raw material available for fission weapons, and made the point that the booster principle already offered promise of bombs many times more powerful than those which had leveled Hiroshima and Nagasaki. The only prospective use for a fusion weapon with still higher explosive yield, said the Committee, would be for "exterminating civilian populations." It would have no military purpose.[57]

Some members felt that, for this reason, the United States should never pursue the technology. Others held that it should refrain from doing so unless and until the Soviets did so. All agreed that one argument for self-restraint on the American side was the possibility that the Soviets might not sink resources into the necessary research, development, and testing in the absence of evidence that the United States was doing so.

After receiving the advisory committee's report, the Commission voted 3 to 2 against the fusion weapon program. One member of the minority, Lewis L. Strauss, formally appealed to Truman to reverse the verdict, and Truman called upon Secretaries Acheson and Johnson to sit with Lilienthal and review the matter. Since Teller and his allies had already succeeded in winning Johnson to their side, the result was to give a casting vote to Acheson.

Strauss argued that the Soviets would not be influenced by what the United States did, that, as atheists, they would not be dissuaded by moral arguments such as those in the Oppenheimer report, and that it was "the historic policy of the United States not to have its forces less well armed than those of any other country (viz, the 5:5:3 naval ratio, etc., etc.)." [58] Somewhat the same argument came from the JCS and from McMahon and the JCAE. The JCS responded to the central objection of the Oppenheimer group by citing troop concentrations and bases used for Soviet strategic nuclear bombers as conceivable military targets. Primarily, however, they emphasized that the United States should develop the weapon because the Soviets might do so, gain an apparent technological lead, and thereby

produce a "profoundly demoralizing effect on the American people" and bring "inevitable jeopardy to our position as a world power and to our democratic way of life." [59]

Though Acheson indicated initial misgivings, he eventually decided to support a fusion weapon development program, accepting the advice of Paul H. Nitze, the new chief of the Policy Planning Staff, who warned him that "the military and political advantages which would accrue to the U.S.S.R. if it possessed even a temporary monopoly of this weapon are so great as to make time of the essence." [60] When Lilienthal learned how Acheson leaned, he went along so that the threesome could give the President a unanimous recommendation, and it was with their report in hand that Truman announced the decision to proceed with the "super."

The most careful recent study of the decision concludes that the President had almost no choice. He could not long have withstood the combined force of the Teller group, the military establishment, the JCAE, and the elements of the public which they represented. [61] This was also Lilienthal's conclusion. He wrote of Truman in his diary for 31 January 1950: ". . . there has been so much talk in Congress and everywhere and people are so excited he really hasn't any alternatives. . . ." [62] Like the turn in force posture toward priority for the strategic offensive, the move to develop weapons of gigantic yield was not so much a product of measured analysis within the government as it was a reflection of perspective prevailing in Congress and among the public thus represented.

Though the outcome may have been foreordained, the debate over the "super" nevertheless was significant, not least because it supplied evidence

that a substantial number of American officials were beginning to see the United States as engaged in a strategic arms competition with the Soviets. In more elaborate and sophisticated forms, the terms of this debate would be the terms for many future debates and perhaps for debates in Moscow as well as in Washington.

Opponents of the "super" proceeded from an assumption that weapons were developed primarily for use in war. They relied heavily on an argument that the United States had little or no need for warheads of very high yield. Those who favored development, of the bomb, on the other hand, tended to reason instead that some weapons, certainly strategic weapons, were important less for their probable practical use than for their symbolism. They spoke only in passing about the operational functions of the "super" and bypassed altogether the question of whether there were any military targets that could not be totally destroyed with a boosted fission bomb. Their principal contention was that the Soviets, should they develop a fusion weapon ahead of the United States, might feel that they had a psychological advantage that perhaps translated into a political and military edge. Intermediate parties such as the West Europeans might come to a similar conclusion. So might the public at home. One can label their contrasting assumptions "utilitarian" and "perceptional." They were to manifest themselves again and again.

Some opponents of the "super" adopted in addition what may be termed an action-reaction assumption. Though contending that the United States had no military need for the weapon, they held that they would favor adding it to the U.S. arsenal if the Soviets did so. By the same token, the Soviets

could necessarily be driven to develop the "super" if the United States led the way. Others in the Oppenheimer camp argued with greater consistency that each party could be guided throughout by its own particular requirements. Commissioner Henry D. Smyth argued, for example, "that there would be weapons that they would want and that we couldn't use, that would be very useful to them and wouldn't be useful to us." [63] In general, advocates of the "super" argued that the Soviets would forge ahead regardless of what the United States did. On the other hand, they also argued that the United States could not afford to allow the Soviets an apparent lead and would certainly have to react were the Soviets to take the initiative. These contrasting assumptions were also to surface again and again. [64]

In a sense, the development of the concept of deterrence provided the first element for a doctrine to guide the United States in a strategic arms competition. Acceptance by the Services of the central role of the strategic bombing mission supplied a second element. The debate over the hydrogen bomb indicated some of the possible lines of future development -- a perceptional as opposed to utilitarian conception of what the competition was about and an assumption that the behavior of each party would be strongly influenced by the behavior of the other.

NSC-68[65]

In large part, the force posture and emergent doctrine suggesting that competition with the Soviets might centrally involve competition in strategic nuclear weaponry was a product of financial pressure. Other factors made some contribution, to be sure, not least the successes of scientists and engineers working for the AEC. But financial considerations were paramount. The questions raised by Defense officials,

the Budget Director, and the President about the B-36; the admirals' revolt; the not unsympathetic hearing given Radford, Ofstie, and others on Capitol Hill; and the votes on the hydrogen bomb issue within the AEC's General Advisory Committee and the AEC itself, all suggested some uneasiness over existing trends.

When the President ordered on economic grounds that the defense spending during fiscal year 1951 be held below the $14.4 billion actually budgeted, officers in all the Services, including elements of the Air Force other than SAC, began to fear that the United States would strip itself of every type of ready military force other than strategic bombers. Similar concern was felt in the State Department. With Secretary Johnson exerting pressure in the Pentagon, and the Treasury, the Council of Economic Advisors, and the Bureau of the Budget enlisted to participate, the President obtained, even in the aftermath of the Soviet nuclear test, an agreed NSC paper asserting that the Department of Defense could, with $13 billion, "maintain substantially the same degree of readiness and posture during FY 1951 which it will maintain in FY 1950." [66]

Acheson and Nitze felt increasingly that the President made a mistake in putting a balanced budget ahead of military strength. The Secretary of State had been invited into debate on nuclear programs when asked, in effect, to resolve the hydrogen bomb issue. When Lilienthal agreed to make the report to the President unanimous, he conditioned his change of position on a proposal that there be a comprehensive review of America's political and military posture. When the President accepted this proposal and set up a special committee under the NSC to carry out the review, Acheson and Nitze

were thereby given an opportunity to try to effect an alteration in the priorities governing the nation's defense posture.

A working group was created, within which the principal figures were Nitze, heading a delegation mostly from his own Policy Planning Staff, and Maj. Gen. James H. Burns (ret.), accompanied by others, mostly civilians, who were aides to the Secretary of Defense. Even though Burns and the other Defense participants were supposed to represent Secretary Johnson, the fact was that they all agreed with Nitze and Acheson on the objective of demonstrating to Johnson and the President a consensus that adequate defense should take precedence over a balanced budget.

One major problem for this working group was the fact that the actual consensus was very superficial. The group asked the intelligence community to assess the implications of Soviet development of nuclear weapons. CIA analysts predicted that the Russians would have one hundred 20-KT atomic bombs by 1953 and two hundred by late 1955. They reckoned 100 accurately delivered bombs to be sufficient for preventing "immediate" American counteraction, 200 sufficient to "destroy the U.S. capabilities for offensive war" and perhaps even to "prove decisive in knocking the U.S. out of a war." Nevertheless, said the analysts, the Soviets were not likely to resort to any military operations other than very limited ones against already weakened areas unless provoked or thoroughly convinced both that their objectives had to be achieved by war and that a successful surprise attack could neutralize U.S. strategic forces and the U.S. mobilization base. CIA's analysts concluded that the appropriate measures for the United States were to strengthen air defense areas to insure that U.S. strategic bombers would not be destroyed

on the ground and meanwhile to develop other forms of military power in order not to be so dependent on a force that might turn out to be vulnerable.[67]

The Services differed from CIA in appraisal both of Soviet force posture and of probable Soviet behavior. The Army G-2 said that CIA underestimated actual and planned Soviet military strength. Air Force Intelligence argued that a basic Soviet aim was to take over the United States through a revolution brought on by a war and that the Soviets were likely therefore to precipitate a war whenever they perceived themselves as possessing military superiority.[68] In joint estimates, the Service intelligence agencies advised that the Soviets would probably have two hundred 20 KT bombs a year earlier -- that is, by 1954 -- and possibly an operational hydrogen bomb together with B-29 type bombers equipped for refueling and perhaps a newer, faster, and longer range bomber plus nuclear-armed guided missiles. Army, Navy, and Air Force estimators seemed in agreement that the Soviets would concentrate on building their strategic offensive and defensive forces with the aim initially of posing a threat to the United States to offset that posed by the United States against the U.S.S.R., but with the aim also of being able to actually destroy U.S. strategic forces and damage U.S. war-making potential if war should come.[69]

Defense members of the working group voiced some concern about the possibility that the Soviets would achieve nuclear superiority. Burns warned at one point that the United States could "lose the armaments race in the atomic energy field."[70]

On the other hand, Najeeb Halaby, one of the OSD civilians on the team, put on record his view that the crucial problem was not Soviet power or even Moscow's perception of Soviet power but rather Western European perceptions of whether or not the United States could and would live up to its commitments under the North Atlantic Treaty.[71]

The working group eventually achieved an internal consensus. Its members agreed that until the mid-1950s the United States could retain an edge in strategic offensive nuclear power if it simply continued diligently along lines already being followed. The emphasis in the near future should go to general purpose forces -- especially those of the European allies -- and to continental defenses.

> During the next four or five years we must build up strength in non-atomic weapons on the part of ourselves and especially our allies in Western Europe, which will counterbalance Russia's improved position in the atomic energy field. . . . . We must also make all reasonable efforts to lessen Russia's ability to drop bombs on ourselves or our friends. 72

A few outside consultants were interviewed by the working group. Their comments suggested some of the variety of opinion consistent with the general agreement that the Soviet Union constituted a threat and that some higher level of activity by the United States was called for. Oppenheimer and President James Bryant Conant of Harvard drew an identical conclusion -- that the United States should revise its mix of military capabilities. Oppenheimer spoke of eventual "complete dependence on the atomic bomb" and Conant of "cutting back on strategic air power and putting more emphasis on land forces and tactical air power." Chester I. Barnard of the Rockefeller Foundation

and Commissioner Smyth of the AEC were nearer to Nitze and Burns in concluding that the United States should continue energetic development of strategic forces but build up other types of forces alongside them. Robert A. Lovett, temporarily out of government service, produced a different set of observations. Perhaps because he approved the President's efforts to keep the budget balanced, he saw the report as not necessarily implying a higher level of military readiness but rather an increase in U.S. will and capacity for propaganda and covert operations designed to cause trouble for the Russians within their own sphere. Physicist Ernest O. Lawrence felt a need to stay far ahead in scientific R&D, especially in strategic weaponry.[73]

Secretary Johnson had already indicated that one option for the United States would be merely to step up a bit what it was already doing. After learning of some of the debate between the CIA and the Service intelligence agencies and being warned that the English physicist Klaus Fuchs could have brought the Russians abreast of U.S. work on a fuzing mechanism for a hydrogen bomb, Johnson had recommended, and the President had approved, acceleration of and added funding for work on the fusion device.[74]

Cautioned by the variety of opinion among the consultants and probably aware of the still greater variety of opinion that might surface within the military establishment, other parts of the executive branch, and the Congress, the working group confined itself largely to penning generalities that would command wide agreement. Its draft of a paper eventually to be labeled NSC 68 characterized the world as polarized "between the idea of freedom under a government of laws, and the idea of slavery under the grim oligarchy

of the Kremlin." It spoke of "the implacable purpose of the slave state to eliminate the challenge of freedom." The Soviets were said therefore to have a "fundamental design" calling first for preservation of absolute power within their own sphere but also necessarily "for the complete subversion or forcible destruction of the machinery of government and structure of society in the countries of the non-Soviet world and their replacement by an apparatus and structure subservient to and controlled from the Kremlin." Since the United States was the formidable obstacle to this design, antagonism was sure to persist until there occurred "a fundamental change in the nature of the Soviet system, a change toward which the frustration of the design is the first and perhaps the most important step."[75]

Though the language may seem extravagant in retrospect, one should recall that the document was composed at a time when Senator Joseph R. McCarthy's name was beginning to become a household word and when almost no one with aspirations in public life was likely to dissent openly from even more extreme characterization of the Soviets. During hearings on the hydrogen bomb issue, for example, Senator McMahon successfully pressed both witnesses and colleagues to agree that the Soviet Government embodied "total evil."[76] And the language laid a foundation for the general conclusion that the United States would have to pursue its policy of containment for the foreseeable future, that such a policy required "superior aggregate military strength, in being and readily mobilizable," and that, in view of the Service intelligence agencies' estimates of overall Soviet capabilities, strategic and tactical, "our military strength is becoming dangerously inadequate."

One long section of NSC-68 reviewed alternatives to continued development of strategic offensive nuclear forces, pointing out their infeasibility. The nature of the Soviet system was said to preclude either abolition of nuclear weapons or international control. The West could never trust Soviet promises; the possibility of a "no first-use" pledge or other measures which might make nuclear weapons nonoperational, like poison gas in World War II, was set aside on a variety of grounds. One was concern lest, "in our present situation of relative unpreparedness in conventional weapons, such a declaration would be interpreted by the U.S.S.R. as an admission of great weakness and by our allies as a clear indication that we intended to abandon them." A second was an estimate that development of the requisite conventional forces would cost too much. A third was doubt that the Soviets would believe a no-use pledge by the United States or would keep such a pledge if it were mutual. The only sure means of deterring Soviet use of atomic weapons, said NSC-68, was for the United States to possess "overwhelming atomic superiority" and "command of the air." The final count was an argument that the United States might need nuclear weaponry to win a war.

Other than dismissing radical departures from current strategy, NSC-68 did not venture far from generalities. In line with Lovett's prescription, it made a case for more extensive and adventurous covert operations, but it did not otherwise prescribe whether a higher level of effort by the United States should take the form of more aircraft for SAC, more ground forces for the U.S. Army, more military assistance for NATO allies, or a combination of programs. Nor did it even hint at how much higher the level of effort should be. Nitze believed privately that the American

defense budget should go from $15 billion to $40 billion a year. He felt that Burns and the other Pentagon representatives were thinking more in terms of an additional $5 billion or so per year.[77] The actual language of NSC-68 was sufficiently vague so that it was endorsed by men who went on either to comment that little or no new spending would be needed or to call for only limited additions to the budget. Although Edward W. Barrett, the Assistant Secretary of State for Public Affairs, read NSC-68 as pointing toward "a gigantic armaments race," State Department Soviet expert Lewellyn Thompson judged "that no very great increase in our present rate of expenditure would be called for, but rather a better allocation of resources and a unified national policy." Thompson's fellow Soviet expert, Charles E. Bohlen, had recently told a congressional committee that he did not think the Russians had been deterred from war by U.S. nuclear weapons and that, indeed, he had "not been able to detect the slightest influence on Russian policy resulting from our possession of the A bomb." Nevertheless, his conclusion with regard to NSC-68 was that the United States should pursue intensive research and development on strategic weaponry, both defensive and offensive, as a substitute for "a full-scale rearmament program of the standard nature."[78]

The Secretary of the Navy said that there should be no expansion of military spending not somehow compensated for by cuts elsewhere in the Federal budget. Secretary of the Army Gordon Gray pronounced it his conclusion that NSC-68 provided no justification for spending large additional sums for offensive weapons. It did, he thought, warrant increased allocations for such items as Army air defense missiles. Vannevar Bush, former head of the Research and Development Board, spontaneously seconded Gray by calling for "a change of emphasis" in U.S. defense programs, shifting funds

from SAC bombers to air defense radar, surface-to-air missiles, and anti-tank weapons. The Air Force saw NSC-68 as not only arguing the case for strategic airpower but as also possibly opening the way for challenges to the predominance of the strategic bomber. Air Force Secretary Symington guardedly declared that the study was unduly specific in citing 1954 as the year when the Soviets would become capable of a surprise nuclear attack which could seriously damage the United States, if "opposed by no more effective opposition than we now have programmed"; otherwise the study was "vague in phrasing." [79]

Although Secretary Johnson was loyally holding defense spending to the limits set by the President and had at one juncture denounced his own representatives on the working group for conspiring with the State Department to subvert the President's policy, he raised no objection to the final text. Indeed, he reported to the White House that the reaction of the Services and the JCS was generally favorable and that he himself wanted "implementation of the policies contained in this paper." [80]

Truman recognized that NSC-68 challenged his own policy of holding down defense expenditures in order to keep the budget in balance. He probably recognized also that whatever its shortcomings as a piece of analysis clearly lining up policy choices, it would serve as a splendid campaign document for anyone seeking to persuade Congress or the country that the Administration's defense programs were inadequate. The evidence that Truman saw NSC-68 in such a light is a communication from him to members of the NSC, adding the administrator of the foreign economic aid program, the Director of the Bureau of the Budget, and the Chairman of the Council of Economic Advisers to those who would review the document. Those agencies

had helped to write the earlier NSC paper endorsing lowered defense expenditures; the Budget Bureau was on record as advocating no increase in defense spending until after FY 1954. The President also directed "that no publicity be given to this Report or its contents without my approval."[81]

A formal NSC meeting to consider NSC-68 ended merely with an agreement that an ad hoc committee, including representatives of the officials added by the President, would examine and report on its programmatic implications. During succeeding weeks, the National Security Resources Board tried a flier by calling for $15.5 billion to be spent over the next five fiscal years for civil defense and strategic stockpiles. Its request was promptly shot down as "excessive." By late May the ad hoc committee had ready a shopping list that, if adopted in toto, could have added over $5 billion to FY 1951 allocations for economic and military aid, propaganda, covert operations, and civil defense.[82] The comparable shopping list for additions to U.S. military programs remained under debate within the Pentagon.

In the ordinary course of events, the practical significance of NSC-68 would have become apparent between August and December when the budget for fiscal year 1952 was prepared and reviewed. Nitze and Burns had done their work sufficiently well so that the President probably would have felt compelled to fix a higher ceiling, even if it entailed a deficit. What would have been the new ceiling or the relative share for strategic weaponry no one can judge. Actual deliberations on future budgets were conducted in an environment totally transformed as a result of the outbreak of the Korean conflict.

NSC-68 and debates on its implementation nevertheless retain significance in part because they indicate that the overall U.S. defense budget would soon have evidenced a shared national belief that the United States was engaged in military competition with the Soviet Union. Even without Korea, it would have ceased to be the case that competition mirrored itself chiefly in allocations within the military establishment. NSC-68 and the attendant discussion also suggest, however, that, in the absence of the Korean conflict, evidence of more competitiveness in overall defense spending could have been accompanied by a shift in the character of competition manifested in force postures. A defense budget developed in peacetime on the premises of NSC-68 could have involved reduced emphasis on strategic offensive forces and increased emphasis on air and missile defense or theater general purpose forces. As of mid-1950 the United States was beginning to engage in long-term military competition with the Soviets, but the terms of competition remained in flux.

CHAPTER III

SOVIET POSTWAR DEFENSE PROGRAMS 1945-48

In retrospect, Soviet military forces between 1945 and 1948 do not seem so imposing as to justify the degree of alarm expressed by American political and military leaders, an alarm sounded not only in public appeals for spending on defense but also in confidential documents such as NSC papers. Beginning in 1945, the Soviet Army, like the U.S. Army, was demobilized. CIA estimated in 1947 that it had been cut from over 10 million to about 2.6 million and that total Soviet military manpower, including security troops, had dropped from 12.4 million to below 3.8 million. Adhering to the formula that a unit existed unless there were three pieces of evidence to the contrary, all U.S. intelligence services described the Red Army as having 175 divisions; but it should have been evident from the manpower estimates that most of these divisions were shells. The Soviet air forces were only beginning to modernize, and the only Soviet bombers with range to cover Western Europe and U.S. bases in the Western Pacific were 105 TU-4s, exact copies of the U.S. B-29.[1]

Since the Soviet Union had suffered enormous war damage, including probably more than 20 million military and civilian casualties, a hard look at Soviet military capabilities during 1945-48 should have produced strong skepticism about the proposition that the Red Army was poised to strike at Western Europe. One of the Americans best situated to pass judgment, Harry Rositzke, who headed CIA efforts to collect clandestine intelligence within the U.S.S.R., says that, in fact, he continually questioned the estimates of Soviet strength and readiness which were circulating in Washington.[2] His evidence strengthens the impression that much of what was written and said about the Soviet threat was a

function less of evidence about what the Soviets were actually doing than of fear about what they might do.

Large Soviet military forces did materialize later. By mid-1950 the Red Army had perhaps a million more men than in 1948, and U.S. intelligence counted not only a larger number of divisions than in 1948 but twice as many mechanized divisions. It was supported by 2,400 tactical bombers, including an initial installment of jet IL-28s, and more than 7,500 fighters, of which almost 2,000 were advanced MIG-15s. The Soviet navy had 100 new ships, and more than 60 new submarines, all built since World War II. The force of TU-4s had jumped from 100 to 500, and the successful test of August 1949 demonstrated that large resources had been poured into a nuclear weapons development program. Especially in view of the losses the Soviet Union had suffered in World War II, the level of investment in modern military forces seems remarkably high.

The question arises whether the military buildup in evidence by mid-1950 was planned long in advance or whether it reflected a Soviet reaction to threatening gestures and language from the West. In large part, the effort to answer this question will be deferred to a later chapter* because it links so closely with the question of whether or how the Soviet government reacted to the large-scale American strategic force buildup during the Korean conflict of 1950-53. This chapter sketches in what is known or can be inferred concerning decisions on Soviet force

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*See below, pp. 242-50.

posture made in the immediate aftermath of World War II.

It has to be emphasized that the evidence is meager. It consists in large part of data regarding the forces that subsequently materialized together with public utterances which were designed to produce effects rather than make disclosures, testimony from defectors whose knowledge was at best partial and whose reports were often biased, and a handful of memoirs--by military men writing about World War II but letting slip some comments on postwar events; by engineers involved in aircraft and weapons design; and, above all, by Nikita Khrushchev. While the American side of the American-Soviet strategic relationship can be reconstructed from a body of information so vast that it can only be sampled, the Soviet side has to be pieced together from random fragments like those which archeologists would use to study a lost civilization.

Consequently, there is temptation to take the United States as a model and to assume that, in the absence of contradictory evidence, generalizations developed from American data are applicable, pari passu, to the Soviet Union. Intelligence analysts continually warn against such "mirror-imaging." It is important at the outset, therefore, to underline differences between the two structures which existed before the strategic arms competition commenced and which for the most part have persisted since.

First, most important and most obvious is the fact that Soviet policies are based on assumptions drawn from Marxist-Leninist philosophy. One which is particularly noteworthy here is an assumption that capitalists must in all circumstances regard a socialist society as a mortal threat. It follows that leaders of bourgeois governments such as those of the United States or Britain will accept peaceful coexistence or some measure of cooperation, as in World War II, only when their own conflicts paralyze them or when they perceive the balance of forces to be so adverse that war against socialism

involves excessive risk of bringing on revolutionary war at home. From Stalin to Brezhnev, from Vyshinsky to Dobrynin, Soviet leaders and representatives have believed that conciliatory actions by bourgeois states are usually to be explained as a product of fear. Although Westerners are inclined to interpret Soviet behavior in similar fashion, the Soviet view has tended to be more doctrinaire and less liable to admit the possibility of exception.

This general assumption must have colored decisions on postwar foreign and defense policy made by Stalin and his subordinates. From their standpoint, the United States had been an enemy from 1917 onward. It had been seen as one of the most determined and most cunning of socialism's enemies, for it had been the last major power to accord diplomatic recognition to the Soviet regime, and it had successfully played the jackal in World War II as in World War I, entering only after its various bourgeois rivals had exhausted one another. Soviet historical writing depicts U.S. diplomatic recognition as entirely a function of the great Depression and American need for Soviet trade, and it represents lend-lease aid and the alliance of World War II as a cynical, opportunistic, and not entirely unsuccessful endeavor to pit Russians against Germans and thereby save American and British lives. There is no reason to suppose that Stalin and his advisers and agents held any contrary view, nor is there any reason to suppose that they ever expected the postwar relationship with the United States to be anything other than antagonistic.

Second, and not unrelated, the Soviet leadership, when compared with that of the United States, consisted of men with longer experience and greater technical knowledge concerning military affairs. As of 1945-46 this was

much less true than it would be by the end of the 1970s when the Soviet Presidium would still be dominated by men who held high office in World War II, but the advisers to Stalin did tend to be men of longer experience than the advisers to Truman, and Stalin himself, of course, had been at the helm for 20 years. Whereas Americans were inclined to perceive 1945 as the beginning point for a new era, Stalin must have seen it more as the end of an interruption--as a point at which, with the menace of Hitler dissipated, he could resume what he had commenced earlier.

Thirdly, the Soviet system was more subject than the American to direction from the top. To be sure, the Soviet Union was not free of bureaucratic competition resembling that prevalent in the United States. Mission elements in the armed Services surely had some role in framing requirements. It is hard to conceive, for example, that needs for air defense were not partly defined by subunits that had particular tasks--the operation of antiaircraft guns, detection of incoming planes, counteraction by interceptors, etc. -- for in any system, the men with operating responsibilities and expertise would have been assumed to know something about the dimensions of their task, the requisite manning levels and maintenance needs, and even desirable weapon characteristics.

Even in this respect, however, there were several important differences between the Soviet system and that of the United States. The Soviet armed Services were not counterparts of the U.S. Services. Although the Soviet navy yearned to be like the U.S. Navy or the Royal Navy, in practice it remained subordinate to the army. Its chief operational functions had been coast defense and riverine warfare. When Admiral V. A. Alafuzov

wrote in Morskoi Sbornik' in 1946 of a possible independent role for the navy, his article was rapidly followed up by another, from Admiral G. Levchenko, atoning, characterizing the navy as "the Faithful helper" of the Red Army.[3] Similarly, the air forces were in practice auxiliaries of the ground forces. Some elements within the ground forces possessed independent strength at least equal to that of the navy or air forces. This was true of armor and especially of artillery, for the Red Army used large quantities of artillery and had separate artillery divisions with separate paths of advancement for artillery officers. On occasion, Soviet artillerists boasted of the decisive importance of their weapons in terms faintly reminiscent of those used by American and British airmen. Stalin himself once spoke of artillery as "the god of war."[4] Insofar as there were contests in the Soviet Union comparable to those between the air Force and navy in the United States, they probably involved more parties, and more parties within each Service.

The role of industrial producers was also different. Industries producing defense goods belonged to the state apparatus. After early 1946, when there was some reorganization and most of the responsible supervisory bodies were relabeled ministries rather than commissariats, the chief military-industrial subdivisions were: Armaments, Aircraft, Shipbuilding, Agricultural Machine Building (including munitions), Transport Machine Building (including tanks and motorized transport), Machine Building and Instrument Making, and Ferrous Metallurgy. Within these organizations, estimates of production capabilities and, probably, recommendations as to efficient allocations of material and manpower filtered up from individual plants through functional or regional glavks to become consolidated proposals for the State Planning Commission and other overall coordinating bodies.

The heads of design bureaus enjoyed special status and personal access not only to ministers but to Stalin himself. Through liaison offices and the like, the military Services and the producers and designers of military goods exchanged information at various levels. Recommendations moving up through the military-industrial hierarchy were thus not drawn up in total ignorance of military thinking. They did, however, reach high-level decision-makers through a separate stream, and they must sometimes have presented considerations different from those emphasized by the Services.[5]

In any event, many Soviet officials who dealt with military force requirements had to think in terms of overall resource allocation. With regard to antiaircraft guns, for example, planners at some level had to consider not only how many such guns should ideally be deployed but how many should be produced, given competing demands for other types of guns, and what should be the total output of guns, given competing demands for machine tools, steel, skilled workmen, etc. Planning in the Soviet Union was more comprehensive than in the peacetime United States. Moreover, the planners usually employed a longer time horizon. Although they must frequently have been concerned with year-to-year or even month-to-month adjustments, they worked within the framework of a 5-year plan, and they had to think accordingly.

The Soviet and U.S. Governments also differed in that it was common Soviet practice for people at upper levels to set performance goals without much consultation with the people who had to meet those goals. Treating nonfulfillment of the goals as personal rather than organizational failings, the Soviets typically replaced or punished nonperforming managers or commanders rather than allocating additional resources. This

practice created incentives for managers or commanders to do the best with what they had, to be very cautious in claiming what they could do if they had more resources, and sometimes to engage in pretense or deception rather than admit inability to do a job.[6]

During the war and for a short period thereafter, the highest body to deal with postwar force planning was the State Committee for Defense (the GOKO). With Stalin as chairman, it consisted of[8] members or candidate members of the party Politburo, each of whom also headed up a major commissariat or had a mandate as a sort of super commissar. For example, Lavrenti Beria headed the secret police. Lazar Kaganovich was Commissar for railroads with jurisdiction over all transportation. Georgi Malenkov superintended aircraft production and planning relating to occupied areas. N. A. Voznezensky was, among other things, chairman of the State Planning Commission and presumably had a mandate to see that other sectors of the economy made contributions to war production. Marshal Klementi Voroshilov until 1944 and then General Nikolai Bulganin, though both political appointees rather than professional military men, provided additional liaison with the armed forces.

Stalin unquestionably dominated the GOKO. He had access to any obtainable information; and he showed unslakeable thirst for data about weapons design, manufacture, and use and about the strengths and weaknesses of military-industrial managers and military officers. In addition to reports through regular channels, tidbits of all types presumably came to him from Main Economic Administration and Main Military Administration of the secret police. Furthermore, Stalin had developed to a science the techniques for getting underlings to do what he wanted.

During 1945-46, Stalin reorganized his government, doing away with the GOKO. Although Politburo members who had been on the GOKO continued to have specialties, most were relieved of managerial responsibilities. Most of the commissariats became ministries, and the men heading them reported directly to Stalin. When they perceived a policy issue, they were supposed to consult with the appropriate Politburo member. Only if a minister felt unable to resolve it would the issue be brought to the full Politburo, with Stalin in the chair. But Stalin would know about it, and would usually be better informed than his Politburo associates about those issues. Also, the ministers had reason to see their own fortunes as wholly dependent on Stalin rather than on others in the party. The effect of the reorganization--almost surely intentional--was to enhance Stalin's control and diminish the roles of all others.

Thus, despite the existence of bureaucracies competing for scarce resources under conditions of high uncertainty, the Soviet system has to be seen as subject to a high degree of centralized direction. Although Soviet leaders could only choose among options that seemed feasible and although results might not materialize for a long time, they were in a better position than their American counterparts to select and pursue conscious policies. At the end of the war, Stalin restored his own utter preeminence. Questions about Soviet postwar defense policy are therefore questions about what Stalin decided to do, given options that would be offered to him from the military and industrial establishments, his own prior history, and the tenets of Marxism-Leninism to which he subscribed.

There can be little doubt that some postwar force planning took place during the war and while the GOKO still functioned. Some intensive review of long-range military needs had occurred at the end of the

1930s, during the final period of the great purge and at a time when Soviet leaders thought it possible that their country might develop in peace while the bourgeois states fought among themselves and weakened one another, and perhaps created conditions for successful Communist revolutions. From this review had emerged plans for increasing the military strength of the Soviet state. It was apparently intended that first emphasis go to weapons which would give ground forces greater strength and speed--more powerful and more quickly mobile artillery; faster and more heavily armed ground support aircraft; and heavier and faster tanks and troop vehicles. Second emphasis was to go to a surface and undersea fleet which could undertake offensive as well as defensive missions and interfere with seaborne supply and reinforcement of hostile armies on the Eurasian continent.[7] Though worsening conditions after 1940 and the outbreak of war in 1941 interrupted progress, it is reasonable to assume that these plans were not simply discarded. In all likelihood, Stalin began sometime in 1944, if not earlier, to review the question of how, if at all, these plans should be revised in light of wartime experience and foreseeable postwar conditions. In the same period he must also have been asking what would be the industrial and other demands for postwar rehabilitation of the Soviet economy and resumption of progress toward domestic economic goals.

The first decision which Stalin announced publicly concerned the postwar navy. In July 1945 he declared that the Soviet Union would build a strong fleet.[8] He did not say what its composition would be, and, as of that date, he may have decided nothing more specific than that rebuilding of shipyards should have high priority and that the yards should construct naval vessels rather than merchantmen.

The period between the end of the European war in May 1945 and the issuance of the new five-year plan in February 1946 witnessed some high-level debate about postwar military forces. In the winter and spring of 1944-45 Stalin sought detailed information about types and qualities of planes that might be produced after the war. He questioned not only A.I. Shakhurin, the Commissar for Aviation Industry, but also Shakhurin's deputy, designer Alexander Yakovlev, and he received information from the various design bureaus which operated with some degree of autonomy under the Commissariat's Central Design Bureau--those of Yakovlev, Andrei Tupolev, Sergei Ilyushin, and the teams, LAGG (Semyon Lavochkin, Gorbunov, and Gudkov) and MIG (Artem Mikoyan and Gurevich). A special committee on the exploitation of the German economy headed by Malenkov meanwhile gathered data on German aircraft technology, and Soviet intelligence agents in North America received special instructions to gather material on U.S. and Canadian jet engine research.[9]

At least from the time when the Germans began to use jet fighters on the eastern front, Stalin was prodding Soviet engineers to duplicate this technology. Presumably in execution of plans by Malenkov's committee, German jet engine specialists were rounded up en masse in June 1945 and brought to the Soviet Union. By autumn lively debate was in progress among designers as to whether it would be better to copy the bottle-shaped German ME 262 or to go instead for jet fighters of native Soviet design. Champions of the latter course (Yakovlev, Ilyushin, and the MIG and LAGG teams) prepared a formal memorandum. Going beyond the particular dispute, it argued that "a serious lag in our aviation" would create "a dangerous situation." This memorandum served as one point of focus for a meeting of members of the party central committee in December 1945, presided over by Stalin.

Some months later, in April 1946, Stalin was presented with a long-range plan for jet fighter development. Presumably, it resulted from collaborative work among the design bureaus, with some assistance from air force officers and some advice from the Ministry of Foreign Trade about imported components that might become available. This plan called for a first generation of jet fighters using German Junkers JuMO-004 and BMW-003A engines with 1,800-2,000 pounds thrust--the nearly completed MIG-9 and Yak-15. There was to follow as quickly as possible a second generation using engines imported from Britain which could develop almost 5,000 pounds thrust. Stalin expressed skepticism that the British would release these engines, saying, "Just what kind of fool would sell his own secrets!" Anastas Mikoyan assured him, however, that the deal could be made. The plan further called for a third generation of fighters, 5 or 6 years down the line, which would be powered by Soviet-made engines of up to 17,600 pounds thrust.

Stalin accepted the plan. Moreover, he ordered Yakovlev and the MIG team to have small formations of Yak-15s and MIG-9s ready to appear at the Tushino air show in August 1946. Subsequently, engines were bought from the British, and an extensive additional campaign was mounted to round up German aeronautical engineers and put them to work in Russia.[10]

Stalin had clearly decided that military aviation should have high priority in the immediate postwar years. Sometime between the spring of 1945 and the spring of 1946 he also authorized large-scale production of the piston-engine TU-4 (Bull), Andrei Tupolev's copy of the U.S. B-29. In this case, he did not opt for the highest attainable technology. He must have been aware that the United States would soon have the more advanced B-36, and there is some reason to believe that Tupolev himself took the position that

a better bomber could be developed if Stalin would tolerate some delay. For this type of aircraft, however, the dictator evidently judged early production and deployment to be more important than advanced performance characteristics. He did say that he wanted a bomber which could reach the United States, but he did not seem to attach high priority to its production.[11]

Stalin also apparently concluded the Soviet Union should push ahead rapidly in developing missiles. The subject must have received some attention during the war, for, in accordance with what appeared to be a well-prepared plan, the Red Army, when moving into Germany, seized laboratories and facilities involved in developing the V-1 and V-2, and their data and some of their personnel were sent to the Soviet Union. Testimony from Leonid Vladimirov suggests, however, that Stalin's personal interest may have been awakened slightly later, when a letter was sent to him by several Soviet rocket engineers warning that the Western powers had captured the most valuable German materials and people and that the Soviet Union could face grave peril if it failed to pursue an energetic research and development program of its own. Whether as a result of earlier deliberation or of this warning from engineers or of a greater feeling of confidence that the West would take no counter-action, Stalin did authorize a further intensive effort to identify and bring to the Soviet Union German rocket specialists. Two laboratories operated. One was at Moscow/Kaliningrad, the other at Moscow/Khimki. In addition, a test facility at Kapustin Yar went up on the lower Volga. At some point, one or both of the laboratories received some German engineers previously held in detention at Sukhumi on the eastern coast of the Black Sea.[12] Given that there was an acute shortage of construction equipment and material, particularly concrete, and that war-damaged transportation facilities in southwestern Russia were strained to the utmost, the order to build these facilities suggests that missile research had high priority.

In still another area, that of nuclear power, Stalin showed keen interest in pushing toward the technological frontier.[13] Within the Soviet scientific community there had long been nuclear physicists. Their research before the war was on a par with that in the West, and they had had significant government support, probably based on belief that they might develop a new source of energy for industry. The war interrupted and slowed their work. With increasing indications that an atomic bomb might be feasible, they were given additional resources from 1943 onward. Then, if not earlier, their research came under the supervision of Lavrenti Beria, an arrangement that imposed restraints but also provided access to facilities in the vast prison and labor camp system and to the scientists, technicians, and skilled workers populating parts of this system. Development of a Soviet atomic bomb was accorded some degree of priority. Uranium mining was underway in the Fergana Valley region of the Soviet Union early in 1945. In November Stalin established a First Chief Directorate under the Council of Ministers to oversee further efforts. Supplies in occupied territories were confiscated, and intensive mining commenced in eastern Germany and Czechoslovakia. Meanwhile, a 1.5-meter diameter cyclotron in Moscow was completed for use by Igor Vasilevich Kurchatov and others in "Laboratory No. 2 of the Academy of Sciences," and a 10-watt graphite reactor modeled almost exactly on one at Hanford, Washington, was started.

During 1945-46, probably in the early part of the latter year, when the Five-Year Plan was being completed, Stalin decided on overall allocations for defense. At the same time, he effected the governmental reorganization mentioned earlier, and the erstwhile commissariats, in some cases divided up, merged, or retitled, became ministries. In the case

of the military establishment, there came into being a Ministry of the Armed Forces, with Stalin himself as the minister. Reporting to him were three headquarters organizations--those of the navy, the land forces, and the air forces. What had previously been aviation of the Red Army thus became, for practical purposes, a separate Service. In addition, the ministry had more or less autonomous directorates for artillery, armor, and air defense (PVO). The long-range air force (LRA) once again became a separate command, directly under the authority of the minister.

Primarily, Stalin was engaged in demobilizing the giant forces of World War II. Red Army manpower was reduced by more than 70 percent by 1948, and air forces manpower by about 50 percent. But it seems clear that Stalin also ordained rapid modernization of the forces that were to survive. In the ground forces, the absolute number of armored units was to rise, and most rifle divisions were, in a very short period of time, to become motorized. The Ministry of Transport Machine Building was reportedly directed to produce 5,000 armored military vehicles per year.[14]

In the military budget proper, our best estimate is that the ground forces, including "mobilization troops" received about 41 percent of the total outlays for 1947, the air forces received approximately 17 percent; and the navy's share, excluding naval air, amounted to 11 percent. In all probability, however, it was anticipated that the air forces and navy allocations would go up, for the large numbers of TU-4s and MIG-15s that entered service in the late 1940s must have been on order by 1947. Certainly, this was the case for the Sverdlov-class cruisers, new classes of destroyers, and Z-, W-, and Q-class submarines copying German technology which began to come off the ways.[15]

All in all, it would appear that Stalin in 1946 elected the following as a postwar defense policy. The Soviet Union would have ground forces of diminishing total size but with increased mobility and striking power. It would as rapidly as possible develop the new type of artillery promised by German experiments with the V-1 and V-2, including weapons usable for strategic warfare, if possible at intercontinental range. It would also develop rapidly for both battlefield and air defense use tactical aircraft equal or superior to any in the world, and it would build up a bomber force potentially capable of strategic operations anywhere in Europe and Asia. It would also expand and modernize its surface and undersea fleets, though not as yet building vessels capable of any other than guerre de course operations outside of Soviet coastal zones.

To some extent, Stalin's defense policy may be explained as a relatively farsighted response to foreseeable demands on Soviet military forces. It was clear that both Germany and Japan had been utterly defeated. Neither could become a threat to the Soviet Union for at least 10 years, probably more. The other neighbors of Russia were weak. The economies of France and other states in Western Europe were shaky, and most of their governments were divided, with Communist parties wielding great influence in their parliaments. China was torn by civil war. There seemed little reason for Soviet leaders to fear in the near term -- the decade, 1945-55 -- a new land invasion of their homeland and hence little reason for maintaining huge ground forces.

It would have been reasonable for Stalin to feel that the Red Army should be equipped during this period for four missions: (1) Maintenance of domestic security; (2) occupation duty in Germany, Austria, Korea, and possibly Japan; (3) prompt aid to a friendly government in Eastern Europe in the event of an

uprising or invasion; and (4) prompt support for Communists elsewhere in Europe or Asia if they should effect a revolution and be threatened by counterrevolutionaries. Small mobile ground forces with lots of firepower were ideally suited to these missions.

While the effects of World War II persisted, Stalin could feel Great Britain and the United States would represent the chief threats to the Soviet Union and to communism as an international force, and that these powers were unlikely to attack in the first instance with their own ground troops. At any rate, there would be plenty of warning if they made ready to stage such an attack. For the foreseeable future, their principal weapons would be ships and airplanes. On this assumption, it made sense for the Soviet Union to build sea and air defenses and develop weapons that could be used for operations against their fleets and their homelands--long-range submarines, heavy bombers, and long-range missiles.

It is possible that reasoning along these lines guided Stalin's choice. To be sure, some of his decisions did not precisely fit such reasoning. The ground forces he decreed were somewhat larger than necessary for their missions unless Stalin contemplated their fighting as far away as France or Spain, in which case they were too small. The new classes of cruisers and destroyers did not have the range or armament to cope with enemy fleets unless covered by shore-based aircraft or artillery, and while some of the new submarines would have the potential range they were too light to carry the torpedo load for effective operations against enemy fleets or ocean shipping. The TU-4 could carry bombs as far as Britain, but it could not reach the United States, and Stalin's policy apparently did not involve high pressure for a follow-on bomber with intercontinental range and the ability to get past American air defenses.

It may be, however, that these anomalies are more apparent in retrospect than they could be at the time. It may even be that they are not anomalies at all--that, for example, Stalin conceived his naval program as only a first phase in a longer range scheme or that he had faith that any bomber would soon be made obsolete by long-range missiles. It is not at all inconceivable that Stalin thought Soviet postwar forces to be tailored exactly to the conditions that might confront them. And it must be borne in mind that Stalin may well have expected developments after the first postwar decade to resemble developments of the 1920s, with some or all of the West European states regaining strength and the United States becoming preoccupied with its own affairs.

Yet another possibility is that Stalin conceived of the postwar Soviet military establishment less as a force designed for military operations than as an instrument of foreign policy. In the 1920s and 1930s, Stalin had behaved very cautiously. Taking the position that development of a strong Communist state in Russia had to have priority, he had chosen not to risk the safety of Russia for the sake of assisting revolutions elsewhere. On more than one occasion, he had, in fact, commanded foreign Communists to sacrifice advantages in order to help the Soviet Union. The little we know of his relations with leaders of Communist parties in Europe, the Americas, and Asia suggests, furthermore, that he was scornful of most of them.

Nevertheless, there is evidence that in the late 1930s Stalin saw the approach of a second world war as heralding a new era. In Europe and perhaps in Asia, it could create conditions similar to those that brought the Bolsheviks to power in Russia. Though any such vision must have dimmed when the Germans attacked and it seemed for a time that communism might be extirpated in Russia

itself, it may have revived as the tide of war turned. Certainly by 1944, if not earlier, Stalin was supposing that the postwar era might see Communists in power in parts of Eastern Europe. Then and in the succeeding year, he and his diplomats and military commanders lent strong support to Communist parties in Poland, Rumania, Bulgaria, and Yugoslavia.

Stalin showed signs of still being extremely cautious. His government did not exploit opportunities to promote Communist fortunes in Finland. It was slow to do so in Hungary, and it made no open objection to temporary cooperation by Communists in Czechoslovakia and Western Europe with bourgeois parties. In Asia, not only did Stalin refrain from giving direct aid to the Chinese Communists, he dealt with Chiang Kai-shek in such a way as to imply that he expected his success. While Stalin may have hoped that conditions would so evolve as to favor Communist prospects, he was evidently not eager for situations in which the Soviet Union might find itself backing Communist regimes embattled against counterrevolutionaries who might well have British and/or American support.

Looking several years ahead, however, Stalin may possibly have seen as an alternative to a repetition of events of the 1930s a situation in which Europe remained weak while the United States became distracted. Should history unfold so, Stalin would look out on foreign scenes exhibiting more attractive opportunities for extension of the Communist faith. In such circumstances, the Soviet Union might be able to aid revolutions abroad simply by seeming militarily strong. Without having to risk actual combat, it could insure fear, confusion, and division among bourgeois factions and nations.

Stalin's decisions on postwar forces could be construed as having this end in view. By emphasizing armor and motorized transport for ground forces while disguising the extent of demobilization, he could create an impression that the Red Army was capable of rapid action anywhere in Europe with mobile striking forces acting as a vanguard for hordes of infantry. The possession of a long-range air force could seem to give the Soviet Union a capability for deterring support of counterrevolution by the British and Americans. A modernized fleet and air defense forces with advanced fighters would minimize any appearance that the Soviet Union might itself be deterred from action by threat of strategic reprisal. If accurate long-range missiles could be developed, they could eventually substitute for the LRA and, if they had intercontinental range, serve as a visible threat even to the distant United States.

If Stalin's thinking was dominated by concern about foreign perceptions of Soviet military strength, some of his choices are puzzling. Deep cuts in ground force strength, for example, involved a large gamble on the effectiveness of the techniques by which the Red Army would attempt to deceive Western intelligence services; and the building of cruisers and destroyers of limited range added little to the appearance of either offensive or defensive strength. Still, it is not unlikely that estimates of probable appearances entered as much into Stalin's calculations as did estimates of the actual combat strength which the Five-Year Plan would yield.

Still another possibility is that Soviet defense policy mirrored some of Stalin's domestic concerns. At the end of the war, he faced immense uncertainties. Through all its past history, Communist Russia had seemed in peril, the possibility always imminent that powerful bourgeois states would once again sponsor counterrevolutionaries. This peril had formed a large part of the justification for dictatorship, regimentation, deprivation, and deliberate resort to police terror by the party leadership. Now the peril was less, or at least had become more remote and theoretical. Though Stalin undoubtedly remained convinced that the methods of the past were still necessary if the goals of the Bolshevik revolution were to be attained, it must have seemed to him an open question whether the Russian people would submit to discipline as readily as in the years before the war. And restoration of the prewar regimen would be all the more difficult because the war itself had required him to relax certain controls, appeal to patriotism rather than party loyalty, permit advancement into the civil and military elites of people qualified more by talent than by ideology, and allow contact between Russians and Westerners.

In these circumstances, Stalin had to deal with the broad question of how scarce resources were to be parcelled out in the immediate future. In all regions of the U.S.S.R., especially those that were battle-scarred, local party leaders would be begging for the wherewithal to restore and increase production of farms and factories. Among them were men such as Nikita Khrushchev in the Ukraine and P. K. Ponomarenko in Byelorussia, who had networks of allies not only in their regions but in the party and government hierarchies in Moscow. To the extent that Stalin denied their demands and at the same time set them exacting goals, he might stimulate conspiracies. On the other hand, he could also expect many of the same

resources, especially skilled manpower, raw materials, transportation, communication, and construction equipment, to be sought by the military. Even though subject to party discipline and continually watched, the military remained in some degree separated from the party. As had been evident in the drastic purges just before the war, Stalin had special dread of conspiracy among men who controlled troops, guns, ships, and aircraft. Some moves by Stalin were almost certainly influenced by desire to prevent any individual from acquiring much concentrated power. The dissolution of the GOKO may have been one such act. Within the inner circle of his government, he temporarily demoted Malenkov while showing favor toward Zhdanov, and he allowed Zhdanov to conduct a new purge. divining and rooting out heresies in the party and among scientists, academicians, writers, and the like, and also to lead in creating the new international Cominform. This so-called "Zhdanovshchina," continued even after Zhdanov's death in August 1948. In the military establishment, Stalin removed from any place of prominence the wartime ground force hero, Marshal Georgi Zhukov. He not only removed but imprisoned the wartime Air Force commander, Marshal Novikov, and Minister of Aviation Industry Shakhurin, and he removed and demoted the Navy commander, Admiral N. G. Kuznetsov.

Some of these changes were doubtless solutions to individual problems. It was rumored that Novikov, the Air Force commander, was removed for taking too much private booty out of Germany. Another version had it that he somehow earned the personal enmity of Stalin's dissolute son, Vasily, who held general officer rank in the air force. Some testimony from aircraft designers and from Khrushchev suggests that Stalin judged the whole aviation establishment to have been badly run toward the end of the war and

that this accounted for his displeasure not only with Novikov and Shakhurin but also with Malenkov, who had been the GOKO member with that portfolio.[16]

It nevertheless seems likely that jealousy for his own status entered into some of these personnel shifts, and it is at least possible that the same motive affected Stalin's decisions on resource allocation. To divide funds among a number of Service elements, building up the separate interests of the air defense force, the LRA, the navy, the armored force, and the artillery, and returning the infantry and its generals to a status of equality, could have been seen by Stalin as serving domestic political as well as strategic and foreign policy ends.

And, of course, the hypothesis cannot be excluded that Stalin's decisions on defense policy are not to be explained by reconstructing any rationale. His actions during the Great Purge lend themselves best to a psychopathological analysis. By 1953 he was unquestionably more than half mad. The reasons for his choices in 1945-47 may have been those of a Nero or a Caligula.

Guided by an assumption that hostile relations with the West were inevitable and involving in large part merely a renewal of a long-standing campaign "to catch up with and surpass the United States" in technology, Soviet defense programs of the immediate postwar period clearly represented acceptance of the proposition that the Soviet-American relationship was competitive in all areas, including strategic weaponry. As Soviet defense programs manifested themselves prior to the Yugoslav defection and Berlin crisis of 1948, however, in themselves they provided as yet little provocation to the United States for a markedly stepped-up competition in armaments.

CHAPTER IV

THE FIRST AMERICAN BUILDUP, 1950-53

After the outbreak of the Korean conflict, the concept of a Soviet threat took firmer shape and American defense programs abruptly increased in scale. Annual spending for defense tripled. The number of nuclear weapons quadrupled and their destructive power increased from less than 10,000 KT in 1950 to more than 70,000 KT in 1953. Equally noteworthy, the number of nuclear weapon delivery systems also expanded greatly. As of mid-1950, the nuclear strike force consisted of more than 200 B-29s, B-50s, and B-36s, plus a handful of Navy aircraft. By 1953, it included more than 1,000 Air Force and Navy aircraft.[1] The strategic offensive nuclear weapon systems were already being supplemented by tactical nuclear and strategic defensive weapons, some of which were also designed to be armed with nuclear weapons. By then also the perception of the Soviet Union as the "implacable enemy" had gained wide acceptance in the United States.

War, Politics, and Budgets

On 25 June 1950, North Korean forces attacked South Korea. The United States asked for and obtained a U.N. resolution calling on the North Koreans to withdraw. Since the Soviet Union was boycotting U.N. Security Council sessions because of that body's refusal to seat Communist China in place of Nationalist China, the Soviet member could not veto the resolution. When the North Koreans continued to advance, President Truman ordered the commander of occupation forces in Japan, General of the Army Douglas A. MacArthur, to provide air and naval support to the South Koreans. A few days later, when collapse of South Korea's resistance seemed imminent, Truman directed MacArthur to send in American ground troops. Together, the

South Koreans and Americans finally succeeded in holding a perimeter around the port of Pusan.

The President, his advisers, most congressmen, and nearly all commentators interpreted the North Korean action as having been dictated by the Soviet Union. Though intelligence analysts soon concluded that Moscow's aim had been limited to reunifying Korea under a Communist government and that the Russians were surprised by the reaction of the United States and other countries, the common initial supposition persisted that Stalin staged the attack as a test on the assumption that the United States would register verbal protest and do nothing more and that its allies and clients in Europe and elsewhere would draw the moral that it was not to be counted upon. In official circles and outside them, this interpretation of Soviet motivation was accompanied by concern that Stalin might be planning other adventures--against Southeast Asia or the Middle East or Yugoslavia or Finland or even Western Europe--and that these would become easier if the United States committed its meager military forces in behalf of South Korea. British Prime Minister Clement L. Attlee expressed such concern.[2] When Truman concluded that the United States and the UN had to intervene in Korea, he also concluded that urgent preparation should be made for coping with possible aggression elsewhere.

In mid-July, Truman went before Congress to propose a national response far beyond the requirements of operations in Korea. In particular, he called for greatly increasing defense spending even though it would entail a deficit and new taxes. Reversing form completely, he instructed the Services to estimate what they would need to effect the

policy outlined in NSC-68* and to ask for the requisite money. Truman insisted that they give him answers in a matter of weeks.[3] By late July, the President had received from the Pentagon proposals for an initial buildup which would bring military manpower levels from below 1.5 million to above 2 million. Given a stated assumption that only 100,000 man-years needed to be allocated to the conflict in Korea, the increment was designed chiefly to strengthen the overall defense posture of the United States. The President asked for and got a supplemental defense appropriation of $11.7 billion.[4]

Additional spending proposals looking to the longer term began to emerge from the Services in early August. The Secretary of Defense was told that they might ultimately ask for another million men. By the beginning of September, the JCS had a comprehensive wish-list. In response to queries from the new Secretary and Deputy Secretary of Defense, General Marshall and Robert A. Lovett, the JCS made some modifications. Forwarded to the President and accepted by him, the JCS proposals became the basis in December 1950 for a second supplemental defense appropriation of $16.9 billion.[5] By the end of calendar year 1950, the Truman administration's defense budget for fiscal year 1951 had already tripled. In addition, its FY 1951 budget for military assistance to allies had grown from $1.2 billion to $5.2 billion.[6]

In Korea, MacArthur staged a daring amphibious landing at Inchon, on the west Korean coast, in September and thus threatened the North Koreans with encirclement. As the enemy broke and retreated, MacArthur, without objection from either Washington or the UN, sent his own pursuing

*For a discussion of NSC-68, see above, pp. 69-80.

forces deep into North Korea. In far northern Korea, however, MacArthur's units began to encounter Chinese "volunteers," massed Chinese armies, and were forced to fall back into South Korea in December.

In Washington, confidence in early success in Korea diminished. The Services had to divert to Korea aircraft and other resources which they had intended to deploy elsewhere. Unanticipated expenses accumulated. The President went to Congress in 1951 for yet a third supplemental appropriation, for $6.4 billion. In the aggregate, therefore, new defense obligational authority for fiscal year 1951 came to more than $48 billion.

In November 1950, midterm congressional elections reduced the number of Democrats but left the party in control of each House. The elections took place too early to be influenced by the Chinese intervention and the reversal of American fortunes in Korea, but Senator Joseph R. McCarthy's allegation of Communist influence in the government evidently had some effect on the election results.

Truman's own popularity plummeted. Because MacArthur had chronically ignored instructions and had come increasingly close to insubordination in protesting restraints on his operations against the North Koreans and Chinese, Truman concluded that he had no choice but to relieve MacArthur of his commands. This took place in April 1951. The immediate reactions included tumultuous welcomes for the returning general and cries for Truman's impeachment. When prolonged Senate hearings on MacArthur's relief produced evidence that Marshall and all the Chiefs of Staff had supported the President, the public temper cooled. Polls nevertheless recorded little improvement in the President's personal standing.

Truce negotiations with the North Koreans and Chinese, begun in the summer of 1951, seemed to lead nowhere, and hostilities continued along the 38th parallel. McCarthy and other senators and representatives captured headlines by means of hearings which produced sensational and usually unfounded testimony about Communists and Communist sympathizers in government alleged to be responsible not only for the "loss" of China but for a "no win" policy in Korea. Joined with some evidence of improper and even illegal conduct by a few Truman appointees and with unsettled economic conditions, the stalemate in Korea and the turbulence created by McCarthy and his adherents put the Administration increasingly in a defensive stance, incapable of making any headway toward accomplishing its domestic goals.

The Administration nevertheless continued successfully to lead Congress and the country toward greatly increased military preparedness. In large part, the leadership came from the Pentagon rather than the White House. Lovett told the Service Secretaries in November 1950 that he was exerting himself to prevent the President and the Bureau of the Budget from reinstituting ceilings. Within limits indicated by Congress, he was prepared to tell the Chiefs to set force goals as if the constraints were skilled manpower and modern weapons, not money. In public testimony on Capitol Hill he took the line that the FY 1952 budget, in contrast to those for previous years, was governed by "military needs" rather than by Treasury estimates of probable revenues.[7]

Truman accepted the guidance of Marshall and Lovett. The Budget Bureau ceased temporarily to have a large voice on defense issues. Scrutiny of Service requests fell more to the Defense Department Comptroller,

Wilfred J. McNeil. Although the Joint Chiefs of Staff went formally on record within the Pentagon as regarding even the enlarged defense budget as inadequate to provide for a victory in war, they defended it in public. It was seen not as Truman's budget but as that of Marshall, Lovett, and the JCS. For fiscal year 1952, it totaled $60.7 billion in new obligational authority.[8]

Congress voted appropriations less than $1 billion below the original Administration request; the reductions were in minor categories. Complaints concerning the size of the budget were more than offset by anxious queries as to whether the Defense Department had actually asked for enough. Senate debate was marked by an almost successful move to add $5 billion for aircraft procurement, just in case the Air Force and Navy had underestimated needs.[9] If put in constant 1972 dollars, the defense budget (TOA) for fiscal year 1952 came to $120.8 billion, almost equal to the $124 billion for fiscal year 1945, the last full fiscal year of World War II, and well above the two largest budgets for succeeding years, $98 billion for fiscal year 1953 and $97.9 billion for fiscal year 1968.[10]

Although Lovett succeeded Marshall as Secretary of Defense only in September 1951, he had been handling most budget management in the Pentagon as Deputy Secretary. In planning for fiscal year 1952, Lovett's strategy had been to capitalize on the temporary openhandedness of the President and Congress to obtain appropriations for long lead-time items that would not actually be in inventory for some years to come. As of July 1951, his staff estimated that of almost $28.6 billion available for aircraft and naval vessel procurement, only $7.5 billion would actually

be spent in fiscal year 1952. Assuming modest additional appropriations, the staff further estimated that funds available for these purposes would exceed actual outlays by $20.7 billion in fiscal year 1953, and $17 billion in fiscal year 1954.[11]

In view of this estimate, the truce negotiations in Korea, public grumbling about inflation, and indications that both Republican and Democratic politicians might try to stir public protest against defense spending, Lovett set a lower target for fiscal year 1953. Instead of $60 billion plus (in current dollars), he instructed the Services to plan on asking for less than $50 billion, indicating that his own preferred figure was in the neighborhood of $45 billion. The Bureau of the Budget proposed a ceiling of $41.2 billion. The JCS protested both figures, arguing that the result would be to delay by 2 years achievement of preparedness at even a minimally adequate level; but McNeil advised Lovett that the chiefs exaggerated the probable effects. Meanwhile, Lovett promised the President that he would stretch out actual spending and thus minimize inflationary effects and the drain on current Treasury receipts. He proposed that the President in return agree to a defense budget for fiscal year 1953 that would exceed $50 billion, and the President eventually acquiesced, sending to Congress a request for $52.4 billion in new obligational authority.[12]

Within the executive branch and on Capitol Hill, the funding proposals for fiscal year 1951 and fiscal year 1952 had been defended in terms of an alleged need to prepare for a "period of maximum danger." Intelligence estimates drawn up after the Soviet nuclear test of 1949 described 1954 as the year by which the Soviets could possess enough atomic bombs and long-range bombers to be able to conduct a nuclear offensive against the United

States. If so, the Soviets might be able to stage a successful surprise attack that would knock out SAC's bombers and the AEC's store of atomic bombs. In any case, they might assume that a threat to do this, coupled with a threat to destroy some American cities, would neutralize the U.S. strategic deterrent. Such reasoning underlay NSC-68's citing 1954 as the year when a "disastrous situation" could exist if the United States had not meanwhile added significantly to its own defenses and those of its allies.[13]

After the outbreak of the Korean conflict, the intelligence agencies reaffirmed these estimates of the Soviet threat. In the new circumstances, the JCS produced documents detailing what the United States should do so that, when 1954 arrived, the Soviets would see enough military power opposing their own to deter them from aggression. JCS plans became keyed to the concept that 1954 was the year for which to prepare. In December 1950, after the Chinese had intervened in Korea and after Lovett had encouraged ambitious budgeting for fiscal year 1952, the JCS proposed and won approval for a policy of trying to meet most of their original goals by mid-1952 and setting still higher goals for 1954. Subsequently, they took the position that 1953 might well prove to be the true period of testing. In answer to questions from Congress, however, Defense Department and military spokesmen tended to repeat that their consistent objective was to get ready for a moment of maximum danger in 1954.[14]

Forced to admit to the policy of stretching out expenditures and carrying over approximately $60 billion in still unexpended funds, Administration witnesses defending the FY 1953 budget found Congress less sympathetic than in the previous year. Both the House and the Senate

voted reductions. In contrast to the $52.4 billion asked by Truman, the final bill appropriated only $46.6 billion.[15] The upsurge in defense spending was about to level off.

Why had it occurred? And can it be characterized as reactive—prompted by actions on the Soviet side—or was it an instance of America's taking the initiative in competition with the Soviets?

Obviously, the expansion of the defense budget occurred because of the Korean War and attendant developments. Most outlays prior to June 1950 would probably have been made even if relations with Russia had been comparatively tranquil. The subsequent increments were largely seen as necessitated by a Soviet threat.

In all likelihood, there would have been some increment even in the absence of the Korean crisis. The authors of NSC-68 seemed en route to at least modest success in their campaign. Identifying as fundamental tasks for U.S. military forces defense of the Western Hemisphere and other essential areas, protection of a mobilization base, capacity to buy time through early offensive operations, and protection of lines of communication and bases, they had said in NSC-68 that the United States and its allies should urgently develop strength "superior for at least these tasks, both initially and throughout a war, to the forces that can be brought to bear by the Soviet Union and its allies."[16] While their argument rested on an appraisal of Soviet military forces as "far in excess of those necessary to defend its national territory," they did not contend that the United States should match specific Soviet military programs; instead they held that the ideology of the Soviets made them inherently aggressive and that the

United States, therefore, needed evident military superiority to deter their aggression.[17]

The North Korean attack on South Korea greatly weakened those elements in the executive branch likely to have posed most resistance to NSC-68. The Council of Economic Advisors, the Bureau of the Budget, and the Treasury could no longer argue successfully for giving precedence to a balanced budget, low taxes, and minimal inflation. After 25 June 1950, almost no one in Washington opposed the proposition that the United States should spend more for defense.

Not all advocacy of such a policy, however, followed the lines of NSC-68. In the State Department, consensus held that the Russians possessed the military capability for localized aggression or for general war and that, in the absence of clear evidence to the contrary, the United States should act on the assumption that they planned to use this capability whenever the odds were in their favor. Acheson advised Truman that additions to ready U.S. military forces "will be of some reassurance to our friends but will not deter our enemies; whereas what we do in the line of stepping up production will strike fear into our enemies, since it is in this field that our great capabilities and effectiveness lie."[18] While the basic appraisal of the Soviet Union may have been similar, the conception of what was called for differed markedly from that in NSC-68; for Acheson did not envision an effort to achieve and maintain general military superiority but rather an effort to keep highly visible the fact that the United States had a long lead over the Soviet Union in military potential.

In the Pentagon, both civilians and military men tended to focus on specific contingencies. The civilian Secretaries joined in a letter to the Secretary of Defense on 1 August 1950. Perhaps in part to rationalize abandonment of efforts to keep tight budget ceilings, they said the Korean incident "revealed the new pattern of Soviet aggression." Characterizing the Soviet bloc as "monolithic" and saying that satellite units were, for practical purposes, elements of the Red Army, they identified 11 sites around the globe as vulnerable to Soviet "use of satellitic force," 7, including Berlin and Iran, as open to direct Soviet military probes, and 20 as susceptible to "internal Communistic coup d'etats." Their inclination and that of the JCS was to recommend not that the United States try to match Soviet power but that a careful review be made of U.S. potential commitments so that the nation would not be in the position of promising to defend areas it was not equipped to defend. At this juncture, the JCS--including the Air Force Chief of Staff--were prepared to say that there was no "absolute weapon" and that atomic bombs were "essential to the security of the United States as adjuncts to military forces in being." Holding such a view, they argued for an effort to develop forces providing local superiority in places of vital interest together with M-Day strategic forces and the mobilization base for achieving victory in all-out war. Once they became aware that money was temporarily no obstacle, they emphasized the mobilization base, proposing programs that would enable a fully mobilized United States to overcome a fully mobilized Soviet bloc.[19]

These were distinctly different notions of how and perhaps even why the United States should spend more on defense--Acheson and Nitze emphasizing industrial mobilization and the Chiefs emphasizing forces in

being. The NSC process, plus need to explain the new defense policy to Congress and the public, might have forced a confrontation among these differing ideas, but in fact, NSC-73/4 of 25 August 1950 simply combined them. Using the logic of NSC-68 and that of Acheson and Pentagon planners, it declared:

> The United States should as rapidly as possible increase the build-up of its military and supporting strength in order to reach at the earliest possible time and maintain for as long as necessary a level of constant military readiness adequate to support U.S. foreign policy, to deter Soviet aggression, and to form the basis for fighting a global war should war prove unavoidable.

This agreed-upon language figured in Administration testimony in support of the fiscal year 1951 and 1952 budgets.[20]

The differing points of view evident in the exchanges of 1950 persisted during the period when the Administration turned toward a stretch-out of spending and a leveling -off of allocations for defense. Between August and October 1951, various elements in the executive branch combined to draw up for the NSC a status report on the progress of the defense buildup. Finally integrated in NSC 114/2 of 12 October 1951, it explicitly reaffirmed the thesis of NSC-68 that the Soviet Union was engaged in "relentless pursuit" of world domination. The report declared that the danger of the Soviets probing any points of weakness had increased rather than diminished. It portrayed America's allies as even more in need than earlier of material and psychological support. At the same time, the report characterized the Soviets as having made more rapid progress than expected toward modernizing their ground and air forces and developing air defenses. The United States would have to spend more to develop a ready capability for winning a war.[21]

The more ominous appraisal of Soviet capabilities and intentions did not derive from new evidence. A special intelligence estimate prepared in anticipation of discussion of NSC-114/2 by the National Security Council stressed the extreme cautiousness shown by the Soviets since June 1950 and suggested that the observed strengthening of Soviet military capabilities was consistent with the hypothesis that the Soviets "fear growing U.S. military power and its projection into a series of overseas bases encircling the Soviet bloc." Statements in the estimate concerning the worsening political threat were supported by references to Soviet propaganda opposing Western rearmament and warnings that the Kremlin might decide to shift "to new and less obviously aggressive tactics, designed to lull the West into a false sense of security."[22] The general conception of the Soviet threat had taken firm shape in 1950. It did not depend on day-to-day observation or review of what the Soviets were doing but rather on a persistent view of the Soviet Union as a continuing menace to the United States.

In 1952, after Congress's harsh treatment of the Administration's FY 1953 budget and at a time when a changeover to Republican control of the White House and Congress seemed likely, the NSC once again conducted a review of basic national security policy. The result, NSC-135/3 of 25 September 1952, portrayed the Soviet Union exactly as had NSC-68 and NSC-114/2. It rephrased and rearranged but otherwise retained the mixed list of objectives which had been in NSC-73/4:

> . . . to develop and sustain for as long as may be necessary such over-all strength as will (a) continuously confront the Kremlin with the prospect that a Soviet attack would result in serious risk to the Soviet regime, and thus maximize the chance that general war will be indefinitely deterred, (b) provide the basis for winning a general war should it occur, (c) reduce the opportunities for local Soviet or satellite aggression and political warfare, (d) provide an effective counter to local aggression, if it occurs, in key peripheral areas, and (e) permit the exploitation of rifts between the USSR and other communist states and between the satellite regimes and the people they are oppressing.[23]

Increased defense spending continued thus to be keyed to all of the different missions identified when, in the language of NSC-73/4 updating that of NSC-68, the Soviet Union first came to be perceived as "the implacable enemy of the United States and the non-Communist world" bent upon "the degradation, weakening and ultimate destruction of the United States" and likely to seize immediately upon any opportunity for mischief.

This greatly increased spending was thus not represented as a necessary direct response to comparable action by the Soviets. The best estimate we can make in retrospect is that the Soviet Government had, in fact, increased its own defense outlays by about 25 percent during 1950 and 14 percent in 1951. This corresponded reasonably closely with a publicly announced increase in allocations for defense, but Soviet budgets were only then beginning to be analyzed in the U.S. intelligence community, and the estimates or assessments distributed among high officials of the U.S. Government did not mention the apparent upturn in overall Soviet expenditures.[24]

This is not to say, of course, that the surge in American defense spending was uninfluenced by observation that the Russians were devoting

substantial resources to defense. The size of the Red Army, the sudden appearance of fleets of jet fighters and long-range bombers, and the evidence of intensive work on nuclear weapons figured in many briefs for buildup of the U.S. military establishment. The significant point is that the same data figured in comparable briefs presented unsuccessfully before the Korean War when the Administration maintained an arbitrary ceiling on defense expenditures. No evidence of any new spurt in Soviet outlays supported the reasoning for budgets of fiscal year 1951 and beyond. That Soviet outlays had remained relatively high ever since World War II may have been a necessary element in those American decisions, but it did not explain them.

Nor was this overall increase in U.S. spending wholly defensive, even if construed as a much belated response. To be sure, concern had already surfaced about the thinness of defenses against the Red Army in Europe and the Middle East, the frailty of some governments subject to Communist subversion, and the possible danger to the American homeland posed by a nuclear-armed Soviet long-range bomber force. The Korean affair indicated that the Soviets might be more adventurous than had earlier been supposed, especially when they could use "satellitic force" instead of their own. Even so, the level of threat was almost the same in the second half of 1950 as in the first half. By itself, the immediate threat cannot explain a sudden great increase in America's commitment of resources to defense, and it seems to have even less explanatory power when one observes the reasoning in NSC-114/2 that the threat was increasing because the Soviets were giving an appearance of being conciliatory.

If the tripling of the American defense budget is only partially to be explained as either imitation of Soviet behavior or a defensive response to Soviet provocation, is it to be characterized as in any significant degree an initiative by the United States? Was the American government seeking to assume a lead in an American-Soviet arms race?

It is possible to concoct an argument that the Administration sought primarily to solve certain domestic problems—that severe recession had set in and defense was in fact to help mend the economic indices. The men who advised Truman to put money in defense were for the most part the conservative members of his Administration who opposed the domestic welfare programs which offered alternative means of turning those indices around. Although the nation's siege of McCarthyism eventually ran its course, politicians in 1950 could have seen "billions for defense" as part of an answer to that problem. At the time, I.F. Stone, a left-wing American journalist, put forth the fanciful notion that the Administration had protracted the Korean conflict in order to repair its standing in the polls and overcome any public or congressional resistance to its predetermined policy of militarism.[25] Any speculation about domestic economic or political motives behind the 1950-53 rearmament push is, however, inference from circumstances, lacking support in the discoverable data, and indeed contradicted by evidence that the President's economic advisors were the last to give ground in the matter.

More to be taken seriously is a hypothesis that the sudden increase in allocation of resources to defense, destined to be virtually permanent,

was in significant part a product of fundamental, widely shared assumptions. The major policy documents of 1950-52 imputed to the Soviets not only a design to conquer the world for their own ideology but a basic unwillingness to tolerate a world in which the ideology espoused by the United States was dominant.

Prior to 25 June 1950, Truman, many of his advisors, and many leaders in Congress took it for granted that, with American economic aid and perhaps even without it, almost all other countries would tend to imitate the United States. Few, if any, would voluntarily imitate the Soviet Union, and the Soviet Government, recognizing the greatly superior power of the United States, would not dare to interfere with this, the natural course of history. Soviet sponsorship of North Korea's aggression was an affront and an indication tnat the previous assumption might have been in error. Also, as Acheson cautioned the President, it was an indication that induced "petrified fright" in Europeans who saw themselves as the first casualties incase of a serious Soviet miscalculation.[26] A substantial increase in defense spending would ensure that the Soviets and everyone else became fully aware of the omnipotence of the United States. The abrupt change in American behavior thus seems best described less as a response to specific external provocation than as a product of a set of rooted convictions concerning the character and motives of the Soviet state, the character and attributes of the United States, and the nature of a suitable world order.

Nuclear and Missile Technology

Technological developments influenced the ways in which the new funds were spent, for the period in which U.S. defense budgets grew threefold or more was also marked by major advances in nuclear weaponry, particularly documentation of the feasibility of fusion, and, to a lesser extent, advances in propulsion systems. Fission weapons began to become available in a variety of shapes and sizes; and long strides occurred in the development of missiles, both aerodynamic and ballistic, capable of being fitted with nuclear warheads.

Production of fissionable material was already increasing before the onset of the Korean conflict. By December 1950, the AEC was able to declare that uranium ore no longer constituted a limiting factor. Following years saw additional finds of ore in the Rockies and discovery of immensely rich veins in western Canada. Meanwhile the capacity of the AEC to process ore increased at an even greater rate. The new reactor at Hanford went into operation at the beginning of 1951. Before the year was out, proof had come in of the feasibility of fast breeder reactors capable of producing more fissionable material than they consumed. Even so, with the Joint Committee on Atomic Energy, the JCS, and the President all pressing for maximum output, the AEC adopted a program early in 1952 for increasing by 150 percent its production of U-235 and by 50 percent its production of plutonium. This program and the success of breeding permitted the AEC to declare by early 1953 that it could more than meet any demands that might be levied. By then, military staff papers were acknowledging that an era of nuclear plenty had arrived.[27]

The earlier promise of greater variety in warheads also became increasingly a reality [redacted] They also demonstrated the feasibility of boosting--injecting a large quantity of neutrons at exactly the moment when a weapon was disintegrating and thus increasing by as much as [redacted] its explosive yield. The first successful test occurred in May 1951. It was enough to prove the possibility of fission weapons far smaller in size than had been previously imagined.

Prior to mid-1950, the AEC had in actual production only bombs similar to those dropped on Japan. The implosion weapons were all 5 feet in diameter and 10 feet long and weighed at least 8,500 pounds. The gun-type "Little Boy" was less fat but also less efficient. Given not only their dimensions but all the special rigging required, they were weapons exclusively for large bombers. The AEC had in prospect a new implosion assembly, the Mark 5, which would be less than 4 feet in diameter and weigh only 3,000 pounds, and a Mark 8, a trimmed-down "Little Boy."[28]

Between mid-1950 and early 1953, the AEC perfected two additional implosion warheads. The Mark 7 was only 2½ feet in diameter and weighed 1,700 pounds. The Mark 18 (originally Mark 13) was to be 5 feet across but to weigh only 7,400 pounds and to carry a boosted device. It was designed as a hedge against the possibility that thermonuclear bombs could not be developed [redacted] Also, the AEC came out with two new gun-type weapons, the Mark 11, 14 inches in diameter and 3,600 pounds in weight, and later the Mark 9, suited for Army artillery, only 11 inches in diameter and weighing but 803 pounds.[29]

Further, the AEC proved able to produce a thermonuclear bomb. Though a fusion device was successfully tested in 1951, it was not suitable for use in a bomb, for one of the critical substances had to be kept constantly under near absolute zero refrigeration. During 1951-52, however, AEC scientists hit upon principles that permitted fabrication of a "dry" device. Tried out in the IVY test series of October-November 1952 as the MIKE shot, the device had a yield of 10 MT. From that moment on, it was apparent not only that thermonuclear warheads could be built but that they, too, could come in small sizes as well as large.[30]

For the most part, to be sure, these developments occurred in AEC laboratories and test facilities. It became certain that nuclear weapons could be produced in large quantities and in a variety of configurations, but this was a future certainty As of 30 June 1950, the United States had fewer than 300 nuclear weapons, in large and unwieldy mechanical assemblies. As of 30 June 1953, the stockpile of weapons would approach 1,200, and the available mechanical assemblies would have expanded to include significant numbers of smaller Mark 5s, Mark 7s, and gun-type Mark 8s and Mark 9s. Service planners, to be sure, would still be dealing with what they viewed as finite numbers of nuclear weapons. As late as 1953, fierce disputes erupted over Army proposals that the AEC develop an 8-inch diameter warhead for an artillery piece, with Air Force spokesmen protesting that fissionable material should be reserved for more efficient weapons.[31] If still conceived to be scarce, however, nuclear weapons were plainly much more abundant than earlier supposed.

As for nuclear propulsion systems for ships or aircraft, they seemed likely to materialize, but not until the mid-1950s at the earliest. Capt.

Hyman Rickover had managed to become at one and the same time the Navy's project officer for nuclear submarine development, the overseer of AEC work on marine nuclear propulsion, and a chief adviser to the Joint Committee on Atomic Energy. In April 1950, he had secured a firm commitment that the Navy would attempt to launch a nuclear submarine by 1955. A construction contract was let in 1951. The keel was laid in April 1952, with the President on hand to celebrate the event. At every stage, Rickover maintained relentless pressure to make the project a success.[32]

Work also went forward on a nuclear-powered, long-range bomber. Air Force interest dated back to the era of the Manhattan Project, and development of such a bomber had been assigned high priority by LeMay when in charge of Air Force R&D in 1946-47. Subsequently, it had been somewhat slighted on account of budgetary constraints and Air Force preoccupation with nuclear weapons development. It came vigorously to life after the opening of the Korean conflict. In 1951, contracts were let to General Electric and Lockheed. The project came to occupy more than 250 technicians, a larger contingent than involved in any other endeavor at Oak Ridge, and by 1952 engineers were predicting that a test engine would exist by 1954 and that a nuclear energy-powered aircraft would be in the air by the 1960s. Because high-level planners continued to regard sources of nuclear energy as scarce, however, the JCS declined to recommend to the AEC a formal military requirement for either nuclear powered aircraft or a nuclear propulsion plant for surface naval vessels.[33] They probably accorded such priority to the submarine propulsion project only because the President's commitment left them no choice.

In missilery, technical progress was a matter of steady advance rather than dramatic breakthroughs. Research and testing gradually eroded skepticism as to whether rockets could obtain much better range, accuracy, and payload than had the V-2 of World War II.

Before mid-1950, the Army had pursued missile research more diligently than the other Services. Concentrating on ballistic missiles, it had made considerable progress toward developing accurate surface-to-air weapons and had hopes for a surface-to-surface weapon with a range of as much as 1,000 miles. The Navy had trailed the Army, in large part because of jurisdictional disputes between its Bureau of Ordnance and Bureau of Aeronautics, the former viewing missiles as artillery and the latter viewing them as pilotless aircraft. By mid-1950, however, the Navy was well on its way to having operational surface-to-air missiles and one or more surface-to-surface aerodynamic (or cruise) missiles with a potential range of several hundred miles. The Air Force had shown less interest. Although several senior officers, including General Henry H. Arnold and General LeMay, had said after World War II that the future of airpower might well lie with missiles, research projects had fared badly when the Service adapted itself to the budgetary stringency of the early postwar years. As of mid-1950, it had in progress relatively slow-paced research and development on an air-to-surface missile--RASCAL--and on two aerodynamic surface-to-surface missiles--SNARK and NAVAHO--with potential intercontinental range.[34]

Promise of increased range and accuracy for missiles emerged almost concurrently with the development by the AEC of smaller and lighter weight fission bombs. Beginning in the second half of 1949, technicians and

planners in the Services turned serious attention to the possibility that missiles might be equipped with nuclear warheads. In the autumn of that year a committee headed by Lt. Gen. John E. Hull, USA, recommended that the Services and the AEC cooperate in mating the Mark 7 or Mark 8 warheads to 4 missiles then under design: the Army's 150-mile range HERMES A-3, the Navy's 500-600 mile-range aerodynamic REGULUS, an Air Force short-range air-to-surface missile (eventually to be the RASCAL), and an Air Force intercontinental cruise missile, the SNARK. In January 1950, the Secretary of Defense approved this recommendation.[35]

After the outbreak of the Korean War, each Service accelerated its own missile research and that of its contractors. Secretaries of Defense urged coordination of these efforts and set up committees or offices to effect such coordination. The Services went along, but individually, and collectively through the JCS, advised that each Service be allowed to pursue its own research, and that was, in fact, what happened.[36]

Between 1950 and 1953, the Army developed 3 surface-to-surface missiles with ranges between 12 and 150 miles--the CORPORAL, the HONEST JOHN, and the HERMES A-3--and a missile intended to have a range of up to 600 miles, the REDSTONE. It also began to deploy the surface-to-air NIKE-AJAX, by the end of 1953, and it started work on a shorter range, higher speed HAWK and a longer range (100 miles) NIKE-HERCULES.[37]

The Navy developed its 500-mile medium-range cruise missile, the REGULUS, to the point of actual deployment by 1954 on one surface ship and one specially converted submarine, and additional submarines and surface

ships thereafter. It also pursued work on two other medium-range systems, the RIGEL and TRITON, and it initiated production of the surface-to-air TERRIER and TALOS and an air-to-air SPARROW.[38]

The Air Force became more active, developing the 650-mile range(propulsion) MATADOR, which promised to be deployable by 1954, and pushing ahead research on its two long-range cruise missiles, the SNARK and the NAVAHO, a 250-mile range surface-to-air BOMARC, an air-to-air FALCON, and two air-to-surface missiles, the RASCAL and the QUAIL, the latter intended to function as a decoy.[39]

With the AEC promising lighter and more versatile warheads, the officers developing missiles worked to engineer them so that they could serve as nuclear delivery systems. As of 1952, such efforts involved not only the four listed by the Hull Committee (the HERMES A-3, REGULUS, RASCAL, and SNARK) but the Army's short-range CORPORAL and HONEST JOHN, the medium-range HERMES C-1, REDSTONE, RIGEL, and TRITON, and the long-range NAVAHO. Just at that point, Los Alamos gave notice that it could produce still smaller warheads ranging from 1 to 2 KT. Some general thought had already been given to the possible use of nuclear weapons for air defense, and work started at once to adapt the NIKE, TERRIER, and TALOS to carry nuclear warheads.[40]

The AEC's panoply of new weapons developed out of research already in progress before the outbreak of the Korean conflict. Substantial additional funding for AEC weapons programs had been provided as a result of the reaction of the President, the executive branch, and Congress to the 1949

Soviet nuclear test and to the possibility that the Soviets might develop a hydrogen bomb before the United States did. After June 1950, still more money poured in, permitting acceleration of work on a fusion device and large increases in production of ore, fissionable material, mechanical assemblies, and capsules. None of the technical developments seem to have been influenced by knowledge of Soviet nuclear research and development. AEC scientists and engineers were simply exploring obvious technological frontiers. While it seems probable that this progress would have been slower if active competition with the Soviets had not stimulated high levels of spending for defense, it is possible that the same advances in warhead design and yield would have occurred in comparatively short order had there been no such stimulus.

The same can be said of work on nuclear propulsion. The Korean conflict and the dramatic change in levels of defense spending probably accelerated progress toward a nuclear submarine and advanced the date when it became apparent that a nuclear-powered bomber would be extremely difficult to develop.

In the case of missiles, the impact of the intensified competition was also limited. Before the onset of the Korean War, the Research and Development Board and the staff of the Secretary of Defense had been urging a greater effort to develop missiles, and the Army and Navy had already stepped up their programs.[41] Other than speeding up the programs, the principal effect of the flow of new money was to awaken Air Force interest, but USAF missile programs did not become productive until after the Korean War. Budgeting between 1950 and 1953 affected the pace of American

missile programs but had little impact on their character or direction.

Nor were these programs much affected at this stage by direct Soviet competition, although Soviet work on missiles attracted some attention. Air Force intelligence circulated in 1950 an estimate that the Soviets might have an intercontinental-range subsonic aerodynamic missile as early as 1956.[42] Though analysts in other Services and in CIA did not agree with this particular forecast, they did begin increasingly to collect and call attention to evidence that the Russians were building upon German V-weapon technology and were testing rockets of increasing size and range. Even in 1953, however, neither planning papers concerned with U.S. continental defense nor military intelligence estimates underpinning JCS war plans placed emphasis on Soviet missile capabilities.[43]

Of course, American missile programs were, to some extent, shaped by the perceived threat. The initial priority given surface-to-air missiles must have been partially a defensive reaction to information about the buildup of the Soviet long-range air force. The Army's efforts to develop nuclear-armed HONEST JOHN, CORPORAL, HERMES, and REDSTONE missiles owed something to concern about the Soviet army's superior numbers. Certain features of U.S. missile programs would surely have been different if the total defense budget had not gone up and if American alarm about the Soviet Union had not been steadily on the rise. They might not, however, have been markedly different. The Navy's REGULUS program kept pace with the others even though the Navy did not learn until much later that there was a

competing Soviet program and even though there were neither actually nor in prospect very many Soviet surface vessels likely to serve as suitable targets.[44] To a large extent, U.S. missile programs, like U.S. nuclear weapons and nuclear propulsion programs, were propelled by a technological dynamic largely independent of the American-Soviet competition. One can imagine that most of these new weapons and propulsion systems would have come along, perhaps lagging a few years but otherwise having much the same characteristics, if there had been a less intense competition.

Force Levels and Force Plans

When the Korean War started, the first concern of the military establishment was to meet its demands while maintaining some semblance of power in other areas that might be threatened. This principle guided the first set of force augmentation proposals submitted to the Secretary of Defense by the JCS. The Army asked for an extra 150,000 men specifically for Korean operations. The Navy proposed activating an additional carrier, bringing some escort vessels and transports out of mothballs, and enlarging the Marine Corps. The Air Force described an increase from 48 to 58 wings as the minimum for maintaining defenses elsewhere and asked yet another 4 wings for Korea proper—a total of 62.[45] Pulled together hurriedly, these initial recommendations were not much different from those made when the original FY 1951 budget was in preparation.

At the time, planners in the Services continued to assume that the Red Army could go wherever it wanted, with the United States and its allies able to offer relatively little resistance. A revised emergency war plan, labeled SHAKEDOWN, endorsed by the JCS in mid-July 1950, resembled its predecessors in taking for granted the ability of the Soviets to march

through Western Europe, at least to the Pyrenees, and to make bases in the United Kingdom untenable. In addition, SHAKEDOWN envisioned serious though not crippling Soviet air strikes against the United States. The Air Force intelligence prediction that the Russians would have intercontinental missiles by the mid-1950s was part of a general estimate crediting the Soviet long-range air force with a current capability for surprise nuclear attack on some targets in the United States and a prospective capability by 1952 for staging such an attack on any continental U.S. target and by 1954 of carrying off massive raids.[46]

Having been surprised by events in Korea, the JCS and their planners felt obliged, as noted earlier, to make a realistic review of contingencies which might call for use of military force. On account of the actual or potential threat to the United States itself, they made an alteration in the basic assignment for SAC, ordering it to give first priority to destroying Soviet bomber bases and nuclear weapons storage depots.[47]

Next in priority came the European theater. Prior to the outbreak of the Korean conflict, it had been declared U.S. policy to help the British and Europeans build up adequate defense forces of their own. Military aid to North Atlantic Treaty allies had loomed large in the Administration's original FY 1951 budget. Its size had been one reason for the President's reducing allocations for U.S. forces, and Secretary of Defense Johnson had taken the position that, as the Europeans became militarily self-sufficient, the United States could cut back its own defense budget still more.[48] Other officials whose views were in any way reflected in NSC-68 felt, of course, that this policy involved grave risk, and after the beginning of the

Korean conflict such a view became that of the large majority, including the President. In August 1950, Truman invited the Pentagon to explore several proposals: The stationing of some U.S. troops in Europe additional to the small forces still performing occupation and related functions in West Germany, West Berlin, and Austria; formation of a supreme command with a combined staff, and an arrangement for some German rearmament. Thus encouraged, the JCS formally recommended dispatch to Europe of 4 infantry divisions, 1½ armored divisions, 8 tactical air groups, and appropriate naval support forces. They also advocated a German contribution and, to allay possible Allied concern, establishment of a supreme command with a U.S. general at its head.[49]

Though the State Department encountered some resistance in Europe, especially from the French, the NATO Council agreed in December 1950 to create a combined NATO force which which would be under an American supreme commander and might include German units. Truman promptly announced that General Eisenhower would return to active duty to take the post. He also announced that 4 U.S. infantry divisions would be part of the NATO force. Fierce debates broke out in public and Congress, with Senator Taft and former President Hoover not only attacking the policy of stationing troops in Europe but also questioning the President's constitutional right to take such action without explicit consent from Congress. The challenge, however, proved ineffectual. As a result, U.S. forces were so deployed as to make it a virtual certainty that if the Red Army marched on Europe the United States would be at war with the Soviet Union. In view of this prospect, the JCS charged the strategic air forces to undertake a retardation mission—

attacking advancing Soviet forces in order to delay their progress and facilitate the consolidation and reinforcement of U.S. and Allied defending units.

Though destruction of Soviet offensive nuclear capabilities had first priority in terms of SAC's allocation of resources, the retardation mission was to take priority in timing. Although some Air Force officers objected that this converted SAC into almost a tactical air force at the beck and call of the NATO Supreme Commander, the JCS voted this change without Air Force dissent, but this did not resolve the issue.*[50]

The JCS were meanwhile voicing caution about the assumption of risk elsewhere. Asserting that the "military capabilities of the United States are not adequate to its current commitments and responsibilities," they recommended limiting operations in Korea (though not necessarily confining them to southern Korea, as Kennan urged); avoiding general war with Communist China even if the Chinese intervened in Korea or attacked Taiwan, Hong Kong, or French Indochina; attempting to make the British responsible for defending Iran, at least in the first instance; assisting Greece, Turkey, or Yugoslavia in the event of Soviet satellite attacks with such U.S. forces as could be made available "without jeopardizing United States security"; and preparing to react to attacks on Finland or Afghanistan with nothing more than "political and psychological measures."[51] Prior to June 1950, the JCS had advised against assuming any risk of war in Korea, and the President had twice formally expressed his agreement; they could hardly feel confident their advice would now be followed, especially since the outcome of NSC discussions was a decision

*See below, pp. 141-42.

that specific recommendations should go to the President only when contingencies actually arose.[52] A sense that U.S. forces might have to fight in any number of places constantly informed JCS assessments of the Soviet threat and the resources required to cope with it.

In the autumn of 1950, U.S. military leaders were conducting a limited war in Korea. They were committed to general war with the Soviet Union in the event of a Soviet attack on Western Europe, and, though having advised against accepting risk of war elsewhere, they were necessarily apprehensive about other contingencies. Also, they were aware of and concerned about the possible growth of Soviet strategic offensive forces. It was in these circumstances that they began to adapt to the transformation worked by the lifting of the budget ceiling and the replacement of Johnson by the team of Marshall and Lovett.

Only gradually did military planners develop specific proposals for the bonanza that had suddenly opened. JCS submissions in September and November 1950 revived essentially the force goals that had been developed during and immediately after World War II. All of the Services proposed major increases in manpower and combat units, to be reached by 30 June 1951. The Army prepared to go from 10 to 16 divisions; the Navy from 7 to 9 carriers and from 70 to 85 submarines; and the Air Force from 48 to 68 wings.[53] Somewhat larger goals were tentatively projected for fiscal year 1954.

These proposals of November 1950 had a short life. Among factors arguing for review and upward revision of goals were the Chinese intervention in Korea, the NATO Council endorsement of the NATO force concept, optimistic

reports from the AEC on progress toward smaller higher yield warheads, prodding from a civilian Director of Guided Missiles appointed by Marshall and Lovett, and, above all, Lovett's sense that the FY 1952 budget should provide as much of the funding as possible for the buildup toward the nation's ultimate force posture.*

In early December 1950, after the passage of only 3 weeks, the JCS changed their proposal, calling not only for achievement of the 1954 goals as soon as possible, and not later than by mid-1952, but also for enlarging the target numbers adopted only the month before. The Army asked for 18 divisions and additional support units, including 100 antiaircraft battalions. The Navy raised the projected numbers of attack carriers to 12, carrier air groups to 14, and submarines to 100. The Air Force proposed going to 95 wings--6 of heavy bombers, 20 of medium bombers, 8 of strategic reconnaissance, and 61 of tactical bomber, fighter, reconnaissance, and troop carrier aircraft.[54]

By the end of fiscal year 1951, the number of men under arms had more than doubled from a year before. The Army actually had 18 divisions and 100 antiaircraft battalions. The Navy had 12 attack carriers, 14 carrier air groups, and 88 submarines. The Air Force reached a strength of 87 wings, including 25 strategic, 27 tactical, 20 air defense, and 15 troop carriers.[55]

Having meanwhile obtained funding for procurement of new weaponry out as far as 5 years into the future, the Services entered fiscal year 1952, and the period of struggle over the FY 1953 budget, with ambitious goals. The Army sought an additional three divisions. Anticipating the changes in the fleet provided for in the FY 1952 authorization--175 new

*See above, pp. 109-10.

ships, including the first Forrestal carrier, and modernization of 291 others, the Navy proposed increasing its manning levels.[56] The Air Force put forward a plan for going from 95 to 138 wings—the exact number called for in Army Air Forces postwar plans prepared during World War II. Though the military and civilian leadership of the Air Force united in declaring this objective absolutely minimal, the other Services would not acquiesce. The JCS reported to the Secretary of Defense that they could not reach agreement. He insisted that they do so.[57]

The result in October 1951 was a set of recommendations which the JCS characterized as "designed to provide, at the least possible cost in manpower and national resources a maximum deterrent to enemy aggression and, in case war occurs, give the nation a reasonable assurance of victory." Identifying the major military tasks as (1) defense of the Western Hemisphere and other essential areas, particularly Europe, (2) providing a minimal mobilization base, and (3) conducting initial strategic offensive operations "to destroy vital elements of the Soviet war-making capacity and to check enemy offensive operations," the JCS explained that the nature of the operations of the three Services made their requirements different: "The Army and Navy have had to provide for building the maximum in sustaining power and mobilization potential . . . . The Air Force has necessarily reduced its sustaining power and mobilization potential in order to concentrate the maximum of resources on the combat forces required for the execution of D-Day tasks." These were identified as continental air defense, especially against atomic attack, the strategic air offensive, and retardation. This said, the JCS proposed an Army with 21 divisions

and 117 antiaircraft battalions, a Navy with 12 attack carriers and 110 submarines, and an Air Force with 126 combat wings plus 17 troop carrier groups. Combat wings allocated to the strategic offensive force numbered 57; 29 wings were for air defense; 40 were for tactical air.[58]

Though the National Security Council approved these objectives, the principle of stretching out expenditures postponed their attainment. The Services protested unsuccessfully. McNeil estimated that the Army would in fact reach its readiness goals by some time in 1954, that the Navy would get its ships more slowly but would actually get more new aircraft per month than previously planned, and that almost all 143 wings and groups of the Air Force would be fully equipped by mid-1955. Congress's severe cutting of the FY 1953 budget, however, placed before the military establishment the prospect of lengthy delays, perhaps even requiring fresh review of Service goals.[59]

As of the end of fiscal year 1952, the Army was up to 20 divisions and 110 antiaircraft battalions. The Navy deployed 12 heavy carriers with a third or more of its 16 carrier air groups composed of late model aircraft. It also had 110 submarines. The Air Force had 95 wings—37 strategic (including 3 fighter escort wings), 20 air defense, 23 tactical air, and 15 troop carrier. Moreover, the strategic force had begun to receive the all-jet B-47s, while the air defense force, now largely equipped with F-84s, counted as having achieved almost three-quarters of planned modernization.[60]

Looking toward fiscal year 1954, the JCS meanwhile restated the force goals that had appeared in their 1951 submission. In a subsequent document.

they also reiterated that fiscal restraints would prevent the Services from achieving these goals before 1956. Addressing the possibility that French Indochina might be conquered by Communist Viet Minh guerrillas (and advocating that the United States prevent it, even if the French pulled out), the JCS observed that currently programmed U.S. forces would not be adequate to deal with such a contingency. Otherwise, however, they maintained the same confident tone as in earlier memoranda in which they counseled the Administration to take "the calculated risk of the adoption of firm and bold courses of action in the political field without awaiting further build-up of the military strength of the free world."[61]

Although the FY 1954 budget prepared in the autumn and winter of 1952-53 accommodated Congress's revived pressure for economy and provided for a more extended stretch-out, the Truman administration's last full day in office, 19 January 1953, saw the Secretary of Defense and Secretary of State join in a valedictory recommendation that "build-up of U.S. forces to presently planned levels should be completed as rapidly as practicable."[62]

At the end of fiscal year 1953, after 3 full years of greatly increased defense spending, the United States had in actuality an Army with 20 divisions and 135 antiaircraft batteries; a navy with 19 attack carriers, 16 carrier air groups, and 110 submarines; and an Air Force of 106 wings, of which 41 were strategic, 26 air defense, 23 tactical, and 16 troop carrier.

Manpower in each Service, exclusive of the portion assignable to Korean operations, was just about double what it had been in June 1950. While the number of Army divisions had doubled, the number of antiaircraft

battalions had more than tripled. In the Navy, manpower and aircraft assigned to carriers was also roughly twice what it had been, while numbers in the submarine service were half again what they had been earlier. In the Air Force, the number of strategic wings had grown more than twofold; the number of air defense and tactical air wings had increased almost threefold.[63]

The Shift to Nuclear Firepower

Changes in the size of the American military forces were accompanied by even more noteworthy changes in the makeup and orientation of those forces. They acquired large quantities of new equipment, including jet aircraft, and they shifted, at least in planning, to heavy dependence on nuclear weapons not only for strategic offensive operations but for theater operations and even for home defense.

Army officers seem to have pushed strongly for greater reliance on nuclear weapons. They had prime responsibility for planning the defense of Europe. Before the Korean conflict, they had been concerned with the question of how a line could possibly be held against the 175 divisions* credited to the Soviet Army by U.S. Army intelligence. Aware that they had few units and that the European allies were devoting even less of GNP to defense than was the United States, they based emergency war plans on an assumption that Europe would be conquered and liberated, much as in World War II.[64] The rebuilding of the Army after June 1950, together with the creation of a NATO force and the commitment of U.S. divisions as part of that force, made this earlier assumption less tenable.

*See above, pp. 37,81-82.

The Brussels conference of December 1950 had produced agreement not only on establishment of the NATO force but on the proposition that the Western allies should field 54 active divisions on the European front. U.S. Army planners believed that this was the minimum necessary for any effort to hold a line against the Russians. Almost from the outset, however, it was evident that this goal could not be attained without the formation of a large number of West German units. The French displayed great reluctance to agree to rearming Germans. It was mid-1951 before a formula was devised for a European Defense Community. Even then, the French parliament could not be brought to endorse it. At Lisbon in February 1952, the NATO Council agreed to a lower goal of 50 active divisions. Even assuming that German units would take part, and taking account of the fact that Greece and Turkey had now been added to NATO, U.S. analysts nevertheless expressed doubt that NATO could muster more than 35 divisions to oppose a Soviet offensive.[65]

In these circumstances, Army planners cast about for alternatives. One option which they did not pursue was to review and scale down the estimated Soviet threat. Careful analysis of the evidence might have produced a significantly lower estimate of the Red Army's offensive strength--even conceivably one which would have made 35 active NATO divisions seem adequate for the first phase of a war. Practically speaking, this option was not available to U.S. Army planners. Army intelligence had generated the estimate of 175 divisions by analyzing human, communications, and signal intelligence in accordance with well accepted routines. With evidence of the functioning of a divisional headquarters, analysts assumed the existence of a full strength unit unless they had significant evidence to the contrary.[66]

For the sake of ensuring that commanders prepared for the worst that might confront them, such rules made eminent sense. It would have been extremely difficult for officers concerned with plans and operations to have asked for estimates based on less cautious procedures. Especially was this so since Army officers had made such insistent use of high estimates of the Red Army in arguments with NATO allies over the Lisbon force goals and in testimony before Congress on the assignment of American divisions to the NATO force.[67] Given prevailing opinions in the executive branch manifested in NSC papers, together with the climate created by Senator McCarthy, it was probably out of the question for any responsible leader in the military establishment to have begun suggesting that the Soviets were not as formidable as generally supposed.

With that possiblity precluded, Army planners were left with no obvious alternative to pessimism other than hope that technology might somehow be exploited to offset the presumed Soviet advantage in manpower, and the most likely candidate was nuclear weaponry.

In the crisis atmosphere of June-July 1950, the Army successfully pressed for assignment of the retardation mission to the strategic air forces. The JCS prescribed that the mission of destroying Soviet strategic nuclear capabilities should have first claim on SAC resources, but the retardation mission would take priority in time. Therefore, theater commanders were able to call on the strategic air forces to attack an advancing Soviet unit or its base of support, and the air forces were to

respond even if it meant postponing a strike on Soviet bombers or nuclear storage depots.[68]

SAC resisted the assignment. A year and more of negotiation between the Army, Air Force headquarters, and SAC headquarters produced an agreement for SAC to contribute to retardation by attacking industrial targets and government control centers as well as known targets to retard Soviet advances.[69] Never approved by the JCS, this arrangement was superseded by an understanding between LeMay and Eisenhower in December 1951, according to which Eisenhower's air commander, Lt. Gen. Lauris Norstad, USAF, would develop a specific target list to be reviewed by SAC.[70]

The capabilities of SAC grew steadily during the Korean conflict. As of 1950, the limitations of the B-36 were fully recognized. SAC and the Air Materiel Command (AMC) were giving relatively leisurely study to possible modifications in models to be purchased in fiscal year 1952. With funds from the supplemental appropriations for fiscal year 1951, the numbers of modifications authorized were increased, and delivery of the remaining 200-odd planes was hurried up. SAC and AMC had also been studying the projected B-52, hoping that the contractor could somehow come up with a design giving the plane speed in excess of 500 knots and truly intercontinental range. Even though Boeing still could not quite meet the range specifications, Air Force headquarters decided to proceed toward procurement with deliveries to begin in 1954. A similar decision was made to proceed with the B-47. Although SAC had had little hand in

developing this all-jet medium bomber, LeMay had come to regard it as the best one likely to be available soon. He believed that SAC should eventually consist of long-range bombers based in the United States and not be dependent on uncertain and vulnerable foreign bases, but he had doubts about the B-52, and he was advised that nuclear-powered aircraft would not be available for at least 10 years. Assuming that an operational intercontinental missile was at least as uncertain and perhaps believing in any case that missiles might never replace the manned bombers, LeMay came to the conclusion that SAC would be reliant for a long time on forward-based medium bombers; the B-47 seemed to him the fastest such bomber capable of carrying a high-yield fission bomb or, if it should develop, a fusion bomb. In fact, he initiated work on a pilotless B-47 for the latter mission and abandoned it only when convinced that B-52s could do the job.[71]

Boeing, which had both the B-47 and B-52 contracts, was pressed to speed production of B-47s. Although the first operational models, delivered in 1951, turned out to have serious performance flaws, LeMay successfully pressed for accelerated procurement of modified versions, and the planes began to flow into SAC's inventory. As of September 1951, the Air Force planned to acquire no fewer than 2,700 B-47s.[72] Meanwhile SAC also obtained new escort fighters. Although the B-52 was expected ordinarily to fly alone, the B-36 and B-47 were to be escorted if flying daylight missions. The plane programmed for the mission as of mid-1950 had been Republic's F-84. In the new circumstances, LeMay argued for a plane with longer range. The result was a comprehensive

redesign, yielding the F-84F, and this, too, was ordered in such quantity that SAC's inventory of these fighters would eventually approach 600.[73] And, of course, SAC acquired a large number of tankers and reconnaissance aircraft. As of 30 June 1950, SAC had fewer than 1,000 planes, only about 30 percent of which were post-World War II models. As of 30 June 1953, it had more than 1,800 planes (including tankers), more than half of which were new models.[74]

At the outset of the period of expansion, it seemed possible that SAC would soon have more planes than atomic bombs to carry in them. Partly for this reason, in May 1951 the JCS recommended that the AEC more than double its production capacity. In actuality, the AEC was more than able to meet demands generated by SAC's growth.

Even when it appeared otherwise, the Army had given evidence of wanting its requirements to be met by means additional to or other than SAC retardation operations. A study prepared for the Army by researchers at the California Institute of Technology offered some support for a thesis that a relatively small number of NATO divisions could halt the Red Army if they made large-scale use of precisely targeted, low-yield "tactical" nuclear weapons. Even before this study had been filed, the Air Force had taken anticipatory steps to meet an Army or NATO requirement of this type. It developed a plan for modifying F-84 fighters and twin-jet, short-range B-45 tactical bombers to carry Mark 5 or Mark 8 warheads and for ensuring that newer jet fighters and fighter-bombers would be designed to carry the projected Mark 7. By the winter of 1950-51, there had been extensive

study of tactical targets for nuclear weapons, and the commanding general of the Tactical Air Command (TAC) was pressing for large outlays to convert more B-45s even though a decision had already been made to phase out the plane. Although the recommendation was not accepted, TAC did receive authority for an ambitious indoctrination and training program. In the spring and summer of 1951, Air Force headquarters directed that TAC have a small operational nuclear force in Europe by the spring of 1952, assigned this project a priority just below that of equipping SAC for the strategic offensive mission, and notified LeMay that TAC would take over from SAC a portion of the retardation mission. Subsequently, a tactical nuclear force was developed for the Far East Command, and a plan was approved for TAC's establishing a tactical nuclear wing to be based in the United States and kept ready for forward deployment on call. In the meantime, TAC pressed successfully for control of development of and training in the use of medium-range MATADOR surface-to-surface missiles capable of carrying nuclear warheads. At one time, the Air Force envisioned having 19 squadrons of MATADORs, but it had to settle for an authorized level of 9 squadrons.[75]

During 1952, TAC and SAC were in competition to provide the Army with nuclear support, for LeMay had struck his bargain with Eisenhower and had also begun to requisition F-84Fs equipped to carry lightweight warheads. In fact, he soon preempted the majority of such aircraft.[76]

In early 1953, the JCS directed that plans be made for nuclear attack on three categories of targets: BRAVO (those that would affect the Soviet ability to wage a nuclear strategic offensive against the

United States), DELTA (those affecting Soviet war production capacity), and ROMEO (those affecting the strength and speed of advance of Soviet military forces). In principle, SAC headquarters favored emphasizing DELTA targets, but in practice, SAC planners assumed responsibility for large numbers of the more precise targets in the BRAVO and ROMEO categories.[77] SAC thus remained the dominant nuclear force within the Air Force. On account of the response of TAC to the Army's support requirement for tactical nuclear air support and because of subsequent TAC-SAC competition, the Air Force emerged from the Korean War period with offensive force programs largely designed for delivery of nuclear weapons and with the traditional distinction between strategic and tactical forces blurred.

At the beginning of this period of expansion, the Navy had only a relatively small part of its force assigned to a nuclear mission. Despite the thorough defeat of the admirals who had challenged the B-36 program in 1949, some Navy leaders continued to criticize the thesis that a strategic bombing offensive could play a decisive part in a war.[78] At the same time, the Navy had continued to develop a capability for carrier-force strategic nuclear operations. As of mid-1950, it possessed 2 squadrons each with 9 planes, fitted for carrying Mark 4 bombs. Some months after the Korean War broke out, the Navy had non-nuclear components stored aboard [redacted] In the event of

general war, the squadron could be put aboard [redacted] The nuclear components were supposed then to arrive from the United States by cargo plane. Assembly teams on board were to make the bombs operational within 24 hours, and the bombers were to take off for targets assigned them by the theater commander. Although several factors, principally the accident-proneness of the AJ-1, prevented much testing of such a scenario, it was accepted as realistic. Early in 1951, [redacted] was loaded with non-nuclear components so that there would always be at least one such ship in European and Mediterranean waters.[79]

The Navy moved in 1951 to enlarge significantly its capability for delivering nuclear weapons. Its construction and modernization program provided for equipping every attack carrier to store nuclear weapon components. Work was hastened on bigger bombers to replace the AJ-1. One of these, the A2J, was eventually to be abandoned because of powerplant problems. Another, the A3D, would not finally materialize in prototype until 1953. In the meantime, however, the AEC developed various smaller, lighter weapons, and in the autumn of 1951 the CNO decreed that nearly all carrier-borne attack aircraft be modified to carry nuclear weapons.[80]

In part, these moves reflected continued Navy interest in having a share in the strategic offensive. For the most part, targets on lists drawn up in or for the Navy's Strategic Plans Division were ports or airfields in the Soviet Union. On the other hand, naval officers taking

part in preparing the JCS target list joined their Army colleagues in insisting that a significant proportion of the stockpile be reserved for retardation targets, and the CNO outdid the Chief of Staff of the Army in upholding such a position within the JCS.[81] The Navy alterations in specifications for Navy aircraft do not seem to have been adaptations designed to meet requirements of theater defense under conditions of enemy numerical superiority in ground forces. They seem instead to have stemmed from the Navy doctrine of maintaining the widest possible array of capabilities for the widest possible range of contingencies. Even so, by the end of 1952, it appeared as if the Navy, like the Air Force, was in process of transforming its offensive forces primarily for delivery of nuclear weapons.

The Army leaders were not content with their role. They tended to view nuclear air support as merely an expedient pending the development of nuclear-armed cannon and missiles under the direct control of ground force commanders. As noted earlier, the Army pressed forward work on an 8-inch gun and the HONEST JOHN, CORPORAL, HERMES, and REDSTONE missiles, and Army spokesmen argued successfully for diverting some fissionable material to appropriate gun-type warheads.

By 1952, Army leaders had come decidedly to the view that tactical nuclear weapons could rectify the balance in Europe. Taking this position, they acquiesced in reducing the force goal for NATO to 39 1/3 active divisions for the central front.[82] Actual Army forces were

still, of course, equipped and trained for warfare involving primarily conventional ordnance, and, with the Army in the lead, the JCS took pains to caution the Secretary of Defense that the United States should be prepared for a variety of possibilities, not merely for general nuclear war. Still, there was evidence of a great change from mid-1950 when the Chief of Staff of the Army and his colleagues had insisted that nuclear weapons were mere"adjuncts to military forces in being." The JCS now described as among the most important of needed forces in being "those . . . capable of making early and accurate delivery of atomic weapons to the enemy at the points where they will hurt him most." At the beginning of 1953, they characterized such weapons as "essential to the success of our strategic plans."[83] The U.S. military establishment seemed in process of becoming primarily a nuclear force.

Why? The change was clearly not imitative of a change on the Soviet side, for even the most dire estimates of prospective Soviet capabilities seemed to ignore the possibility that the Soviets might develop theater nuclear forces of their own. Intelligence analysts appear to have assumed unquestioningly that the Soviets would reserve their stockpile for bombs to be used by the long-range air force in a strategic offensive directed primarily against the continental United States.[84]

Was it chiefly a defensive reaction prompted by the Soviet Union's apparent maintenance of unnecessarily large ground forces together with evidence of unpredictable adventurousness on the part of the Soviet government? Another way of putting the question is to ask whether it

seems likely that the same developments would have taken place, perhaps over a longer period of time, if the Soviet Army had been seen as a smaller, weaker force under the control of an essentially cautious government. Probably not, for in other circumstances prudent American military planners and their civilian superiors would surely have become alert at an earlier point to the problem inherent in the notion of protecting and preserving an area such as Europe while detonating nuclear weapons on, over, or near it. The actual or prospective nuclearization of the U.S. Air Force, Navy air force, and Army does seem to have been in large part a reaction to the force posture attributed to the Soviet Union.

At the same time, it must be noted that this change also had as a necessary precondition the technological breakthroughs achieved by the AEC just when the threat of the Red Army aroused the most intense concern among American military leaders. If work on nuclear weapons had proceeded at a slower rate while work on missiles speeded up, the American military establishment would have probably deployed more missiles armed with TNT.

Still other factors affected the precise developments that occurred. Debates of the previous few years on defense spending had produced considerable evidence that budgeteers and Congressmen were sympathetic to spending money on nuclear weapons. The Joint Committee on Atomic Energy continually agitated for more reliance on such weapons. In August 1951, for example, it declared them to be "the natural armaments of numerically inferior but technologically superior people."[85] To some extent, competition between SAC and TAC speeded up and magnified the nuclearization

of the Air Force, and that competition was influenced, at least in part, by awareness of congressional attitudes that might affect long-term budget shares. The Navy's participation is partially explicable in similar terms.

After June 1950, the President abandoned his insistence that the AEC retain custody of nuclear weapons. He transferred a small number to the personal custody of the Chief of Staff of the Air Force in April 1951. Subsequently, in September 1952, he agreed that both non-nuclear and nuclear components could be turned over to the military and stored not only on carriers but at air bases abroad. The JCS welcomed the change as providing "a degree of operational flexibility and military readiness . . . heretofore considered unattainable." [86] Had Truman not given indications from 1950 onward that he probably would not keep nuclear weapons forever out of the hands of military commanders, officers in the Army, the Navy, TAC, and perhaps even SAC might have placed much less emphasis on nuclearizing their forces.

The factors critical to the nuclearization of U.S. forces were, however, freeing-up of resources, a shared perception that there existed a threat calling for some display of military strength, and the ripening of a technology which could be adapted to this purpose.

Some individuals who might have questioned the wisdom of this choice did not do so because of their inclination to think in terms of the image effects rather than possible operational use of military forces. The military, most of whom did think more in utilitarian terms, were in the position of having to plan how to fulfill a commitment to defend any

or all of the frontiers of the "free world" against an enemy with numerical superiority and internal lines of communications. In the circumstances, especially given the fact that the new funds came so suddenly and that new financial restraints were imposed so soon afterward, it is not clear that the Services had an alternative to heavier dependence on nuclear weaponry.

This turn, however, produced two major effects. First of all, it made the United States much more clearly the military competitor of the Soviet Union. Earlier, the two states had been rival powers rather than rival military powers. Now, the United States was arming with the avowed object of demonstrating its capacity to defeat the Soviet Union if the Soviet Government should initiate a war. Secondly, it established nuclear firepower in American eyes as the primary gauge of competitive military strength.

CHAPTER V.

FROM THE "NEW LOOK" TO SPUTNIK

The Eisenhower Administration

On 20 January 1953 Dwight D. Eisenhower succeeded Harry S. Truman as President. A professional soldier, he had commanded Allied forces in Europe in World War II, served as Army Chief of Staff from 1945 to 1948, acted as Louis Johnson's chief advisor on the original FY 1951 budget, and held the post of NATO commander in 1951-52. He brought to the presidency considerable knowledge of the strategy and force posture that had evolved since World War II, some comprehension of newer technologies, personal acquaintance with many senior officers in the Services, and an understanding of--and no little cynicism about--the processes that produced the Services' force and funding requirements. Eisenhower also brought to the presidency two convictions that were often in sharp conflict with one another. First, he believed profoundly that the defense of Europe was vital to the security of the United States. He had little tolerance for those in his party who espoused the "Fortress America" concept. Second, he believed with at least equal fervor that total government spending had to be reduced; that lower taxes and a balanced budget were essential to the nation's long-term health; and that, as he often said, the United States would lose the Cold War if it had to develop a controlled economy in order to wage it.

Surrounding the President were some strong and outspoken men whom he respected not only for their judgment but for their past success in the private sector of the economy: Secretary of State John Foster Dulles, a Wall Street lawyer with formidable analytic and forensic gifts; Secretary of the Treasury George Humphrey, a forceful Ohio banker virtually obsessed by a conviction that the country faced doom if tax reductions and a balanced budget were not achieved quickly; and Secretary of Defense Charles E. Wilson and his Deputy, Roger M. Kyes, previously the chief executives of General Motors, the former a bluff, shrewd man with a reputation for getting maximum production out of his organization and the latter a manager known as a pitiless driver of men.

Encouraged by Humphrey, Eisenhower had the Budget Bureau direct all departments to do everything possible to bring the FY 1954 budget down to the level of expected tax revenues. In the Defense Department Wilson and Kyes had meanwhile discovered to their surprise that approximately $62 billion of previously appropriated funds would remain unexpended as of the end of fiscal year 1953. Kyes circulated a letter proposing that, regardless of additional appropriations, actual expenditures in fiscal year 1954 be kept below $41.2 billion. He made tentative allocations of 36 percent for the Army (continued Korean War costs included), 26 percent for the Navy, and 35 percent for the Air Force. For fiscal year 1955 he proposed that expenditures fall to $34.6 billion, 38 percent for the Army (assuming the Korean War still to be in progress), 26.5 percent for the Navy, and 33.5 percent for the Air Force.[1]

The Service responses in March were, to say the least, discouraging. The Army declared that such a limit would mean virtually abandoning Japan and reducing the NATO contribution to a token 2 divisions. The Navy said it could maintain current strength but would have to stop most construction and force modernization. The Air Force declared that it would have to reduce to a state of virtual ineffectiveness all elements except SAC. In particular, it would have to cut by more than half its promised tactical air contribution to NATO. These replies came in the form of letters from the Service Secretaries, who were all appointees of the new President. They were followed by a memorandum from the JCS asserting that such expenditure ceilings would entail unacceptable military risks. In face of such advice, even so tough and skeptical a man as Kyes felt obliged to back off. He and Wilson withdrew the projected ceilings, substituting a general injunction to the Services to keep spending within bounds.[2]

Turning instead to proposals for new appropriations, Wilson and Kyes tried to find items in the Truman-Lovett budget that could be reduced. Reviewing the huge carryover account and the Services' intended uses for their funds, they concluded that significant sums earmarked for Air Force aircraft procurement would probably not be used for years to come. They concluded, in fact, that only 120 of the Air Force's projected 143 wings could materialize by fiscal year 1956. Hence, they decided to remove $5 billion chiefly from the aircraft and related procurement category in the

proposed FY 1954 budget request for new funds and set 120 wings as the near-term target for the Air Force. By this means, by imposing new and lower personnel ceilings, by curtailing naval procurement (and even with the inclusion in the regular Defense budget of $2.0 billion which, under previous plans, would have been a FY 1954 supplemental appropriation for Army expenses in Korea), Wilson and Kyes were able to reduce what would have been a total Defense budget from $41.3 billion to a proposed $36.2 billion.[3]

The Administration action on Air Force funding provoked a strong reaction by the Air Force Chief of Staff, Gen. Hoyt S. Vandenberg. Reporters and columnists with Air Force sources publicized Vandenberg's fear that the Administration's zeal for economy would reduce the nation's airpower below acceptable levels. When the revised Defense budget went to Congress in May 1953, Democrats in both Houses assailed what they alleged to be the threatened impairment of America's nuclear deterrent. Hearings and floor debate concentrated almost exclusively on the question of whether the reduced allocation for the Air Force and the 120-wing goal would provide sufficient strategic airpower. The proposed budget survived amendments to restore some of the costs in the Air Force budget only after Eisenhower personally vouched for the military soundness of the Defense Department's recommendations. On the other items in the Defense budget, Congress strove to outdo the Administration in economizing and, in particular, cut the Army by 5 percent.[4]

Despite Vandenberg's public statements and the subsequent controversy, the defense program embodied in the revised budget remained substantially unchanged. The Administration conceded that it had been able only to make alterations of the budget at the margins. The "year of maximum danger" concept had already died. The Eisenhower administration simply advertised its death and extended a stretch-out already planned during the Truman administration. Neither Eisenhower nor Wilson nor Kyes denied this fact. They promised, however, that their "New Look" would result in substantially different recommendations for fiscal year 1955 and beyond.

For aid with this "New Look," the President appointed an entirely new panel of chiefs of staff. To replace his old comrade, General of the Army Omar N. Bradley, he named as Chairman of the JCS Adm. Arthur W. Radford, a naval aviator who had been deeply involved in the Navy campaign against the B-36 and who had subsequently been Commander-in-Chief, Pacific Command. In this appointment in particular, there seemed promise of a genuine "new look," not only because of Radford's past criticism of predominant reliance on strategic airpower but also because of his prior preoccupation with the Pacific and Asia as opposed to the Atlantic and Europe.

The President instructed the new Chiefs of Staff, in July 1953, to undertake a comprehensive and searching review of America's strategic needs. They received this directive, moreover, at a propitious time. Not only was work just beginning on the FY 1955 budget, but more importantly, the context for strategic planning had just been altered in significant ways.

The Soviet Union appeared to be entering a period of change. Stalin had died in March 1953, and the collective leadership that succeeded to power had surprised American Kremlinologists and intelligence analysts by beginning almost immediately to signal possible new departures in domestic and foreign policy--a shift of resources toward greater production of consumer goods and a move toward reviving negotiations on issues left over from the early postwar era.

Almost simultaneously, the Korean War came to an end. At the beginning of his Administration, Eisenhower's dealings with the holdover JCS had been dominated by the question of how to bring about such a result. The President had encouraged the Chiefs to recommend bold plans. In May, he had endorsed in principle their proposal to use nuclear weapons [redacted] even when he learned that they contemplated using 250 to 450 bombs. Indicating that he had not kept fully abreast of nuclear technology, he asked whether it was correct that 200 bombs might wipe out civilization. He was given reassurance that AEC scientists now believed it would take several thousand to produce such a calamity, though no one was certain.[5] The new Soviet regime rescued the President from having to test this uncertainty by acting as a go-between in revived negotiations for an armistice. In July 1953 terms were agreed upon with the Chinese and Koreans which had the effect of bringing armed conflict to a halt.

In these circumstances, the new JCS could at least attempt a fresh estimate of the Soviet threat and could consider future needs without

having to take account of an actual limited war still in progress. By the same token, they had to contemplate a future in which congressional and public enthusiasm for preparedness might well diminish in the absence of an ongoing war.

The new Chiefs started on their task by meeting together and, without the aid of staff officers, sketching their notions as to the force posture which the United States should strive to achieve and maintain. Acknowledging that their thoughts were provisional and subject to change as they examined matters in detail, Radford summarized the results on 27 August 1953, at a meeting of the National Security Council.[6]

The United States, said Radford, was militarily overextended. It was developing large strategic forces. At the same time, it maintained substantial general purpose forces in both Europe and Asia. It could not maintain such a position for an extended period, not only because of high costs, which strained the domestic economy, but because of excessive demands on the nation's pool of manpower. The existing position could not long be sustained without a peacetime draft at levels which the public might regard as unacceptable. Moreover, the overseas deployments of American forces made the United States dependent on host countries whose long-term cooperativeness was uncertain.

Reversing the position he had taken during the B-36 controversy, Radford now argued that the strategic forces were pivotal for American security. The threat of nuclear or thermonuclear attack on the Soviet Union was, he said, the principal means by which the United States

could deter not only a general war but localized probes like that in Korea. The strategic nuclear forces therefore deserved first claim on American resources.

Second in importance but closely allied, the admiral said, was continental defense. In part, this involved protection of the strategic forces so that they could strike a massive retaliatory blow even if the Soviets staged a surprise attack. In part, it involved conservation of a mobilization base so that other forces could be assembled for later stages of a war. (Radford had not swung altogether to the view that the first phase of a nuclear war would be the decisive phase.) Noting that the general subject of continental defense was under study by the NSC staff, Radford observed that it might well entail new defense programs in addition to those already under way.

In view of these priorities and of fiscal and manpower constraints, Radford continued, the United States had no choice except to cut back on general purpose forces. Numbers of military personnel should be reduced. Significantly smaller numbers of troops should be deployed in Europe, Japan, and Korea. Emphasis should be placed on the mobility of those forces retained. Also, it should be made clear to any potential enemy that if those forces were committed to battle, they would have and use nuclear firepower. The position of the United States would thus be one of dependence on a well-protected strategic nuclear force, supplemented by small highly mobile contingents of nuclear-armed general purpose forces.

While the new Chief of Staff of the Air Force, Gen. Nathan F. Twining, seconded Radford's statement, the other two Chiefs indicated reservations. Adm. Robert B. Carney, successor to Adm. William B. Fechteler as Chief of Naval Operations, cautioned that the proposed policy involved risks which might, on closer study, appear unacceptable. Observing that air forces could not stop a ground force attack, he urged "careful examination of the question whether we want to try to fight a war on the overseas periphery--as remote as possible from the continental U.S.--or greatly reduce this peripheral defense." Gen. Matthew B. Ridgway, the Chief of Staff of the Army, conceded doubt as to whether the United States could afford to make preparation for pursuing several different strategies, but, like Carney, he suggested that the current choice might be to build lines of defense overseas rather than at home. Further, he expressed doubt as to whether deterrence could be achieved by strategic weaponry and airpower alone.

By and large, the civilians at the NSC meeting found Radford's line of argument both persuasive and appealing. Despite Radford's caution that monetary savings might not materialize before FY 1955, if then, Humphrey expressed delight, terming Radford's report the best thing that had happened since inauguration day. Kyes also voiced approval. Though observing that actual withdrawal of forces from overseas stations might involve delicate diplomatic problems, Secretary of State Dulles joined in the approbation. The Executive Secretary of the NSC

summed up the reaction as favorable and said that he would now report to the President, who was then in Colorado on vacation.

In fact, Eisenhower received not only this report but also one given him in person by Secretary Dulles. Dulles reported to the NSC on 9 September that the President also reacted favorably but had serious misgivings about the political and psychological effects if American forces in Europe were prematurely reduced or withdrawn. Nevertheless, Eisenhower approved Radford's recommendation that the NSC staff take the report as a partial basis for drafting a set of general policy guidelines which the NSC could debate and possibly agree upon.[7]

The result was NSC 162/2, "Basic National Security Policy," which the NSC endorsed on 29 October 1953 and which the President approved the next day. Attempting to reconcile diverse perspectives, including those of Service staff officers who since August had had opportunity to exert more influence on the new members of the JCS, this paper made much less sharp recommendations for new departures in policy. While it asserted that American forces were overextended as currently deployed, it also observed that any immediate reductions were out of the question because of their possible effects on the morale of allies. The document called for diplomatic efforts to persuade these allies that their security would be best promoted if the United concentrated on having mobile general purpose forces and massive retaliatory strategic forces. NSC 162/2 said that the chief deterrent to Soviet aggression

against Western Europe was "...the manifest determination of the United States to use its atomic capability and massive retaliatory striking power..." It also called for emphasis on "an...integrated and effective continental defense system; ready forces of the United States and its allies suitably deployed and adequate to deter or initially to counter aggression, and to discharge required initial tasks in the event of a general war; and an adequate mobilization base; ...."

The chief new departure embodied in NSC 162/2 came in a paragraph which declared, "In the event of hostilities, the United States will consider nuclear weapons to be as available for use as other munitions." Both the text of the document and the minutes of NSC debate indicated, however, that this statement of policy was not so clear-cut as it appeared to be. Other sections of NSC 162/2 pointed out that America's allies had objections to any use of nuclear weapons and urged that at least some of them be consulted before actual use occurred.[8]

In sessions of the NSC, the President had declined to answer with a flat affirmative a question as to whether he would authorize use of nuclear weapons in event of a new flareup in Korea.[9] He and others appeared to accept the stated doctrine on the grounds that another large-scale limited war like that in Korea was highly unlikely; that any new war would result from a Soviet initiative; and that the Soviets would probably use nuclear weapons themselves. While the text of NSC 162/2 would be of assistance to military leaders who sought to persuade a President to authorize

nuclear bombardment, it did not quite guarantee that such authorization would be forthcoming.

The Administration's FY 1955 budget, completed in the aftermath of this policy review, reflected chiefly an acceleration of trends already in progress. When the new JCS developed specific proposals, with all the weight of past Service and joint staff work now bearing upon them, their force posture recommendations were almost exactly the same as those of their predecessors. At the instance of the NSC, Wilson and Kyes insisted on lower personnel ceilings. Even when the Chiefs accommodated themselves to this demand, they asked for almost $6 billion more than the President and his civilian advisers wanted to allow them. Eisenhower and Wilson finally imposed a "new look" in December with an order for still more substantial personnel cutbacks. The Army bore the brunt of the withdrawal of 2 divisions from Korea and their deactivation.[10]

Because of the evident temper of Congress as well as altered strategic conceptions, the Administration subtracted least from the Air Force, which was allowed a 137-wing program, though on condition that it could have only 120 wings by the end of fiscal year 1955. Within this budget, SAC was to get nearly everything it asked for. While the Navy suffered reductions in both ships and manpower, it could continue building super carriers and actually increase its level of spending for carrier aircraft. The Army, however, was given a 17-division instead of a 20-division end-strength goal. The new appropriations for defense proposed

to Congress by the President totalled $31 billion--36 percent for the Air Force; 32 percent for the Navy; and less than 27 percent for the Army. Congress lopped off approximately $1 billion, mostly again at the expense of the Army.[11]

The President and most Administration spokesmen represented the FY 1955 budget as embodying a radically different strategy. Alluding guardedly to the altered doctrine on use of nuclear weapons, Eisenhower spoke of "the full exploitation of air power and modern weapons." In a celebrated speech before the Council on Foreign Relations, Secretary Dulles asserted that the United States would now "depend primarily upon a great capacity to retaliate, instantly, by means and at places of our choosing." He continued:

> Now the Department of Defense and the Joint Chiefs of Staff can shape our military establishment to fit what is our policy, instead of having to try to be ready to meet the enemy's many choices. This permits a selection of military means instead of a multiplication of means. As a result, it is now possible to get, and share, more basic security at less cost.

Wilson, Kyes, Radford, and Twining all argued on Capitol Hill that the Administration had found the proper formula for achieving long-term security at minimum cost. Though Carney and Ridgway voiced reservations, they did so in muted tones. Efforts by a handful of Representatives and Senators (notably, Hubert H. Humphrey of Minnesota and John F. Kennedy of Massachusetts) to provide more money for the Army were handily defeated. By and large, Congress and the country appeared to accept the "New Look" as, in fact, new and, in general, acceptable.

In fact, even with the severe reduction imposed by Eisenhower and his aides, the FY 1955 budget did not involve significant new departures. It placed primary reliance on strategic offensive nuclear forces. The cut in Army divisions from 20 to 17 followed from the impositions of reduced personnel ceilings required by budget constraints. The most that can be said is that the "New Look" budget stepped up the trend toward greater investment in nuclear forces and reduced investment in general purpose forces. This process gave the Air Force a distinct lead over the other Services

Despite the testimony that they gave, the Joint Chiefs of Staff and the Services were not content with the budget they defended or with the notion of accommodating themselves to ceilings based on Secretary Humphrey's principle that a balanced budget and lower taxes took precedence over defense. The JCS used every occasion to combat this principle and to argue that defense needs came first. Leaders of the Army and the Navy were both intent on somehow reclaiming larger shares of the budget, and many Air Force officers, despite the favored position of their Service, remained discontented with the spending limits imposed by the Administration. In all of the Services there was genuine feeling that the Administration was prepared to sacrifice security for the sake of economy, and that any opportunity should be seized if it offered promise of reversing these priorities. The

opportunities were to present themselves in the form of technological advances by the Soviets.

Challenges to the "New Look"

In the midst of its efforts to advertise the "New Look" as a formula for long-term security, the Eisenhower administration confronted a succession of international issues which raised questions about its force planning.

Early in 1954, soon after the President's budget message and Secretary of State Dulles's "massive retaliation" speech, a question arose as to whether or not the United States should employ military force in Southeast Asia in support of French efforts to retain control of Indochina. Ever since 1946 the French had been at war with the Viet Minh, a Communist-led force championing independence. Because it seemed essential to do so if the French were simultaneously to build up their military establishment at home and contribute to the collective defense of Europe, the American government had, without much enthusiasm, supplied money and arms for the campaigns in Indochina. Officials of the Truman administration, and Eisenhower as NATO commander, had meanwhile exhorted the French to grant the colony self-government and thus encourage a non-Communist nationalist movement. In response, the French had made grudging changes which were largely superficial. Viet Minh strength had steadily risen, and now the French seemed in danger of losing at least the entire northern

part of the colony. Major elements of the French Army were surrounded and under siege in the fortress of Dienbienphu. Although officials in Paris and French generals in Indochina voiced optimism about the ultimate outcome, they were suggesting as early as December 1953 that the United States lend overt aid at least in the form of air strikes against Viet Minh artillery positions.

Eisenhower's initial reaction was strongly adverse. He felt that any intervention would require ground troops, and he said that he was opposed in any and all circumstances to committing ground troops in mainland Southeast Asia. At this juncture, no one in the Administration other than JCS Chairman Radford spoke up even for providing air support. By the spring of 1954, however, it had become evident that the force at Dienbienphu was in a desperate condition. For a time, the JCS gave serious consideration to possible means for intervening, including use of nuclear weapons against Viet Minh strongholds. Secretary of State Dulles, who had originally taken the position that unilateral American intervention was out of the question, began instead to say that, if Dienbienphu fell, the consequences might be intolerable. All of Southeast Asia might be taken by Communists, and the United States might be seen as having shown lack of will. Vice President Richard M. Nixon leaned toward action of some kind. The President himself remained opposed to unilateral intervention.[12]

There was, however, no decision for intervention. The JCS remained divided, with Army Chief of Staff Matthew B. Ridgway particularly vehement in arguing that air support alone would be inadequate. Congressional leaders indicated that they could support intervention only if the French conceded independence to the colony and if the United States acted in concert with other allies besides France. Neither of these conditions could be fulfilled before May 7 when Dienbienphu surrendered.

In subsequent diplomatic negotiations, Indochina was partitioned, with the French departing, the Communists assuming control of North Vietnam, and independent non-Communist regimes taking form in South Vietnam, Cambodia, and Laos. In September 1954 a treaty was signed at Manila, binding the United States, Britain, Australia, New Zealand, the Philippines, Pakistan, and Thailand as members of the Southeast Asia Treaty Organization to concert measures for defense of Southeast Asia. In contrast to the North Atlantic Treaty, this pact was vague as to the actual mutual defense obligations of the signers. It was vaguer still with regard to what they would do to defend the nonsignatory governments of South Vietnam, Cambodia, and Laos. Nevertheless, this treaty committed the United States in indefinite fashion to concern itself should there be an attack upon or a serious effort to subvert non-Communist regimes in Southeast Asia.

Not long afterward, the United States accepted a more precise engagement to defend the Chinese Nationalist government on Taiwan. Before, during, and after the presidential campaign of 1952, various

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political figures, mostly in the Republican party, had assailed the Truman administration for taking the stand that the United States would patrol the Taiwan Straits to prevent either Chinese government from attacking the other. There was much talk about "unleashing" Chiang Kai-shek to reclaim the mainland. The Eisenhower administration early announced that its objective would be only to prevent the Communists from attacking the Nationalists. Partly further to gratify the admirers of Chiang in the United States, partly to exert influence so that Chiang would embark on no foolhardy adventures, partly to secure a base, and partly to guarantee Taiwan's aid in the event of war, the Administration took the added step of negotiating with the Nationalists a mutual defense treaty.

At the end of 1954, when treaty discussions were in the final stages, the Communist Chinese began to shell various offshore islands garrisoned by Nationalists. While the Nationalists relinquished the Tachens in the northern sector of the Taiwan Straits, they declined to give up the Quemoy and Matsu islands in Amoy harbor. Communist bombardment of these islands intensified after the American-Nationalist mutual defense treaty came into effect, and the Administration faced the question of what, if anything, to do should the Communists attempt to invade and seize these Nationalist outposts. The question remained unresolved. The President and Secretary of State declared that their course would depend on whether or not they interpreted the Communist action as preliminary to an attack on Taiwan itself. Military planners

meanwhile considered options for possible naval and air action, including nuclear strikes against targets on the Chinese mainland. The Communists, however, made no attempt to seize the islands and in time cut back on the scale of their artillery bombardment.[13]

Neither in Indochina nor in the Taiwan Straits did the United States resort to military action. There was thus no practical test of how well American forces could have performed. The fact that in both instances JCS thinking included an airborne delivery of nuclear weapons might have suggested, however, that the nation's force posture was not particularly tailored to such contingencies.

Other events of the period further highlighted the fact that American forces could not be designed for all situations that were realistically foreseeable. Concern had arisen in 1953 lest the premier of Iran, Mohammed Mossadeq, ally with Communists and make his oil-rich country a voluntary satellite of Moscow. In retrospect, the likelihood of such an alliance or of such a result, even if the alliance did take form, appears to have been exaggerated. In any event, [redacted] contributed to Mossadeq's overthrow and the installation of a resolutely anti-Communist government. In 1954 [redacted] overturned a government in Guatemala which was thought prepared to let the country become a base for Communist subversive activity in the Americas. In neither instance did overt military intervention ever become a subject for serious planning.

If [redacted] however, as it might have in Iran, the Administration would have had to consider what appropriate military action it could take with forces that were becoming more heavily nuclearized.

Major problems also faced the United States in determining what might be an adequate and effective mixture of forces for contingencies in Europe. 1953 passed with France still failing to agree to creation of the proposed European Defense Community, and this despite Secretary Dulles's open warning that, if EDC did not materialize, the United States would have to make an "agonizing reappraisal" of its commitment to defend Europe. In 1954 the French parliament rejected the plan. For a time, officials in Washington debated whether to formulate plans that counted France a neutral rather than an ally. The French, however, brought themselves to accept a somewhat different scheme which had the practical effect of permitting 12 West German divisions to be formed as part of the NATO defense force.

This development brought with it some promise that the original goal of NATO might be attained, i.e., to make Europe defensible against an attack by the Red Army. Increasingly, however, the American contingent was taking a shape that made it less suited for such a purpose. On the one hand, strategists in Washington were openly talking of the NATO force as a "trip wire" or "plate glass wall," the function of which was not to hold a line but merely, by being attacked, to trigger a strategic

nuclear offensive against the Soviet homeland. On the other hand, American commanders, including those with NATO hats, were making arrangements for wholesale tactical use of nuclear weapons, creating a vision of a campaign that could leave much of Europe a radioactive desert.

The European allies made known to Washington their concern about these tendencies. Secretary Dulles reported their desire for assurances that the President would not authorize use of nuclear weapons without their consent. When the American government responded that it respected their wishes but could not so completely constrain itself, the allies began to press for arrangements which would ensure that they had a voice and, if possible, veto over any use of nuclear weapons. In Washington, there was a tendency to interpret these initiatives as indicating that the allies were becoming reconciled to the idea that nuclear weapons would be used, and this interpretation was not wholly without foundation, for many British and European military officers did gravitate to the view that no distinction should be made between conventional and nuclear ordnance. By and large, however, leaders in the NATO capitals were seeking some means of preventing use of nuclear weapons within the European theater. As they became more and more nuclearized, American ground, air, and naval forces thus became less and less suited for the kind of war which Allied leaders preferred to fight if the Russians actually attacked.

For this and many other reasons, increasing friction developed between the United States and some of its NATO partners--

the British, the Belgians, the Dutch, and especially the French. In each case, it was exacerbated by open American criticism of European colonialism and by American dealings outside of Europe with factions and governments hostile to the imperial policies of European states. The extent of strain was to become fully manifest in 1956, when the United States wooed an Egyptian government that had seized the Suez Canal, the French and British and Israelis surprised Washington by suddenly staging a military attack on Egypt, and the United States compelled them to halt by forcing a cease-fire resolution through the United Nations.

Through the preceding years, the relationship between the United States and its European allies had gradually undergone a profound change. In the period of the Marshall Plan and the North Atlantic Treaty and even the early Korean War through 1951 and 1952, the American government had acted as a backer of Western Europe, offering, in effect, to do what it could to help the Europeans achieve what they wanted to achieve--recovery, security, etc. Sometime in the early 1950s, the United States became instead a leader, cajoling, exhorting, and even bullying the Europeans to do what the American government conceived to be in their best interest and, more broadly, in the best interest of the "free world"--spend more on defense, achieve a greater degree

of unity, both military and economic, come to terms with nationalism in the less developed world, and take part in containing communism, wherever it threatened to expand.

By the mid-1950s, the United States had assumed an altered and much larger role in world affairs. With varying degrees of explicitness, it had assumed commitments in all parts of the globe, and it was confronting the presumed Communist bloc as leader and protector of virtually all states and territories not already under Communist governments.

That the United States had taken on such a role and that its military forces might not be adequate or well-suited for the wide variety of contingencies this role could entail seems somewhat more obvious in retrospect than at the time, but it did not go unnoticed by contemporaries.

Some senior Army officers began to question not only the general trends in defense policy but those within their own Service. Having been MacArthur's successor in Korea, General Ridgway had recent experience of a war in which the nuclear arsenal was not used. He had found the accuracy of tactical bombing in support of ground troops such as to raise questions about whose forces would have been destroyed if nuclear weapons had been used, and strategic bombing, in the form of raids on North Korean dams and hydroelectric plants, though admittedly waged with conventional ordnance and in

an industrially backward country, had not seemed impressively effective. Hardly had Ridgway come back to Washington as Chief of Staff in July 1953 when he confronted the problem of Indochina. In contrast to his colleagues in the JCS and some of his own staff, he remained wholly unconvinced that airpower and nuclear weaponry could prove decisive in a theater which, after all, bore some resemblance to the one in which he had just fought a war. He was equally unconvinced that available weaponry was suitable for the task of holding the Chinese offshore islands, and he sensed from discussions with Europeans some of the problems latent in ground force planning that assumed nuclear fire support.[14]

All the while, Ridgway was experiencing the pressures for economy which, given the rationale for the "New Look," pinched the Army more severely than the other Services. He was compelled to accept the 20-percent cut in programmed manpower for fiscal year 1955. In the last stages of preparing the FY 1956 budget, he was told that there would have to be another cut of almost equal size and that Army end-strength in manpower would be fixed in the neighborhood of one million. Though Eisenhower allowed him to appear in person before the NSC in December 1954 to protest these cuts, his words had no effect.[15]

When Ridgway went to Capitol Hill in the early part of 1955 to testify on the Army budget, he came close to voicing protest not only against the specific manpower reductions but against the whole theory that the policies of the United States could be adequately supported

by armed forces shaped to the "New Look." His actual language was sufficiently guarded to protect against a charge of launching a "generals' revolt," but his meaning could be understood. Probably, too, there occurred private exchanges between Army officers and potentially sympathetic Representatives and Senators. The thesis implicit in Ridgway's testimony was picked up by a few of the latter in speeches on the floor. The only tangible result, however, was congressional action adding to the manpower of the Marine Corps and the capability of the Navy to land troops on a hostile shore.[16]

Ridgway was not wholly alone in the Administration. Another Army officer, Brig. Gen. Charles Bonesteel, III, served as a representative of the Secretary of Defense on various NSC boards. In October 1954, he circulated to others in the Office of the Secretary of Defense a memorandum raising the basic question of whether wisdom and prudence did not dictate a force posture that would give the President the option of fighting a war without resort to nuclear weapons. His colleagues told him sharply that the matter had been decided and that the nation simply could not afford such an option.[17]

Before retiring as Chief of Staff at the end of June 1955, Ridgway wrote a long letter to the Secretary of Defense, protesting the drift of U.S. defense policy.[18] This, too, produced no effect By the time the FY 1957 budget went to Congress in early 1956, Ridgway had retired. As a private citizen, he became an outspoken critic, writing magazine

articles and a book attacking the "New Look," the priority assigned to strategic forces, and the degree of reliance on nuclear weaponry. His successor as Chief of Staff, Gen. Maxwell Taylor, meanwhile testified to similar effect on Capitol Hill. He went so far as to lay out some specifics of Army staff thinking as to a more suitable force posture--an increase from 17 to 28 divisions, a substantial increase in stocks of conventional ordnance and artillery, including guided missiles, and increases in airlift and sealift capability. Although Ridgway and Taylor both made the point that even a war in Europe need not necessarily entail all-out nuclear exchange, neither man voiced doubt about prevailing notions on the size of the Red Army or quarreled with the concept of relying on nuclear firepower in Europe to compensate for inferiority in numbers. The basis of their plea was chiefly an argument that the armed forces should be designed for a variety of contingencies, among which all-out nuclear war was only one.[19]

Ridgway, Taylor, and other Army officers taking their line found some sympathizers in Congress and among the attentive public. Despite Eisenhower's own popularity, the Democratic opposition had won control of Congress in the 1954 elections. Democrats were eagerly in search of issues for the congressional and presidential election of 1956. Moreover, large numbers of journalists, columnists, academics, and others interested in international affairs were opposed not only to the Republican leadership in Congress and members of the Cabinet but to the President

himself. Attacks on his defense policy from officers in his own Service should have seemed made to order for the purposes of partisan Democrats and other opponents of the Administration.

The issues raised by Army officers did not, however, receive the attention they might have received, for Air Force officers simultaneously broached other issues which had greater appeal for politicians and members of the public. These were the issues for which the catchwords were, first, "bomber gap" and, somewhat later, "missile gap."

The "Bomber Gap"

Up to 1949 the Government had devoted little study to possible Soviet nuclear capabilities. There was general recognition that the question was important. When the Central Intelligence Group was established by the President in 1946, it had a specific mandate to investigate foreign development of nuclear weapons. Lacking capability to do so, this group in 1947 transferred the task to the Army Air Forces. In 1948 the newly independent Air Force asked for $40-45 million with which to develop a surveillance network. In the spring of 1949 the JCS labeled the endeavor one of "major" but not "critical" importance, and the Defense Department Research and Development Board planned to allocate less than $20 million for the purpose. Before a decision was made, air sampling turned up indications of the Soviet test of August 1949. Thereafter, the Air Force received almost everything it asked for the purpose and by the end of 1953 had more than 100 stations around the globe, collecting

data of various kinds which permitted relatively confident judgments not only on the occurrence of each Soviet test but on its approximate location, the position of the burst, and the yield of the weapon.

Once knowledge about the Soviet nuclear program came to be urgently sought, importance also became attached to information about Soviet production of fissionable material. In January 1950 the JCS pronounced this a "primary" intelligence objective. In the aftermath of the surprise attack on Korea, concern about a possible "nuclear Pearl Harbor" also came to be widely voiced. In response, the JCS set as a high priority objective for the intelligence services the acquisition of information about Soviet strategic delivery systems.

Although the Army had a role in continental air defense, it was the Air Force that undertook this high priority intelligence mission. [redacted] were mined for evidence concerning Soviet aircraft production and the characteristics, movements, and location of Soviet bombers. Germans, especially engineers, returning from the Soviet Union were interrogated on these subjects. In addition, of course, information was sought about Soviet strategic defensive systems. By 1953 Air Force Intelligence was beginning to accumulate material relating to Soviet research on missiles, including not only surface-to-air but surface-to-surface weapons.[20]

Air Force Intelligence and a relatively autonomous intelligence organization at SAC headquarters had an independent interest in data

on the Soviet Union to be used for targeting purposes. The new emergency war plan adopted just after the opening of the Korean conflict had specified that first priority in an American strategic offensive should go to neutralizing the Soviet strategic threat to the United States. [redacted]

The targets division of Air Force Intelligence contained officers and civilians who favored counterforce targeting as opposed to area bombing. They made strenuous efforts to locate airfields and other suitable targets, and they, too, were relatively successful. One of the civilians testified that the division had by May 1953 identified targets for 2000 atomic bombs.[22]

To supplement information from these sources, the Air Force made some efforts at aerial reconnaissance. The precise extent of these efforts is unclear. One veteran Air Force intelligence officer asserts that a secret program of overflights was authorized by LeMay and the Chief of Staff, with approval from the Secretary of Defense and the President. He says that several hundred reconnaissance missions were flown over Soviet territory in the early 1950s. No documentary evidence of such a program has come to light. General LeMay, when questioned, mentioned only one episode in which reconnaissance aircraft were mixed with others in a scramble

over Vladivostok. No other person interviewed on this subject recalled seeing in the early 1950s aerial photographs which were clearly neither from German files nor results of slant photography by U.S. or British planes flying along Soviet or East European borders, nor did anyone recollect sensing that any SAC or Air Force intelligence officers possessed information not available to other fully cleared members of the intelligence community.[23] Further, although the Soviets loudly protested flights near their borders and shot down several Air Force and Navy planes alleged to have trespassed on the edges of their air space, they did not make more sweeping charges.

An East German book on Western aerial espionage, possibly inspired by the Soviet KGB, mentions only incidents that were subjects of protest at the time.[24] One has to conclude that, if the United States conducted large-scale aerial reconnaissance over the Soviet Union in the early 1950s, it enjoyed extraordinary and continuing success in preserving the secrecy of the operation.

Air Force Intelligence did, however, lead the nascent intelligence community in collecting and analyzing information about Soviet military capabilities. Though the CIA had a Scientific and Technical Group which assembled data on Soviet nuclear physics research, it was generally understood when the intelligence community took form after 1947 that assessment of Soviet military strength would be done by the armed Services. Nevertheless, a significant independent capability for estimating Soviet

military forces developed within CIA. In its Office of Science and Technology, some analysts became experts on the Soviet aircraft industry. In some instances, they were technicians who had previously worked for American aircraft companies. One of their basic techniques was to study the operations of those companies and then to piece together fragments of intelligence for the Soviet Union on the assumption that there were basic similarities. At the same time, economic analysts in CIA's Office of Research and Reports developed data about resource constraints affecting Soviet defense production--raw materials, transportation, machine tools, skilled manpower, etc. John Foster Dulles's brother, Allen Dulles, who became Director of Central Intelligence in 1953, insisted, however, on preserving the rule that military estimates should come from the Services. Since the Air Force was the most Service keenly interested in Soviet strategic forces, this meant that the Air Force had the lead role in preparing estimates of those forces.[25]

Given the new budget stringency, Air Force officers had incentives for erring, if at all, on the high side rather than the low side. It is reported that a study undertaken in 1953, code-named ARCTIC YOKE concluded that the Soviet long range air force could use its Arctic bases only 6 weeks in the fall and 6 weeks in the spring and, even if the Soviets staged an attack during one of these two periods, not more than 1 percent of their bombers would get through. A decision

is said to have been made in Air Force headquarters to suppress the results of this study.[26]

In the early 1950s, the air attaché in Moscow had begun reporting indications that the Soviets were not satisfied with the TU-4 (Bull), the copy of the B-29 which was the standard bomber in the long range air force. The attaché sent back a photograph of a Bull modified to be powered by turboprop engines. In 1953 he sent another photograph which was too fuzzy to be of much use. Only much later did interpreters in Washington appreciate that it showed a prototype of a wholly new all-jet 4-engine bomber, the Mya-4 (Bison).[27]

Through the winter of 1953-54 most American officials and outside students of military affairs assumed that the Soviets lagged well behind the United States in design and production of long-range aircraft. They were aware of Soviet success in developing jet fighters, especially the MIG-15, which had performed well in Korea, and they had learned late in 1953 of an all-jet medium bomber, the TU-16 (Badger), which had reached the stage of flight testing. Most intelligence officers assumed that the Soviets would probably develop a relatively slow long-range bomber akin to the B-36. Even though the results of the Air Force ARCTIC YOKE study were not widely known and even though the authors of National Intelligence Estimates estimated that the Soviets could get up to 850 Bulls over targets in the United States if they flew them from all conceivable forward bases and if they either

dispatched the planes on one-way missions or equipped them for refueling, few analysts actually thought that the Soviets had or soon would have a real capability for large-scale intercontinental strategic warfare.[28]

The chief warning came from the Air Force, whose Chief or Staff informed an NSC meeting in February 1954 that the Soviets might be developing a bomber with characteristics somewhere between the B-47 and B-52. Citing the difficulties which American manufacturers had encountered in producing such an advanced plane, the President commented that he thought such a development unlikely.[29]

Then in April 1954 the Soviets put on display a model of their new Bison. The Director of Central Intelligence had to concede the Soviets were making more rapid progress in bombers than most intelligence officers had anticipated. The JCS circulated a memorandum saying that this new evidence concerning the potential Soviet strategic threat argued for an upward revision in the American defense budget. Outside of the Air Force, however, most intelligence officers believed the Bison to be still in the prototype stage and years away from actual series production.[30]

On May Day, 1955,the Soviets put in the air over Moscow not only several Bisons but also several models of the large turboprop TU-95 (Bear), which had not theretofore been sighted at all. This "fly-by" seemed to indicate that the Soviet Union was now engaged in full production of new, long-range bombers. While the Bison was thought by American aircraft specialists to lack the range for unrefueled intercontinental missions, the Bear was judged to be a genuine intercontinental bomber.

There developed a controversy between Air Force Intelligence and the CIA over numbers of Bisons and Bears which the Soviets were likely to produce. Air Force analysts took the view that the Soviets could force the pace of production, as in fact they had done with Bulls. Citing problems encountered by American manufacturers, constraints on factory space, and other claims on Soviet resources, CIA analysts predicted lower levels of output, particularly of the Bear. Because of Allen Dulles's view that the military Services should lead in evaluating intelligence, National Intelligence Estimates after May 1955 incorporated the Air Force forecast that, within 3 years, the Soviet Union would have 350 Bisons and 250 Bears and could launch a surprise attack in which 380 of these bombers, minus combat losses, would reach targets in the United States. (In actuality, the numbers in 1958 were to be 50 and 105.)[31]

Despite Allen Dulles's attitude, doubts about these numbers felt by CIA analysts were communicated to other people in the government. Faced with urgings from the Air Force that B-52 procurement be accelerated and other spending approved to strengthen SAC, Secretary of Defense Wilson responded that he did not believe a real Soviet strategic threat would materialize before 1960 at the earliest. Consistent with the principles of the "New Look," Wilson allocated to the Air Force much the largest share of the proposed FY 1957 budget (46 percent); but he insisted that the budget total not exceed $35 billion.[32]

In the circumstances, and with the President firmly backing Wilson, Air Force officers decided to make an appeal to Congress and the public.

LeMay felt passionately that the United States should maintain a long lead in strategic offensive forces, and the Administration had already angered him by slowing down procurement of B-52s and trimming allocations to SAC in order to transfer resources to missile research and continental defense. Many Air Force officers shared his attitudes. Others saw in possible congressional and public alarm over the Soviet threat a means for increasing the total Service budget with benefit to other elements besides SAC.

Journalists, such as the brothers Joseph and Stewart Alsop, with sources high in the Air Force, began to write of a prospective "bomber gap"--an approaching period when the Soviet Union would have more intercontinental bombers than the United States. This theme was taken up by some academics. It was then played with force by Air Force witnesses, including LeMay, during congressional hearings on the FY 1957 budget early in 1956.

To Democratic politicians and others disposed to criticize the Administration, allegations of a "bomber gap" had much more appeal than did the issues raised by Ridgway, Taylor, and other Army officers. The public could more easily understand and respond to warnings that its safety was in danger. The obvious remedies entailed more production and more jobs and not unpalatable recourses such as reinstitution of conscription.

In debate in the House, a few members called for amendments to increase general purpose forces, but more was heard of need to

increase allocation for strategic bombers. In the Senate, the latter was almost the only theme sounded. Senator Stuart Symington, a former Secretary of the Air Force and an aspirant for the Democratic presidential nomination, assumed the lead, and others ambitious for higher office echoed his words. The Senate agreed to create a special committee under Symington's chairmanship to investigate the state of American airpower. Predictably, its Democratic majority reported that the Administration was being dangerously niggardly toward SAC.[33]

The House and Senate ended up voting $900 million more for the Air Force than the Administration had requested--$800 million for procuring aircraft, particularly B-52s, and $100 million for research and development, chiefly for missiles. Nothing was added to the budget for the Army or Navy. Indeed, $100 million was cut from the Army budget and $50 million from the Navy budget.

The Army persisted for a time in questioning the doctrine underlying force posture plans. On 24 May 1956, General Taylor went to the White House to make, in effect, a final appeal to the President. He argued that by 1960 the Soviet Union would have enough thermonuclear bombs to create a condition of mutual deterrence. Looking toward such a condition, he pleaded, the United States should prepare for a war to be fought with conventional ordnance. Eisenhower, however, gave him no encouragement. At the outset of any war with the United States, he insisted, the Soviets would use nuclear and thermonuclear weapons for a surprise attack, and the United States would have to retaliate. He discounted the possibility of any lesser war, saying that he could not envision a case in which the

United States would commit more than a few battalions of ground troops. Even in such a case, Eisenhower said, he assumed that tactical nuclear weapons would be used. Taylor was told to reconcile himself to the fact that the Army no longer had a leading role in war planning.[34]

One buttress for Taylor's position collapsed soon afterward. Since most of the NATO governments found it politically impossible even to fulfill their existing commitments to the standing force, let alone increase them, and since the American government made acceptance of its doctrines a virtual precondition for military and economic aid, the NATO defense ministers agreed in principle both to the "plate glass wall" conception of the NATO standing force and to planning based on an assumption that tactical nuclear weapons would be employed.

In the circumstances, leaders in the Army altered their tactics. They ceased to raise questions about use of nuclear weapons. Indeed, Taylor proclaimed that American divisions would henceforth have a "pentomic" organization, with nuclear artillery integral to each. The only issue which Army officers continued to press concerned possible preparation for small-scale wars outside of Europe.

During all this time, naval officers took little or no part in the debate. Within the Service, the trend in thinking was somewhat like that in the Army. Indeed, Navy planning seemed to concentrate less and less on the contingency of a nuclear war with the Soviet Union. In July 1955 the Service officially abandoned the principle that all or almost all carrier aircraft should be fitted to deliver nuclear weapons. The Chief of Naval Operations limited to six the types of

fighters to be so equipped. The surface Navy's capability for nuclear warfare was still to be substantial, based on a projected total of more than 800 A4D, AD. A3D, and F3H fighter bombers, but the carrier fleet was to be prepared primarily for missions other than strategic bombing and was to be prepared also to fight wars in which there was no resort to nuclear weapons. The assumption at the upper level of the Navy was that, if the Service's role in strategic warfare expanded, it would be through growth of the nuclear submarine force and development of submarine-launched ballistic missiles.[35]

The Navy stayed out of the debates of 1955-56 because naval officers had no incentive to be openly critical of the Administration's force posture plans. The budget trimming associated with the "New Look" did not affect the Service's primary interests. The construction of supercarriers and the modernization of Midway- and Essex-class carriers was not to be interrupted. New types of carrier aircraft were to be acquired just about as soon as they could be produced. Nuclear submarine construction was to proceed on schedule, and there were to be adequate funds for research on missiles. Reductions in funds and personnel could be absorbed chiefly through cutting back on the amphibious fleet, trooplift capability, and antisubmarine warfare forces, none of primary concern to the Service's leaders. Remembering the results of the admirals' revolt, moreover, naval officers felt a positive incentive to avoid entering into renewed doctrinal debate with the Air Force. Hence, the Navy did almost nothing to promote questioning of the strategy to which the Administration and the Congress appeared to be committed.

The mold remained fixed. For fiscal year 1958, the Administration proposed new appropriations of $36.1 billion, but Eisenhower and Treasury Secretary Humphrey said publicly that they thought this total included some fat. Thus encouraged, Congress made reductions that brought the total to $33.7 billion. Nearly all the trimming came at the expense of nonnuclear general purpose forces.

With the Navy silent, the Army had been unable effectively to challenge the policy of placing chief reliance on strategic nuclear forces. Within the Administration, in Congress, and among the informed public during 1955-57, the allegation of a "bomber gap" focused congressional or public debate on the relative standing of the United States and the Soviet Union in strategic nuclear offensive forces. It turned attention away from the question of whether predominant emphasis on such forces produced a defense posture suited to the foreign policies to which the United States had become committed. Meanwhile, missile technology continued to progress, bringing ever closer a day when the United States might face obliteration, regardless of the level of its own capabilities for destroying other societies.

The Advent of Strategic Offensive Missiles[36]

When the Eisenhower administration took office, the research on guided missiles funded after June 1950 was beginning to promise fruit. The Navy was on the verge of actually deploying the 500-mile range, aerodynamic REGULUS on board a submarine. The Army was well along in work on the 200-mile-range REDSTONE, a highly mobile surface-to-surface missile. The Air Force had in progress a MATADOR cruise missile

of about the same range, the aerodynamic RASCAL designed for air launch, and three intercontinental missiles: the subsonic SNARK and supersonic NAVAHO, both aerodynamic, and the ballistic ATLAS. Among Air Force officers directing missile research, the three were regarded as sequential--the SNARK to come on line in 1953, the NAVAHO to succeed it around 1959, and the ATLAS to materialize in the mid-1960s. Tests of SNARK prototypes in 1952 had, however, had mixed results. The potential delivery date for operational missiles had slipped to late 1955 and was still moving. The NAVAHO program was also having trouble, and the ATLAS was still at an early stage of design.

Prospects for any long-range missile remained doubtful. In 1945, an Army Air Forces Scientific Advisory Group under the chairmanship of Dr. Theodore von Karman had questioned whether an intercontinental ballistic missile would ever prove feasible. Though many specific doubts of that earlier period had since been allayed, there were still no guidance systems able to ensure high accuracy even to missiles of shorter range. While the AEC had demonstrated ability to produce fission warheads which could be married to missiles, it seemed to be a long way from producing appropriate thermonuclear warheads, the explosive power of which could compensate for shortcomings in accuracy. The missiles of aerodynamic design were limited in speed. While ballistic missiles could travel at very high speeds, it seemed questionable that any warhead they carried could actually go into space and return to the atmosphere without being destroyed by friction and heat. A committee headed by Dr. Clark Millikan of the California Institute of Technology

reviewed the evidence during 1952 and concluded that very-long-range missiles were feasible but that they should be expected to achieve accuracies measurable in miles rather than feet and that no ambitious development effort should be undertaken until many technical problems had been overcome.

Although missile programs still involved relatively small sums, they naturally came under scrutiny during the period of the "New Look." Partly for budgetary reasons, partly because of Air Force objections to possible competition with its own missions, the Army was told by the Secretary of Defense that it could not adapt REGULUS missiles to its purposes. Apparently after discussion of programs at an Armed Forces Policy Council meeting and some pressure from OSD, the Air Force cut its guided missile programs from $485.5 million to $385.4 million for fiscal year 1953 and revised its fiscal year 1954 program--downward to $271.8 million.[37]

No doubt there existed among some Air Force elements doubt about the future role of guided missiles. The leaders in the Service were pilots, naturally skeptical about unmanned aircraft. Because of fear that a manned bomber could not drop a thermonuclear device and get away safely, the heads of SAC and the Air Research and Development Command had embarked on a serious effort to develop drones for such missions. As soon as they learned that their fear was baseless, however, they had abandoned that enterprise.[38] When paring the budget for fiscal year 1953 and fiscal year 1954, the heads of the Service were prepared to eliminate the SNARK altogether rather than pursue attempts to improve its faulty guidance system.

Among missiles earmarked for continued investment were ones complementary to bombers--the air-launched RASCAL and a new air-launched CROSSBOW specially designed to strike against enemy radar. Given the more than 250 men assigned to the project at Oak Ridge, the nuclear-powered manned bomber seemed still to have a high development priority in competition with surface-based missiles.[39]

Just as the "New Look," combined with lack of high-level interest in the Air Force, seemed likely to stall missile programs, however, two important technological developments intervened. The first had actually occurred in 1952. Dr. H. Julian Allen of the Ames Laboratory of the National Advisory Committee on Aeronautics came up with the "blunt nose" principle which offered hope of solving the reentry problem for warheads on high-flying ballistic missiles. Secondly, and with more immediate impact, the AEC demonstrated in a series of tests in early 1954, code-named CASTLE, [redacted] thermonuclear devices and concluded that one small enough, light enough, and sturdy enough to be fitted into the nosecone of a long-range missile could be developed.[40]

Coincidentally, intelligence reports indicated that the Soviets had ambitious missile development programs. As early as 1948, Germans repatriated from Russia nad told of Soviet work based on captured records and personnel from Peenemunde. By the early 1950s, both Air Force Intelligence and the CIA had begun systematically to assemble much evidence. The level of effort in both agencies was still well below that for gathering and analyzing evidence on Soviet bomber

programs,but a few individuals, such as Robert Komer at CIA, had begun to argue that Soviet advances in missilery deserved greater concern. In August 1953 the attention of the highest officials in the government was engaged by Malenkov's boast that the Soviet Union had tested a hydrogen bomb. Air Force Intelligence and CIA tests subsequently confirmed that the Soviets had detonated a thermonuclear device. A National Intelligence Estimate distributed to members of the NSC in February 1954 assigned to the Soviets a capability for [redacted]

Earlier, in 1953, during an extended interdepartmental review of missile programs directed by Secretary of Defense Wilson, the Air Force decided to undertake its own evaluation of its requirements and efforts. The Special Assistant to the Secretary of the Air Force for Research and Development, Trevor Gardner, established on 31 October 1953 a Strategic Missiles Evaluation Committee (known as the Teapot Committee) with John von Neumann as chairman. Anticipating what the results of the CASTLE tests would be, the Committee found in its final report on 10 February 1954 that accuracy requirements for long-range missiles could be substantially relaxed. The Circular Error Probable (CEP) could be extended from 1,500 feet to as much as 3 miles. The Committee drew on a RAND report to the Air Force, written by Bruno Augenstein and dated 8 February, which offered an identical recommendation.

Forecasting the eventual eclipse of the manned bomber as the mainstay of the U.S. strategic offensive force, the von Neumann committee urged that all long-range missile programs be put into high gear. They portrayed the SNARK as having possible uses during the twilight of the manned bomber era, serving as a decoy or a defense

suppression device or being wired so that it could be shepherded toward its destination by a bomber which could then dispatch it to an exact target from several hundred miles distance--used, in other words, as a "stand off" weapon. The committee recommended that the NAVAHO be developed initially as a missile of less than intercontinental range so that it could be put into operation before the end of the decade. It advised that IREMs also be developed within the same period. With regard to the ATLAS project, its emphatic recommendation was that the Air Force assign its best officers to a well-funded, well-organized crash program, following the systems approach pioneered by the RAND Corporation, to achieve an operational ICBM by the beginning of the 1960s.

The Teapot committee not only laid out an extremely ambitious development program, it also identified some of the central problems to be anticipated in the missile era. One was the problem of decision time. Since enemy ICBMs could reach their targets in a matter of minutes, the question arose as to how much time could be allowed for ordering and carrying out a retaliatory attack. If the U.S. Government waited too long, its retaliatory forces might be destroyed. This possibility raised in turn a question as to how much should be expended to reduce the vulnerability of the U.S. missile force and further questions as to how a President was to ensure his own survival and continued capability for communicating with and controlling U.S. strategic forces, what were to be the targets for these forces--Soviet cities and industrial centers or Soviet ICBMs or both--and, coming

full circle, whether, in a crisis, the United States should strike first in order to limit the damage which the enemy could inflict. Recommending merely that decision time, vulnerability, and yield be considerations in the systems approach to ICBM development, the von Neumann committee report offered no clear solution to these doctrinal issues, but it did note their existence.[42]

Perhaps persuaded by the Teapot committee, perhaps just influenced by the same factors, especially the actual success [redacted] during the CASTLE test series the top civilian and military leaders in the Air Force agreed in May 1954 to give the ATLAS highest priority among the Service development projects. That this did not yet represent a complete change in view is indicated by the fact that comparable priority was not given to the SNARK or the NAVAHO, which were further along, and that, because the ATLAS was still at such an early stage, the immediate costs of the decision were not large. For FY 1955, the total funding for the project was to be only $20.7 million, less than the sum that might be freed by suspending further development of the SNARK. An even stronger indication is that in the same month LeMay told the Joint Committee on Atomic Energy that the nuclear-powered bomber had top priority for SAC, and the Air Force committed $15.5 million for a laboratory in Connecticut designed to do research on engines for such a bomber. In December 1954 and January 1955 the Air Council reviewed the nuclear-powered bomber project and endorsed it in its entirety, including a new requirement for supersonic dash.[43] As of that date, the Air Force seemed destined to put most of its money for strategic offensive forces for the 1960s into a new type of manned bomber.

Nevertheless, the papers assigning priority to the ATLAS had been signed by the Secretary and the Chief of Staff of the Air Force. Various offices in the Service took action. Eventually, Brig. Gen. Bernard A. Schriever was put in charge of a Western Development Division of the Air Research and Development Command. He had wide powers. Following the recommendation of the Teapot committee, he enlisted analysts from RAND and elsewhere and commenced an energetic attack on all the interrelated development problems. On the Washington end, he had zealous backing from Gardner.

When the Teapot committee was at work, one question pursued by both Gardner and von Neumann concerned the state of comparable Soviet programs. The original draft of its report had said "most of the members of this Committee, on the basis of the available evidence, believe that the Russians are probably significantly ahead of us in long-range ballistic missiles." They finally said that available intelligence permitted no positive estimate but that there was evidence of some Soviet activity which would have an intercontinental missile as its goal. Gardner complained to the Assistant Secretary of Defense for R&D that he and the committee had received several intelligence estimates pointing to a Soviet lead in strategic missilery but they were "substantially different." With blessing from the Chairman of the JCS, an effort commenced to obtain a coordinated evaluation of the evidence. While the work was in progress, communications intelligence, supplemented by a reconnaissance overflight, yielded firm evidence that the Soviets not only had a missile test range at Kapustin Yar in the

Black Sea region but were preparing for tests of missiles with ranges up to 900 miles. A National Intelligence Estimate completed in October 1954 credited the Soviets with a large-scale development program likely to yield a 900-mile ballistic missile between 1955 and 1957, a 1,300-mile IRBM by 1957 to 1959, and an ICBM perhaps by 1960, more probably around 1963. This last item was featured in January 1955 in the annual NSC document on basic national security policy, along with a general admonition that the U.S. ICBM program "should approximate this timetable."[44]

Largely as a result of the concern about continental defense, the President had meanwhile appointed a committee to advise him on "the country's technological capabilities to meet some of its current problems." Called the Technological Capabilities Panel, it was headed by President James R. Killian, Jr., of M.I.T. With a broader mandate than that of the von Neumann committee and with the President rather than a Service secretary as its patron, Killian's committee reviewed the actual and potential missile programs of all the Services and made its report on 14 February 1955.[45]

This committee, too, expressed grave concern about the possibility that the Soviets would produce an ICBM before the United States did. Its possession by the Soviets would in any case nullify the geographical advantage historically enjoyed by the United States, said the panel. If the United States were unable to match "threat for threat," its allies in Europe and elsewhere could be subjected to intolerable pressure.

From identical reasoning, Killian's group argued that IRBMs also deserved attention. Soviet IRBMs could menace Europe and, if based in

Siberia and China, be targeted also against Japan, Okinawa, the Philippines, and Alaska. If the United States had no matching capability, the Soviet Government could use its apparent advantage as a basis for potentially successful extortion threats. Since it seemed clear that the United States could not have an ICBM before the Soviets had an IRBM and since the technological problems facing IRBM development, though by no means small, were less formidable than those facing Schriever, the panel argued for an urgent effort to produce and deploy IRBMs before the end of the decade. Acknowledging basing and targeting issues, the panel urged work on a sea-based as well as a land-based IRBM.

With accelerated procurement of the B-52 and other aircraft ensured in response to the "bomber gap" agitation and with the nuclear-powered bomber not yet at a stage needing large-scale funding, the Air Force showed no hesitation in accepting this high-level endorsement of its ICBM effort. Already planning to develop a successor to its MATADOR missile, it had little difficulty accommodating the notion of adding an IRBM program. With a longer range REDSTONE already in view, the Army similarly reacted favorably to the Killian committee proposal. Though the Navy had a small number of fleet ballistic missile enthusiasts, some of whom had had a hand in the Killian panel's recommendation for a sea-based IRBM, the Service's top leaders were wary of becoming committed to a weapon system that might revive a roles-and-missions conflict with the Air Force and, worse yet,

might pull money away from aircraft carriers or nuclear submarines. They agreed only to cooperate with the Army on an IRBM potentially adaptable for deployment at sea. Because of the large ultimate cost implications, the Secretary of Defense and his aides exhibited more reservations about the Killian panel's recommendations. In the end, however, they agreed to an endorsement, qualified only by a strong statement that most of what the panel advocated was not readily provided for in currently funded programs.[46]

Though the President doubted that usable long-range ballistic missiles could materialize within the next decade and felt that competing Service efforts would waste money, he was not proof against a consensus among members of the NSC, backed, as they were, by the Joint Committee on Atomic Energy. On 30 June 1955, Senators Clinton P. Anderson and Henry M. Jackson had sent a letter to the President expressing their fears that the Soviets were winning the ballistic missile race and suggesting the assignment of the highest national priority to the U.S. ballistic program. The Director of Central Intelligence had briefed the NSC on 28 July 1955, just after the President's return from the Geneva summit meeting with Khrushchev. Dulles may have repeated what appeared in a memorandum he had written just before that meeting--that "the Soviets almost certainly recognize that even when their nuclear capabilities approach those of the United States, the dangers inherent in full-scale nuclear war to the Communist system will not be appreciably reduced." Probably also, however, he reported the alarm felt among members of a committee he had recently assembled to study Soviet missile programs. Assuming erroneously that the missiles could come from plants currently producing airframes and that their shells would be stainless steel instead of

aluminum, the committee set potential Soviet missile output at a high figure; and it had before it newly obtained evidence that a 3500-mile test range was going in at Tyuratam. Dulles presumably shared this intelligence with the NSC.[47]

Perhaps some members of the Joint Committee on Atomic Energy also had such information. In any case, Senator Henry M. Jackson, speaking for the military applications subcommittee of that committee, chose the next day, 29 July 1955, to advise members of the NSC that the subcommittee feared the Soviets would beat the United States to both the IRBM and the ICBM and that it believed the ICBM should be "the single most important project in our entire defense program." On 8 September, when the NSC had before it both the Killian panel report and the Defense Department response, its members agreed that there would be "the gravest repercussions on the national security and on the cohesion of the free world, should the USSR achieve an operational capability with the ICBM substantially in advance of the U.S."; that, "in view of known Soviet progress in this field, the development by the U.S. of an operational capability with the ICBM is a matter of great urgency"; and that ICBM R&D should have "the highest priority above all others." In regard to the IRBM, the group temporized, asking the State Department to report its judgment of the potential effect of the Soviets acquiring such a weapon system ahead of the United States. The Vice President presided over this session. When the President reviewed the recommendations however, he indicated his acceptance.[48]

The President reconciled himself also to endorsing IRBM development. All Services strongly advocated the IRBM, arguing, as had the Killian panel, that it would offset a Soviet ICBM if that particular race happened to be lost. The Navy's new Chief of Naval Operations, Adm. Arleigh Burke, was far more interested than his predecessor in the Navy's having a ballistic missile. John Foster Dulles answered the open question by telling the President that the effects of a Soviet IRBM would equal those of a Soviet ICBM. On 3 June 1955, Secretary Wilson had concurred with the need for an IRBM and informed NSC that he would have specific recommendations ready by 1 December. After interservice debates, Wilson accepted on 8 November a Radford-proposed compromise calling for development by the Air Force of what became THOR and jointly by the Army and Navy of what became JUPITER. On 1 December the President accorded the IRBMs an R&D priority rating equal to that assigned the ICBM on 8 September.[49]

Secretary of Defense Wilson set up special committees to oversee the various projects. The Army's REDSTONE rapidly evolved into a 1,500-mile JUPITER. The Air Force's 1,500-mile THOR followed close behind. Advised by a scientific panel that both solid fuels and lightweight thermonuclear warheads would be available in the not-distant future, Admiral Burke elected to separate the Navy's effort from that of the Army; in December 1956 he set up a Special Projects Office to manage systematic development of what would materialize as the POLARIS. Obligations for IRBM and ICBM programs went from $515 million in fiscal year 1956 to $1,365 million in fiscal year 1957.[50]

The pressure for early results affected interim resolution of the strategic-doctrinal issues touched upon by the von Neumann committee. CEP requirements were relaxed to permit standard errors of up to 2 miles. This was necessary, one Defense official explained, because "our

objective is the development at the earliest possible date of militarily usable weapons which will retain our lead in the race for technological weapon supremacy." Such error allowances implied, however, that the missiles would be aimed at large population centers. Assuming any serious effort by the Soviets to protect their strategic offensive missiles, U.S. missiles could not realistically be targeted against them. The notion of developing missiles for a "counterforce" strategy as opposed to a "countervalue" strategy,* ventilated publicly by Richard Leghorn and Theodore Walkowicz in 1954 and later championed within the Air Force by, among others, Brig. Gen. Noel Parrish, could not apply to weapons of such uncertain accuracy.[51]

Coincidentally, the Secretary of the Air Force and certain elements at the AEC were promoting the development of very-high-yield warheads -- up to 60 MT. It is possible that the objective was to equip ICBMs for counterforce missions even if they had high CEPs, but the available record does not say. In any case, the pilots in the Air Force showed little enthusiasm for warheads clearly too powerful for delivery by manned bombers, and the President ultimately vetoed development of high-yield warheads because of concern about radioactive fallout from atmospheric tests.[52]

Although Schriever's analysts attached high importance to making the ATLAS safe against a Soviet first strike and thus capable of serving as a genuine retaliatory force, pressures of time compelled the Western Development Division to plan initial deployments of missiles bunched in unhardened sites, subject to wholesale

*Countervalue referred to urban targets.

destruction if an enemy thermonuclear device exploded within 9 miles. In the circumstances, attention went to ensuring that the missile could be fired in a hurry--a point of emphasis that, in any case, comported well with the tradition of instant readiness that LeMay had built up within SAC. Though Schriever's analysts specifically rejected the concept that ICBMs should be set to launch upon warning of an enemy attack or even to launch upon attack, arguing that such hair-trigger responsiveness could be perilous in case of false intelligence or a breakdown in communications, the initial system was so designed that it allowed almost no option.

Planning documents prescribed alternatives. Looking toward the achievement of smaller and smaller CEPs, they anticipated eventual counterforce targeting. They also anticipated decreasing vulnerability by use of silos or mobile platforms. Subsequently, as appropriate technology materialized, all these possibilities were to be revived and reviewed. Interim solutions for complex problems, however, have a way of lasting. The assignment to ICBMs of an assured destruction mission, together with an inference that the missile might be launched under attack if not upon warning, were to be solutions persisting long after the time pressures of the 1950s had relaxed.

By 1957 in any event, the THOR, JUPITER, and ATLAS systems were all ready for tests. The President retained his reservations. In the summer of 1956 he expressed doubt about authorizing procurement of more than a token number of these early missiles. In February

1957, he told the British Minister of Defense, Duncan Sandys, that "too many people attach too much importance to the use of guided missiles." According to Ray Cline, then head of the Directorate of Intelligence for CIA, Eisenhower expressed surprise when told in May 1957 that the Soviets seemed on the verge of testing a missile with a range in excess of 5000 miles even though the U.S. Air Force was also on the verge of such a test. In August 1957, Eisenhower nevertheless continued to press the Defense Department to cut back its planned expenditures for missiles.[53] Then came the Soviet Sputnik shots.

So far as ICBM development was concerned, the Sputnik shots merely demonstrated that the Soviets were just about even with the United States. They tested their SS-6 successfully in August 1957. A U.S. ATLAS-A failed a test during the same month. A second test in September was also a failure, but a third, in December, was a complete success. And the ATLAS-A, despite all its primitive features, was a more advanced system than the lashed-together SS-6. Still, the Sputniks produced shock among Americans because they demonstrated that the United States had allowed itself to be matched in a major line of strategic weapons technology. Since the possibility of such a Soviet success had not been ignored, the question that arises is why the United States had not pursued this line of technology sooner and more vigorously, exploiting the still enormous gap between its research and production capabilities and those of the Soviets.

As already suggested, the basic answer may be that long-range missilery did not initially have strong enough champions within the U.S. Government. Army artillerymen who were interested in and confident about the weaponry could not secure prime responsibility for the mission. The bomber pilots who did have the mission were unenthusiastic about pilotless aircraft and not easily awakened to a view that the future of their Service might lie not with any type of aircraft but with giant-size bullets. It took zealous entrepreneurship on the part of people like Talbott, Gardner, and Burke, and organizational innovation in forms such as Schriever's Western Development Division and the Navy's Special Projects Office to get intensive work going on long-range missiles. The United States did not have a powerful artillery tradition and interest comparable to Russia's.

Continental Defense[54]

The beginning of the Eisenhower administration coincided not only with the commencement of the missile era but also with the end of the long period in which the continental United States had been virtually invulnerable to enemy attack.

That long-range bombers and nuclear weapons would spell the end of America's safety had been ritually noted in the Finletter and Brewster reports* and almost all documents of the late 1940s dealing broadly with airpower or U.S. national security.

Within the military establishment, the potential threat had received some attention. The Air Force and Army had wrangled over the continental air defense mission, with the Air Force winning the primary assignment as a result of the Key West debates of March 1948

*See above, pp. 26-29.

but with the Army still left in control of antiaircraft artillery. The practical outcome was side by side growth of an Air Force Air Defense Command* and a continent-wide Army Anti-Aircraft Command. Although the Korean War period had been marked by periodic alerts in both commands, combined with operational deployments which suggested genuine concern about possible sneak air attacks on U.S. nuclear production facilities, the two had not signed an agreement outlining bases for cooperation until April 1952, when the war was almost in its third year.

The Air Force and Army did each contain elements which took seriously the task of preparing defenses against bomber attack. The Air Defense Command had sought to acquire all-weather jet interceptors capable of coping with jet bombers. Not offered any entirely suitable design during the period when funds were flowing freely, the ADC had settled for acquiring large numbers of successive models of the F-86, F-89, and F-94 and accepting for future delivery the planes which were to be designated F-101, F-102, and F-106.

The idea of a Distant Early Warning (DEW) Line in the northern reaches of Alaska and Canada had been revived, with Air Force consultants in Project Charles, supplemented in 1952 by a Summer Study Group, counselling that all technical problems could be solved. And a start had been made by the Air Force on air defense missilery. The BOMARC, a 250-mile-range high-altitude surface-to-air missile had successfully passed its first tests in September 1952.

*For a brief period, 1 September 1949-1 January 1951, part of the Continental Air Command.

The Army had given high priority to the NIKE-1 air defense missile even during the period of budgetary stringency. During the Korean War, work had been speeded up, and missiles were actually being delivered by the month of Eisenhower's inauguration. The Army had also begun installation of its own radar for target tracking and gun or missile control--the AN/FSG-1, known as the "Missile Master." And the Air Force and Army were engaged in research on the potential problem of defense against ballistic missiles. On the whole, however, although the bomber threat and the more distant missile threat had engaged the attention primarily in the Air Force and Army commands with air defense assignments, they had not as yet become central problems for the Service Chiefs of Staff, let alone for their civilian superiors or for the Truman White House.

Not until the last months of the Truman administration did the subject of continental defense appear on the agenda of an NSC meeting. In late December 1952, President Truman somewhat reluctantly endorsed for his successor a recommendation for constructing the DEW Line. In a valedictory paper, NSC 141, Truman and the NSC also left to Eisenhower a warning that by the mid-1950s nuclear armed Soviet bombers could wreak critical damage in the United States unless planned expenditures of $3.2 billion for fiscal year 1953 and fiscal year 1954 were supplemented by another $8.5 billion.[55]

This NSC paper made the point that the success of U.S. policy hinged on a threat to use nuclear weapons in the event of a general

war. To the extent that the Soviets were able to menace the continental United States with their own nuclear weapons, the U.S. threat would become less credible, particularly if the Soviets were to produce thermonuclear weapons. The conclusion drawn was the need for "the allocation of large additional resources to continental defense and civil defense." Although the body of the paper gave equal or greater importance to maintaining U.S. capability for "an atomic counterattack of a size unacceptable to the Soviets" in face of their "increasing atomic capabilities and air defense," it proposed additions to the budget, primarily for improving defense of urban and industrial areas in the continental United States. Of the items priced, $6.5 billion consisted of interceptors, antiaircraft guns, missiles, and anti-submarine forces; $1.5 billion consisted of radar and associated computers and long-range sound surveillance for submarine detection (LOFAR). The costs of the DEW Line were on top of these. The case for expenditures on civil defense was made in terms of an estimate of 22 million casualties in case of a surprise attack; only half as many, with two-thirds of them possibly surviving, if a civil defense organization and a moderate shelter program were in existence. The potential costs were appraised vaguely at between $2 billion and $10 billion.

Such recommendations obviously ran contrary to the wishes of the new Administration, bent as it was on reducing federal expenditures. On the other hand, it could scarcely deny the existence of the problem which NSC 141 identified.

During the first few months of Eisenhower's tenure, the problem repeatedly surfaced. In May, for example, the NSC discussed whether or not the President should release information on the devastating power of thermonuclear weaponry demonstrated in the Eniwetok tests of October - November 1952. Scientists Vannevar Bush and J.Robert Oppenheimer, present for this discussion, took occasion to describe the possible effects of Soviet nuclear or thermonuclear attack. Bush said that added air defense would not provide 100-percent protection but would "deter or postpone attack." Delay, he said, could bring grave danger--of, among other things, "a greater Munich." Even Treasury Secretary Humphrey, despite his preoccupation with cutting the budget, was troubled by the discussion. He spoke of "the terrible facts presented to the Council."[56]

In June 1953, the NSC heard a report from Lt. Gen. Idwal H. Edwards, USAF, whom Truman had commissioned to prepare a net assessment of damage the United States and the Soviet Union could do to one another in the event of nuclear war. Though the committee's damage and casualty estimates were not in low numbers, Edwards took occasion to express doubts about the quality of Soviet aircraft and to say that, in his judgment, no Soviet surprise attack would occur in the foreseeable future except as "an act of desperation." Eisenhower, deep in his effort to identify a line of policy permitting budgetary economies, indicated agreement with much of what Edwards said. He even questioned the utility of the DEW Line, saying that the Soviets were most likely to fly across the Bering Strait. Foreshadowing what would eventually be his own formula for the continental defense problem, he did, however,

express concern about the potential vulnerability of SAC bases and the question of whether and how they could have two hours warning of an approaching attack.[57]

In July 1953, what brought the subject back before the NSC was a report from a committee Eisenhower had appointed, headed by his old Army comrade, Lt. Gen. Harold R. Bull, to examine the program recommendations of NSC 141 as they had been amplified for the Defense Department in a report from M.J. Kelly, the President of Bell Laboratories. Unlike Edwards, Bull adopted and defended an estimate that the Soviets had "a growing capability to deliver a devastating attack on the United States." In the background was a recent report from CIA that the Soviets might already have developed a bomber of true intercontinental range. Characterizing existing continental defenses as entailing "unacceptable risk to our nation's survival," Bull's committee advocated spending money for early warning systems and interceptors even if they served only to provide protection for the near term and became obsolete when long-range missiles appeared. The committee did not, however, recommend exact sums, and the core of its argument was rather more in line with Eisenhower's expressed views than with views appearing in NSC 141. While saying little about civil defense, it stressed that U.S. "offensive capability is a most significant deterrent to Soviet atomic attack upon the continental United States." This capability, it continued "must be maintained not only for gaining our war objectives, but for its marked deterrent value in protecting our homeland."[58]

TOP SECRET

In the late summer and early autumn of 1953, as the New Look took shape, continental defense inevitably drew attention. At the very NSC session where the Deputy Director of Central Intelligence reported Soviet success in developing a thermonuclear device and confessed that it had occurred a year ahead of the most pessimistic CIA estimate, Secretary of the Treasury Humphrey disclosed his view that continental defense could represent a money-saving alternative to existing overseas commitments. At a later NSC meeting--well after the 1954 Indochina crisis--he was to ask, "since we will eventually get pushed out of certain areas, would we not be better off if we withdrew from those places like Indo-China before we were actually pushed out?" In August 1953, he had said that the United States could either add continental defense to its burdens or as Radford had put it, cut down on what we were doing elsewhere and jack up our continental defense.[59]

From the standpoint of the dominant elements in the Services, the choice seemed more one between continental defense and offensive forces, including ready general purpose forces, and maintenance of a mobilization base for a large-scale, prolonged war. To the Secretary of Defense, they argued that the Soviet thermonuclear test and the Bull report made a case for additional funding, not for transfers within budgets already tightly squeezed. Before the NSC in September 1953, Radford contended that the Soviet threat was easily exaggerated and thus seen to necessitate impossible outlays for continental defense. The JCS, he said, thought it unwise to accord a preclusive priority to defense measures as against offensive measures.[60]

Programmatically, the Services had little new to offer. The JCS proposed to the Secretary of Defense in November 1953 construction of the Mid-Canada Line--a belt of radar stations halfway to the projected DEW Line; continued study of the feasibility of that line; 6 radar picketships for seaward extension of the Mid-Canada Line; airborne early warning planes plus offshore "Texas Towers" and radar ships to cover the ocean approaches to the continental United States; gap filler radar; LOFAR: a semi-automatic ground control system (SAGE) for interceptors; modest additions, perhaps 100 to 200 planes a year, to the active interceptor force; and antiaircraft and NIKE battalions. Still battling against cuts in ground force manpower, the Army was reluctant to seem to ask supplements for continental defense. Hence, the JCS submission merely specified 100 such battalions as a minimum and 150 as a maximum, and it said nothing about possible acceleration of defensive missile programs.[61]

The OSD staff estimated in late November the costs for continental defense as $2.9 billion for fiscal year 1954 and $3.5 billion to $3.9 billion for each succeeding year through 1958. Subsequently, the Director of the Budget maintained that allocation for continental defense had to be increased even while defense expenditure as a whole had to come down by no less than $6 billion. Despite objections from the Army and Navy, McNeil indicated at the 16 December meeting of the National Security Council that allocations of $4.3 billion to $4.5 billion, instead of only $3.5 billion might be required for "continental defense." Whether OSD was serious in advancing these figures is questionable since 2 months later the final allocation in the FY 1955 budget was for $3.2 billion. Although the differential between the figure finally agreed upon and that suggested in

mid-December was substantial, it is more important to note that the Administration did propose a modest increase in spending over the preceding year's $2.9 billion. This decision moreover stood in sharp contrast to the large drop in total defense expenditures from $43 billion in fiscal year 1954 to $37.6 billion in 1955. Still the message for the Services was clear-- they could not use continental defense requirements to gain concessions on the budget as a whole.[62]

Eisenhower's own preference had been restated during the NSC meeting which saw adoption of the New Look in October 1953. He said his policy was "to keep the minimum respectable posture of defense while emphasizing our retaliatory offensive striking power." At the time, however, he did not acknowledge that such a policy in itself offered little promise of limiting damage to the United States in the actual event of war. He went on to say, "Nobody. . .could possibly deduce from such a statement that we propose to abandon the defense of, say, New York City."[63]

Continuing to question the specific warning and protection systems bracketed under continental defense, the President commissioned yet another study, this by Dillon Anderson who would eventually succeed Cutler as his national security assistant. On the basis of fresh estimates from CIA crediting the Soviets with growing strategic offensive capabilities but saying that they were unlikely to force a general war during the next 3 to 4 years, Anderson's report in February 1954 divided continental defense programs into three categories. First, were those to be completed with "all practicable speed:" The Mid-Canada Line and its seaward extensions; the warning net for U.S. coasts; antiaircraft battalions and interceptors equipped with missiles rather than guns. The report emphasized that it might be possible to achieve higher kill ratios with fewer planes if they were better armed. The second category consisted of programs to be completed over a 2-year period: DEW line preparations, SAGE, gap filler radar, LOFAR, and various

steps preparatory to developing active civil defense and urban evacuation programs. The third, least urgent category consisted of stockpiling for civil defense and actual initiation of measures to reduce the vulnerability of cities. As Anderson reckoned them, the essential costs for first-priority programs would be only $2.7 billion to $2.8 billion for fiscal year 1954 and fiscal year 1955. With the President presiding, the NSC approved the report.[64]

Dispute nevertheless continued. As the Administration's policy had evolved, civil defense had received little attention, and emphasis had increasingly gone to short-term projects employing existing technology rather than to more long-term programs dependent in part on accelerated R&D. Along with the reduction in general purpose forces quietly protested by Ridgway and less quietly protested by Democratic Senators, both of these points were noted publicly by members of Congress and journalists when the FY 1955 budget went to Capitol Hill. A subcommittee of the Senate Armed Services Committee undertook an investigation centered on the application of new technology to continental defense problems of the near and not-so-near future. It was headed by Leverett Saltonstall of Massachusetts, many of whose constituents earned their living in advanced lines of defense R&D and production. It employed as chief consultant Robert Sprague, Chairman of the Board of Sprague Electric in Saltonstall's home state, a close associate of scientists and engineers who had been involved in Project Charles and the Summer Study Group, and soon to be one of the founders of the MITRE Corporation.

Neither in the executive branch nor in Congress nor among the public did civil defense find an effective champion. The head of the Federal Civil Defense Administration, former Governor Val Peterson of Nebraska, was not a heavyweight among Eisenhower's counselors. Arthur Flemming, in charge of the Office of Defense Mobilization, had more influence but expended little of it for this particular cause. No one came forth to argue for higher priority for stockpiling, evacuation, or shelter programs.

Nor did anyone seriously level the charge that Eisenhower had feared-- that the Administration planned to abandon the defense of New York City. Especially after the "bomber gap" was publicized, concern was widely voiced about the potential threat to U.S. urban areas. Within the defense establishment there circulated, almost coincidentally, a RAND study estimating that active air defense for major U.S. cities would cost $30 billion to $60 billion for the period 1954-60 and, even so, would ensure no more than bare survival.[65] Though the precise figures might be challenged, the conclusions were inescapable that it would be very expensive and that some bombs would still reach their targets.

Critics in any way sympathetic with the Administration's efforts to balance the budget found it difficult not to narrow their focus to the question simply of how to protect the retaliatory forces. Sprague easily adopted such a focus. From the outset, he was making inquiries about the vulnerability of SAC bases. The other line of questioning he pursued had

to do with the potentialities of nuclear-armed air-to-air rockets. To the Saltonstall subcommittee he recommended a higher level of effort, but chiefly along lines laid out in the Anderson report.[66]

The Administration was sufficiently pleased and relieved to ask Sprague to continue his work as a consultant in the executive branch, preparing a report for the NSC. The invitation, was issued in mid-May 1954, only a month since the decision not to reinforce the French at Dienbienphu, and only 2 weeks since the "bomber gap" prospect had surfaced. On 29 April 1954, Allen Dulles had briefed the NSC on the appearance of the new Soviet Mya-4 bomber, the Bison, cautioning that past estimates might have to be revised and the time for adapting to a greater Soviet threat markedly shortened. Even earlier, the President had expressed dismay at learning that the new U.S. B-52 could outrun existing U.S. interceptors.[67] With Eisenhower smarting in any case on account of charges that he was sacrificing security for the sake of economy, the Administration was in a frame of mind to accept from Sprague advice that at least a little more be done for continental defense.

In early June, the NSC heard from the JCS Joint Advanced Study Committee an assertion that the Soviets would have achieved such power by 1957 that they could mount a surprise attack which would do massive damage to the United States. Also on this occasion Radford issued his warning about a possible Soviet thermonuclear-armed intercontinental missile materializing by 1958.[68]

When the tentative guidelines for the basic national security policy for fiscal year 1956 were reviewed by the NSC early in the summer of 1954, Cutler noted that the staff was divided over the choices of taking "whatever measures were necessary" or "all practicable measures." Commenting that the first position was "rooted in the erroneous assumption that you could have an absolute defense of our retaliatory capability," the President expressed decided preference for the second phrasing. On the other hand, he was far from siding with Secretary Humphrey in insistence that first priority go to keeping the budget down. At a meeting in late May, he had said to Humphrey: "...when we have reached the irreducible minimum which we need to safeguard the national security, we must all be ready to carry the fight to the politicians in order to prevent further reductions. We can never under any circumstances say that we cannot defend our country." He even mentioned new taxes as a possibility. At this June meeting, he admitted to Humphrey: "Obviously,...our earlier estimates of Soviet capabilities were faulty. Accordingly, we will need to step up our military capabilities in certain specific areas, though not across the board."[69]

The President persisted in this view. The NSC Planning Board unanimously recommended a U.S. policy "that (a) it was essential for the U.S. to maintain the striking force necessary to deal massive nuclear retaliation to the U.S.S.R. and (b) that it was essential for the U.S. to take all practicable measures to protect their retaliatory capacity against any foreseeable Soviet attack." Eisenhower registered no

objection; nor did he protest Sprague's recommendations for urgent new work on warning nets and nuclear armed air-to-air ordnance. Hearing subsequently from Assistant Secretary of Defense Donald Quarles an offhand estimate that stepping up the development of early warning systems and antiaircraft rockets would cost about $1 billion, the President said he would be prepared to recommend a supplemental appropriation if it were really needed. On 5 August, he formally approved as his policy an NSC declaration that the United States should "accelerate" continental defense programs "to the fullest extent deemed feasible and operationally desirable and give to these programs very high priority...." [70]

Subsequently, the President showed no inclination either to back away from this decision or to go further. In September 1953, after absorbing news that the Soviets had a thermonuclear device, he had broached with his advisers the possibility of preventive attack: "It looked to him ... as though the hour of decision were at hand, and that we should presently have to face the question of whether or not we would have to throw everything at once against the enemy." He explained "that he had raised this terrible question because there was no sense in our now merely shuddering at the enemy's capability. We must determine our own course of action in light of this capability." [71] No serious debate ensued. In the autumn of 1954, however, Radford represented the JCS as seeing force in arguments for preventive war. Referring to the unfavorable outcome in Indochina and new evidence of unrest in Africa, the admiral characterized the Soviets as pushing ahead even while the United States possessed nuclear superiority. The Chiefs believed,

he said, that the Kremlin "some time or other... will elect to force the issue. Accordingly, the JCS had concluded that the U.S. had only a limited period of time in which to reach an accommodation with the Communists." If issues were forced in the near future, he continued, and the results were "either a limited or a full-scale war, the outcome for the U.S., prior to Soviet achievement of atomic plenty, would be successful." Once the Soviets achieved nuclear parity, he warned, the JCS "could no longer guarantee a successful outcome...." With all his civilian advisors protesting the concept of a preventive war, Eisenhower dismissed Radford's arguments. He said he thought "our national security policies are now well-stated." [72]

Getting to practical details, Eisenhower issued his directives that military manpower be trimmed -- the directives that preceded Ridgway's retirement and the congressional debates of 1955. He explained to the NSC, "the resultant savings could then be expended on the program for continental defense...." [73]

At times, Eisenhower could show signs of modifying the rationale he had adopted,[74] but as a rule, his recorded comments were compatible with the language in formal NSC documents such as that of January 1955. involving basic national security policy (NSC 5501). It had become the Administration's policy to anticipate and prepare for a condition characterized as "mutual

deterrence." The United States was to remain in the perilously ambivalent position of acknowledging the likelihood of mutual destruction in the event of general war while at the same time demonstrating both readiness to accept such a war as an alternative to "acquiescing in Communist aggression" and "determination to prevail if general war eventuates."[75] The function of continental defense, as it had evolved, was primarily to ensure that U.S. strategic offensive forces survived a surprise attack so that destruction of the enemy would still be assured.

The Killian report of February 1955 addressed itself to the adequacy of actual and projected air defenses and found them seriously wanting.[76] Though rejecting many of the criticisms, the military establishment ended up agreeing that there was need for better defense against low level attack and that air defense weapons should generally be equipped with nuclear warheads.[77] Subsequent NSC papers concerned with continental defense seemed to take it for granted that the policy had been set and that forces were in place or going into place adequate to protect SAC's second strike capability.[78]

In the actual FY 1956 defense budget, the effects of high-level policy decisions were visible chiefly in provisions for larger sums for R&D and interceptor and radar procurement and a specification that the Army, in spite of its protests against manpower cuts, would increase the number of NIKE battalions.

Actual Service programs vibrated even less to changes ordained in the NSC. The Services had continued to wrangle about their respective missions. In January 1954, the Joint Strategic Plans Committee of the JCS was directed to prepare a plan for a joint air defense command. In August, it was announced that a Continental Air Defense Command (CONAD) would be established in Colorado Springs as a unified command directly under the JCS. In September, the JCS hammered out an agreement over development of and operational responsibilities for missiles which still left unanswered pressing questions about surface-to-air missiles. In effect, it allowed continuation of two entirely different air defense systems. The Secretary of Defense approved the JCS agreement in November.[79]

In May 1956, an emissary of the Secretary of Defense described CONAD as hardly functioning as a joint command, with the Services ill-informed of one another's capabilities and with several technical problems concerning USAF interceptors and missiles in need of resolution.[80] By September CONAD had finally separated itself from the Air Defense Command, and its commander had engineered a tentative agreement to collocate Air Force and Army warning and ground control radar. A year later, in September 1957, just before Sputnik, the United States and Canada established a new international command--the North American Air Defense Command (NORAD)--with Canadians

formally assuming a role. Actual command arrangements suggested that neither the Air Force nor the Army saw the problem of continental defense as having anything like the urgency attributed to it in NSC papers.

The air defense interceptors actually deployed through calendar year 1956 were for the most part the F-86s and F-94s noted in 1954 as lacking the speed and climb to catch Soviet jet bombers.[81] Mass production of the new F-101 was delayed for a long time as a result of the Defense Department's shift to a "fly before you buy" procurement policy designed to save money. The F-102 and F-102A had design problems. The first nuclear-armed air defense plane, an F-89J, was not actually in the air until almost the beginning of 1957. Large-scale procurement of a redesigned F-104, supposedly able to overtake a Bison, promised to occur sometime in the missile era.

Warning and ground control radar units did show effects of prodding from on high, for agreements were reached with Canada in 1956 to construct the DEW Line. The Atlantic portion of it, including the seaward extension, actually came into operation by mid-1957. By the end of the same year, the Mid-Canada Line was also functioning. On the coasts, the first Texas Tower began scanning in May 1956. Others followed, and radar picket ships went on station. The Air Force's SAGE system began to operate in 1958, by which time early warning squadrons had been operating for several years.

NIKE-1 missiles were rapidly deployed. By late 1955, more than half of all the Army's antiaircraft battalions were equipped with them. By 1957, there were 61 NIKE battalions mounting more than 5,000 weapons. These missiles had sufficient range to hit high-flying jet bombers, but only if fired promptly and accurately. The chances of their achieving high kill rates were judged small. A new, longer range NIKE-B underwent tests in 1955 and 1956, but it was not to be employed until 1958 or later. A nuclear warhead for the air defense missile, urgently requested by the Army in 1954, remained under development by the AEC.

If not informed about the uncertainties at Colorado Springs, Soviet Intelligence analysts might have concluded that the United States had put in place the organization and equipment for active air defense but, either because it rated the threat as slight or because it was awaiting new technology, it was taking its time about putting up defenses against bombers comparable to those which PVO Strany had erected in Russia.

In all the to-do about high-level policy, relatively little had been said about the approaching problem of enemy ballistic missiles. The NSC document embodying Eisenhower's acceleration of continental defense merely repeated the CIA warning of October 1954 that the Soviets could have an ICBM by the early 1960s and added, "There is no known defense against such missiles at this time."[82]

The Killian report, however, dealt in detail with the ICBM threat and the absence of preparation for defense against it. The report recommended urgent development of a Ballistic Missile Early Warning System (BMEWS) and research on antimissile systems. In their reclama,

the Services accepted both as R&D missions. Subsequent NSC papers on continental defense stressed these as research needs to be "urgently pursued".[83]

Within the Army, a possible antimissile missile was in fact a subject receiving intensive thought. In early 1955, Bell Laboratories had concluded that an ABM was probably feasible. Work had started with a view toward having an actual system by 1965. During the course of the year, the Secretary of Defense received advice from the Technical Advisory Panel on Aeronautics to give the project higher level supervision and more funds. In December he did allocate $4 million for the purpose from his own R&D reserves.

An Ad Hoc Group on Anti-ICBM set up in the Department of Defense delivered a report in mid-1956, identifying very-long-range target acquisition radar as one requirement on which research should be most urgently pressed. The Group's view was that this technical problem was pivotal and had to be solved in more than interim fashion. Encouraged by the Assistant Secretary of Defense for Research and Engineering, the Army developed a plan aimed at producing an operational ABM (called NIKE-ZEUS), including all requisite radar, as early as 1962. The Secretary of Defense would not, however, fund a crash program. The Air Force had concluded as early as January 1957 that an ABM would be too expensive.[84] The Army, however, assigned the project increasingly higher priority.

In view of evident Soviet progress in improving and lengthening the range of ballistic missiles, the President, in May 1957, commissioned

yet another study on continental defense, this from a panel headed by H. Rowan Gaither. Completed just after the Sputnik shots, it drew a dark picture of a nation hopelessly lacking any active or passive defense for its cities and industrial areas, dependent for safety on the threat posed by strategic forces which could be neutralized by an enemy surprise attack.[85]

The Gaither panel recommended promptly reducing the vulnerability of SAC by resort to continuous alert, dispersal of bases, additional radar warning nets, and emplacement of NIKE-Bs around SAC bases. Secondly, the panel urged increasing U.S. offensive striking power -- quadrupling the IRBMs and increasing more than 7 times the ICBMs projected for SAC (60 to 240 and 80 to 600); getting IRBMs into place abroad by 1958; putting ICBMs into hardened silos; and forging ahead on POLARIS. For damage limitation, the panel recommended development of area defense against ICBMs "at the earliest possible date." It then counselled a large-scale fallout shelter program as likely to save more lives than any comparably priced measure for passive defense. The costs were estimated to be $4.8 billion in the first year and an additional $11.9 billion over the succeeding 5 years.

Irked by spending recommendations which he regarded as unrealistic and outraged that Gaither and others on the panel briefed journalists before turning in their report, Eisenhower criticized the panel publicly. He threw it to the JCS just at budget-squeezing time and thereby extracted almost line-by-line repudiation of its argument.[86] The principal outcome

was a new emphasis on ballistic missile defense in the NSC papers on basic national security policy. It now rated description as of the "highest national priority."[87]

As with offensive missilery, the inescapable question is why the United States did not compete more dynamically. Since it was deemed almost a certainty that the Soviets would eventually have long-range jet bombers and since their development of intercontinental missiles was confidently forecast early in the 1950s, why did the United States not mass its enormous technical and other resources to provide protection for its bases of operation, industrial plant, and population?

The answer is surely in part the same answer as to the comparable question concerning offensive missiles. No organization able to lever the U.S. Government into action had a strong interest in air or missile defense. In the Air Force, the Air Defense Command and its affiliates had nothing like the standing of SAC or TAC. In the Army, the Chief of Ordnance carried weight, but the Army felt truly under siege with its central elements -- infantry, armor, field artillery, and engineers -- in jeopardy. The civilian agencies which might have pressed a case for area defense or civil defense could scarcely even win invitation to meetings where the essential resource allocation issues were discussed.

This was a function in part of inheritance -- the absence of executive congressional networks such as those to which SAC and TAC and the carrier pilots belonged; in part of the weakness of public constituencies which might have forced a different approach. In spite

of headlines about Soviet bombs and bombers, the general public did not exhibit strong fears until after Sputnik, and special publics concerned with continental defense did not exist. The fallout shelter industry was not the aircraft industry, nor were the advocates of area defense sufficiently convincing to create a powerful and effective constituency to support their recommendations. It was no accident that the United States government did not establish a counterpart to the Soviet air defense service, PVO Strany.

To explain why the U.S. strategic defensive doctrine came to focus so nearly exclusively on safeguarding the offensive forces requires mention of additional factors--the Eisenhower administration's zeal for balancing the budget and a belief that the nation's defenses could cope with the Soviet aerial threat. Any other concept of continental defense would obviously have involved outlays far higher than the $1 billion off-the-cuff figure which Quarles named for providing additional protection for SAC. The piper could not have been paid simply by cutting a few hundred thousand men out of the ground forces. The result was not only to postpone until the aftermath of Sputnik serious review of alternative conceptions of continental defense; it also added to the momentum in favor of a general strategy oriented toward what would later be termed "mutual assured destruction."

"Atoms for Peace" and "Open Skies"

Faced with likelihood that both superpowers would soon possess abundant thermonuclear weapons coupled to intercontinental delivery systems, the United States could have chosen one of two policies. One was to

attempt to relegate both nuclear and thermonuclear weapons to a status comparable to that of poison gas, building operational military forces with a clear assumption that use of such weapons was extremely unlikely, and in consequence investing primarily in general purpose forces / armed with non-nuclear ordnance. The alternative was to make preparation for fighting a nuclear war and emerging from it a victor, at least in the sense of suffering less damage than the opponent. This would have entailed strategic offensive forces designed, positioned, and subject to control arrangements such that they could destroy a maximum amount of an enemy's strategic offensive forces before they could get into action. It also would have entailed active and passive measures for continental defense. The Eisenhower administration judged each of these alternative policies intolerably expensive.

A third possibility was to attempt to negotiate with the Soviet arrangements which might restrain competition.

In the immediate aftermath of World War II, the Truman administration had sought not only political understandings but also agreements aimed at preventing development or use of nuclear weapons. The latter effort had taken form in the so-called Baruch Plan. After the Soviets rejected this plan, Truman and his advisors judged it not worthwhile to expend much time or energy on other such efforts.

In acknowledgement that the United States was building up strategic nuclear offensive forces as an offset to Soviet general purpose forces, State Department negotiators did contrive to back away from the position

of advocating simply a ban on nuclear weapons. In the UN, discussion of arms limitation, both conventional and nuclear, was entrusted to a single committee. The American delegates maintained insistence on "progressive and continuing disclosure and verification" as a sine qua non for limitation of any type, and, in company with their British and French colleagues, put forward proposals for numerical limitations on the armed forces of all major powers.[88] On the whole, however, those were the results of efforts by technicians, arousing only casual interest at the highest levels of government. NSC 141, the compendium of advice from Truman, Acheson, Lovett, and Harriman to their successors rarely mentioned negotiation.

In the early days of the Eisenhower administration, the subject came before the NSC. A panel of consultants had suggested that the United States stop advocating arms limitation in the UN, given the fact that it was simultaneously pressing all its allies to build up their armed forces. Dulles indicated that he thought the U.S. stance useful for propaganda purposes. Vice President Nixon, say the minutes, "inquired whether it might not be possible to make some kind of sensational offer on the disarmament side, which the Soviets would of course not accept, and which would therefore put them on the spot."[89] For the moment at least, nothing came of either the consultants' proposal or Nixon's suggestion.

With the death of Stalin in March 1953, discussion naturally turned to the question of whether the new Soviet regime might be more tractable. Eisenhower himself expressed doubt. He said that he thought Stalin had

never been a dictator, that he had always answered to a committee of his peers, and that, in fact, he had probably been one of the less militant figures in the group. Though none of the President's advisors seconded this analysis, they did not recommend that Stalin's departure be made an occasion for American initiatives. Subsequently, Secretary Dulles interpreted Soviet renewal of its so-called peace offensive as evidence that the Kremlin was feeling pressure from the West and simultaneously seeing evidence of domestic discontent. The moral he drew was that the United States should not let up unless and until the Soviets showed signs of a basic change in policy. The President endorsed this conclusion.[90]

"The Chances of Peace", a speech delivered by Eisenhower a month after Stalin's death, included a brief section on the subject of arms limitation.[91] For practical purposes, it summarized a position identical with that of the Truman administration. Over the course of the rest of the year, as the "New Look" took shape, the principal line of inquiry within the Administration ran in the direction originally suggested by Nixon. While Eisenhower and Secretary Dulles in their dealing with foreign governments felt some need to counter Soviet propaganda, they hesitated to take any initiative which might compromise American guarantees to European and other allies, possibly thus injuring chances for French entry into the proposed European Defense Community. Though Dulles might have been content to do nothing, the President's advisor on psychological warfare, C.D. Jackson, took it upon himself to find a formula

which satisfied the various constraints. The outcome was a proposal approved by the President's advisors and incorporated in a speech delivered by him on 8 December 1953. With the label "Atoms for Peace," it called for contributions of nuclear materials by the United States, the United Kingdom, and the Soviet Union to an international atomic energy authority which would work on peaceful uses of atomic energy. As the President subsequently conceded, the plan, even if fully implemented, would have had only faint effects in the strategic military balance.[92]

During 1954, the Administration began to give more serious attention to negotiating possibilities. This may have been simply a result of increasing recognition that other options were intolerably expensive and that increased expenditure on security was not purchasing correspondingly increased peace of mind. The President wrote to D.D. Jackson that, in his view, the United States would gain if nuclear weapons were simply abolished; ". . . we never had any of this hysterical fear of any nation until atomic weapons appeared upon the scene and we knew that others had solved the secret."[93]

Though Secretary Dulles continued to insist that there should be no relaxation of pressure on the Soviets, he had by mid-1954 taken interest in a moratorium on further testing of thermonuclear weapons. In part, no doubt, he was concerned about effects on European opinion at a time when arrangements for a German contribution to NATO remained uncertain and intelligence analyses told of increasing neutralism in France and Britain, and he backed off quickly, once his staff advanced the point that the United States could

compromise itself if it allowed any distinction to be drawn between nuclear and non-nuclear weaponry. Though without prodding his aides to pursue any particular line, Eisenhower made it plain that his views were similar to those expressed earlier by C.D. Jackson. He said "that if he knew any way to abolish atomic weapons which would ensure the certainty that they would be abolished, he would be the very first to endorse it, regardless of any general disarmament. With its great resources," he said, "the U.S. could certainly whip the USSR in any kind of war, whether atomic weapons were available or not." [94]

As the second half of 1954 saw the Soviets moving toward rapprochement with the Yugoslavs, making gestures to West Europeans, seeming to shift in the UN toward a much more flexible posture on arms limitation, and not letting up in propaganda attacks against German rearmament and American "militarism," feeling grew in some sectors of the American government in favor of at least an exploratory negotiating effort. NSC 5501, the summary of basic national security policy approved by the NSC early in 1955, identified the Soviet "'peace offensive' as their most effective present tactic for dividing the free world and isolating the U.S. from its allies." The text characterized it as very unlikely but not impossible that "the Soviet leaders might be led by the fear of nuclear destruction to accept an effective system of armaments control, with whatever changes would thereby be required in their present practices and concepts." In a footnote, the JCS took exception to even this guarded language, saying that it overstressed the possible significance of apparent shifts in Soviet

propaganda. During an NSC meeting before adoption of the policy, Cutler noted that the JCS and the State Department disagreed about negotiating with the Soviet Union, with the latter holding "that we should actively use negotiation in pursuing our strategy," while the JCS were "very skeptical" unless there was an about-face in the Soviet attitude.[95]

With intensification of the Soviet peace offensive, accompanied by mounting international concern over radioactive fallout resulting from nuclear weapons tests, State Department officials saw reason for presenting their case more forcefully. Calling attention to the near passage by the House of Commons of a resolution in favor of a test-ban and to India's sponsorship in the U.N. of a similar resolution, Gerard Smith, Secretary Dulles's Special Assistant for Atomic Affairs, asked for reconsideration of the 1954 decision not to propose a moratorium on the testing of thermonuclear devices. Deputy Under Secretary of State Robert Murphy suggested that the United States might propose such a moratorium to cover a period of time in which it planned no testing with a view simply to putting the Soviets on the spot. The CIA provided reinforcement in the form of an NIE of April 1955 saying that the Soviets probably did not have a deliverable thermonuclear weapon and would not get one without tests.[96]

The JCS and upper-level officials of Defense and the AEC, however, remained determined opponents of a test moratorium. As put succinctly by General Bonesteel, the representative of the Secretary of Defense on the NSC Planning Board, the Pentagon-AEC view was "that testing is essential for weapons development and rapid weapons development is essential for keeping ahead of the Russians." Apparently sharing this opinion,

the President in June 1955 ruled once again against an effort to obtain any type of test ban.[97]

The President had, however, agreed to meet at Geneva in July 1955 with the heads of government of the United Kingdom, France, and the Soviet Union. It was difficult for him to go with nothing to propose in the realm of arms limitation, especially since the Soviets were not only championing a ban on testing and abolition of all nuclear weapons, but in May had altered their posture concerning verification, suggesting cautiously that they might accept the stationing of observers at certain fixed points within their territory.[98] Preparation of advice for the President produced fierce debate between Defense and State, principally over the possibility of discussing with the Soviets limitations on armaments in Europe alone.[99] Potentially more divisive issues relating to limitations on U.S. and Soviet nuclear and thermonuclear weaponry were confided to a special group presided over by former Governor Harold Stassen of Minnesota, who had previously been in charge of U.S. foreign aid programs and was now a Special Assistant to the President.

Out of Stassen's group came the single initiative which Eisenhower was to take at Geneva, labeled "Open Skies." It was a proposal that the United States and the Soviet Union first exchange detailed information about their respective military establishments and then agree to open their airspace for unlimited aerial reconnaissance offering reassurance against any secret military buildup or preparations for surprise attack. Scarcely

discussed by the principal staff aides preparing for the conference, this plan was probably viewed as unlikely to be accepted and useful, therefore, only for propaganda. When presented, it was in fact ill-received by the Soviet delegates. Now advocates of the scheme originally introduced by their adversaries, the Soviets had come to Geneva proposing overall numerical limitations on the armed forces of the major powers, destruction and abolition of nuclear weapons once reductions to these limits were well underway, and in the interim a ban on testing and exchange of pledges against any first use of nuclear weaponry. Upon receiving Eisenhower's proposal, Khrushchev said his reaction was "100 percent negative." It would have no effect, he said, except to feed the intelligence services. It would produce no reduction of armaments. [100]

After the conference, Secretary Dulles and the President agreed that they had found among the Russians "unconcealed anxiety" for relaxation of tension. They attributed it to internal problems complicated by the heavy burden of defense expenditures, and they were convinced that the United States should take advantage of this intuition and test Soviet willingness to conclude meaningful agreements. [101]

In the realm of arms control, however, little happened. Representatives of State, Defense, and other agencies continued to bicker. Stassen labored on, but in the midst of staff disputes mirroring those in the bureaucracy at large.

In February 1956, the President recorded in his diary a strong desire to find some means of inching toward arms limitations sufficiently verifiable

to improve confidence. Rejecting the Soviet approach, which was once more engaging interest in the U.S. State Department, he observed, however, that he did not want to get into any "numbers racket." In March, in its review of the 1956 version of the basic national security policy, the NSC directed "that intensive efforts should be continued on all aspects of the problem of devising a safeguarded system of disarmament." [102]

In the autumn of 1956, a special State-Defense-AEC committee was attempting to hammer out a new U.S. position. The State Department had become a champion of a proposal for a 1-year moratorium on all tests of weapons over 100 KT, its argument being that any Soviet violation could be automatically detectable. In the Pentagon, however, both civilians and military men opposed any such moratorium, arguing that it would inhibit U.S. weapons programs, prevent acquisition of knowledge about high-yield weapons such as the Soviets had been testing, and would, in fact, not be verifiable. With the President's 1956 challenger, Adlai Stevenson, making an issue of radioactive fallout and calling for a test-ban, the Administration temporized by announcing that it had such a ban under consideration and by having the U.S. Ambassador to the U.N. not ritually reintroduce old arms control proposals but instead say that he would offer something new at a later date. [103]

After Eisenhower's reelection, the new U.S. plan actually put forward differed only in detail from plans previously advanced. By the spring of 1957, however, Stassen and his staff had pulled together a document incorporating the "Atoms for Peace" and "Open Skies" formulae. Based on conversations with Soviet diplomats, Stassen believed the Kremlin

likely to be receptive to proposals for phased introduction of zonal arms limitations accords to be verified by aerial reconnaissance. His document outlined several possibilities. The one generally thought to be most feasible involved the Arctic region. A series of meetings at the White House on 25 May 1957, involving the President, the Secretary of State, Stassen, the Chairman of the JCS, the Director of Central Intelligence, and others, yielded at last, approval of an approach to negotiation with the Soviets. Preparations for actually carrying forward such negotiations were in progress when Sputnik went up.[104]

Meanwhile, the State Department had revised its advocacy of a U.S.-sponsored test moratorium. Probably aware that one ally, Japan, was about to demand such a moratorium in the U.N., and certainly aware that the AEC planned an exhaustive review of tests for the autumn and winter of 1957-58, the Defense Department and the JCS concurred to the extent of endorsing a proposal for an 18-month moratorium subject to rigid verification procedures.[105]

Though the "Atoms for Peace" and "Open Skies" proposals and the projected Stassen package had elements of novelty, none reflected enterprise comparable to that contemporaneously exhibited in, for example, the nuclearization of theater forces and the development of marine nuclear propulsion. In fact, after the initiative represented by the original Baruch Plan of 1946, the negotiating posture of the United States may be characterized as defensive. "Atoms for Peace," "Open Skies," and the Stassen package were all minimal responses to pressures largely created by Soviet initiatives in diplomacy and propaganda. A disposition to "use negotiation

in pursuing ... strategy" was confined to certain representatives of the State Department. More generally, negotiation seemed to be viewed as necessarily involving some sacrifice of defensive strength, not as potentially a means of adding to it.

The years from 1953 to 1957 were ones in which American officials knew with a certainty that the United States might soon face danger of annihilation. They were also years of extraordinary technological progress both in nuclear weaponry and in missilery. In retrospect, it seems evident that the strategy and accompanying force posture developed by the United States before and during the Korean War became increasingly less realistic. Committed to defend allies around the globe, it continued to rely primarily on a threat to drop nuclear and thermonuclear bombs on the Soviet homeland. At the same time, it acknowledged that the day was not far off when this threat would be neutralized. Yet the Eisenhower administration for practical purposes maintained exactly the position of it predecessor. Indeed, the end of 1957 saw the emphasis stronger than ever on strategic nuclear offensive forces, with general purpose forces at a diminished level, damage limitation programs virtually nonexistent, and possibilities for negotiation being discussed but not explored. Key figures in the government were all unshakeably wedded to beliefs about the Soviets and American-Soviet political competition similar to those which had infused NSC papers of the Truman period. At the same time, they were dedicated to spending less money on defense. All in all, the budgets, forces, deployments, and policies of the United States during this

period were products less of direct interaction with the Soviet Union than of tension in the United States between dread of Communism on the one hand and dread of deficit spending on the other.

CHAPTER VI

SOVIET PROGRAMS: 1949-57

Action-Reaction: A Beginning

If there was a strategic arms race before the end of the 1940s, the Soviet Union was the only runner. Trying to match technology the United States already had, the Soviet Government sought to develop atomic bombs, long-range bombers, jet aircraft, and aerodynamic and ballistic missiles.

With accurate intelligence, Soviet leaders would have known that the United States had practically collapsed its own nuclear weapons program and dismantled most of its capacity for actually delivering these weapons. They would also have known from public sources that the U.S. Air Force was planning to put its money into a bomber, the B-36, overmatched by Soviet antiaircraft defenses already designed and ordered, and that the U.S. Navy was eager to build large aircraft carriers not obviously tailored for a Russian war.

Even if Soviet leaders were in possession of the facts, of course, they may have refused to believe them. They could pardonably have surmised that, despite postwar economies and the turmoil caused by organizational changes, the United States was continuing to manufacture and stockpile atomic bombs at a rate of perhaps two a month, was experimenting with variations in yield and size, and was doing more than it publicized in the way of realistic preparation for war. Even so, if Soviet leaders were trying to catch up with the United States militarily, they can only have had in view the United States of 1945 or some fancied United States of the 1950s, not the real United States of 1948.

In 1949-50, this condition changed a little. During 1948 the Soviets found some evidence that the United States was giving slightly more attention to ready military power. Early in 1948 both the Finletter report and the Brewster committee report argued that the United States should develop sufficient strategic nuclear offensive power to threaten the Soviet Union with extensive damage in the event of war. In March 1948, the Truman administration responded to the Communist coup in Czechoslovakia by asking Congress for a $3 billion supplemental appropriation for defense. Congress not only approved this increase but added another $822 million for bomber procurement. This was also the period of the Berlin blockade, the beginning of the airlift, the Italian elections, and the series of nuclear weapons tests at Eniwetok, and, after the President's discovery that there were no deliverable atomic bombs, a stepping up of activity at AEC installations. The American press speculated, sometimes informedly and sometimes not, about new technological advances permitting reductions in the size of nuclear weapons or increases in their power or radioactivity. Because of intensified security, Russian intelligence agents probably became less able meanwhile to check the authenticity of such stories.

The American response to the Berlin blockade, it will be recalled, involved a transfer in July 1948 of B-29s to the United Kingdom in what was intended to be seen in Moscow as a warning gesture.* Similarly, SAC staged in July-August a round-the-world flight completed by 2 of the 3 B-29s making the attempt. Earlier, SAC had received its first B-36s and B-50s, and in December one of each flew a nonstop roundtrip between Texas and Hawaii--a distance which,

*See above, pp. 32-33.

Air Force spokesmen took care to point out, was greater than the distance from the United States to Moscow. Not to be left behind, the Navy announced in September the formation of Composite Squadron 5, to be given the specific mission of providing carrier-based delivery of atomic bombs on targets anywhere on the globe. Press releases meanwhile told of work on even newer weapons. In May 1948, for example, the Air Force reported progress on the long-range aerodynamic NAVAHO missile and the Navy, on a submarine-launched missile.[1]

All this publicity about nuclear weapons, bombers, and the like came during a year which also saw the formation of military alliances among the adversaries of the Soviet Union. The Brussels treaty signed in March was complemented in September by a five-power organization for mutual defense. The Senate having already passed the Vandenberg resolution, the State Department proceeded without much concealment to negotiate the broader North Atlantic treaty and to plan for providing the five European states with some aid specifically aimed at strengthening their military forces. In the autumn of 1948 when Truman and his advisers were debating NSC 20, press leaks indicated that, in line with the logic of the Finletter and Brewster reports, the United States would figure in this North Atlantic alliance primarily as the provider of strategic air power designed for deterrence or, in an actual war, for devastation of the Soviet homeland.

In January 1949 Truman presented his budget for fiscal year 1950. As was detailed in an earlier chapter,* the President had rejected pleas by Forrestal and the JCS for more spending on defense. In May 1948 he

*See pp.46ff.

had given the military establishment an arbitrary budget ceiling of $15 billion for fiscal year 1950. He eventually held them to a lower figure. Soviet observers could well have doubted that the President was putting economy ahead of preparedness, however, for they would probably have been most struck by three facts about the budget for fiscal year 1949. First, though Truman asked for only slightly more money in fiscal year 1950 than the total (including the $3 billion supplemental) for fiscal year 1949, he asked for a great deal more than the original request in his budget message for fiscal year 1949--$14.3 billion for 1950 as opposed to $11 billion for 1949. Second, the President proposed this spending even though it entailed a deficit of $823 million and a consequent need for new taxes. In 1948, by contrast, he had kept his defense request for fiscal year 1949 to $11 billion even though a surplus seemed likely. Third, Truman allocated just over $2 billion--more than twice as much as in fiscal year 1948--for procurement of new aircraft in fiscal year 1949. In Moscow, Truman's FY 1950 budget could easily have been read as evidence that the United States was girding itself for the type of war with the Soviet Union envisioned in the Finletter and Brewster reports.

Truman's FY 1950 budget was, moreover, the first of his new Administration. When he increased defense spending in March 1948, his action could have been interpreted as an election maneuver, designed partly to pump money into a drooping economy, partly to stir fear so as to counteract the "progressive forces" led by Henry Wallace. Aware of Roosevelt's deference to ethnic voting blocs, Stalin and others could have discounted Truman's moves as appeals to Czechs and other East Europeans in the American electorate. In any case, they could reasonably have assumed that almost anything Truman said or did was influenced by the fact

that he was competing with Republicans for voters of the center and right, including large groups of Roman Catholics. They probably thought that his words deserved little attention because he would not be President beyond January 1949. Almost everyone in the United States assumed this. When surprised by Truman's election victory, Soviet leaders could well have judged it likely that he would shift a bit in the direction of the defecting Wallaceites. Predictions to this effect appeared in Pravda.[2] For anyone genuinely entertaining such an expectation, the January 1949 budget message surely caused surprise, perhaps even shock.

In January 1949 the Soviet press did in fact voice alarm about American defense policy. Before Truman's message had been published but after the American press had disclosed its general provisions, Pravda declared that the United States sought to "ward off...the approaching economic crisis by an unprecedented arms race and by creating a war psychosis." When Truman's actual message appeared, Pravda made a front page attack on this alleged "Arms Race Budget." Pravda and Izvestia both charged that the Anglo-American bloc had rejected Soviet proposals for outlawing nuclear weapons because, in Pravda's words, of the "aggressiveness of its foreign policy and interest in preserving the barbaric atomic weapon." When the British Government in February announced a 30-percent increase in defense spending, Pravda charged the Americans and British with provoking "an unbridled arms race."[3]

Several weeks of commentary of this type preceded publication on 11 March of the official Soviet budget for the forthcoming year.

Among projected increases, the largest was that for national defense, which was to go up by over 10 billion rubles and was to claim 19 percent of the total in 1949 as opposed to 18 percent in 1948. Although the official commentary by "Observer" in Izvestia justified higher defense spending largely in terms of increases in wholesale prices and transportation costs, it made the point that Western defense spending was rising sharply. This at least hinted that the Soviet budget itself might be in part an "arms race budget."[4]

As nearly as can be ascertained from quite unsatisfactory data, the announced increase coincided with an actual increase. By our best estimate Soviet defense expenditures, measured in constant rubles and leaving out of account security forces, reserve pay, and nuclear energy, were to be almost 20 percent higher in 1949 than in 1948. Outlays on the nuclear program were to go up by one third. In monetary terms, the scale of effort in the nuclear program was to be 4 times what it had been 2 years earlier.[5]

It must be emphasized that even such a broad-brush depiction of Soviet defense spending depends heavily on guesswork. Though the forces and new hardware deployed by the mid-1950s make it likely, we are not completely sure that Soviet defense spending went up in 1949-50. The only indisputable fact is that the Soviet regime announced an increase.

Speculation should therefore start with this one matter of certainty, for Stalin surely had the option of concealing any actual increase or even pretending that there had been a decrease. Some if not all of the extra spending attributed to defense could have been put under other

headings in the state budget. Why was the choice made to tell the Party, the Soviet public, and the world that 10 billion additional rubles would go to the military establishment ?

One hypothesis not to be hastily dismissed is that Stalin and his planners saw no reason not to tell the truth and felt it best to give the Supreme Soviet and the public some notice of what people would soon see. As indicated, Western intelligence analysts described an actual increase of approximately the same magnitude as the announced increase. Callups for the ground forces, new keels for the navy, new bombers and fighters for the air forces, and antiaircraft emplacements around major cities were going to be at least partially visible to Party functionaries and the public at large.

A second hypothesis is that Stalin saw domestic reasons for saying that defense spending would go up. Having the press hammer the thesis that the United States and Britain were forcing an "arms race," Stalin could make it appear that the Soviet Union had no choice but to respond, thus explaining and partially justifying the failure of the regime fully to fulfill hopes for social and economic improvements. Alternatively or equally, he could have desired to display his concern for the military and his intention to continue giving preference to those branches of industry that supplied defense needs.

Yet a third possibility is that Stalin was most interested in conveying signals to foreign audiences. That he intended to frighten the Americans, British, and Western Europeans seems unlikely, for the size of the budget increase was minimized in publicity within the Soviet Union and the very fact of the increase was ignored in English language publications controlled by Moscow.

TOP SECRET

More plausibly, Stalin meant the announcement to hearten Communists in Eastern Europe, China, and Korea who might have been made nervous by news of the Brussels Pact and the North Atlantic Treaty, moves by the United States toward establishing an independent South Korea and restoring self-government to Japan, and rumors that the United States might somehow attempt to undo the defeat of Chiang by Mao.

We do not know enough to declare one hypothesis more probable than another. At most, we can say that Stalin did choose to announce a substantial increase in defense spending and that he may have done so for reasons of domestic politics, including that of gratifying military and military-industrial circles, or for reasons of foreign policy, primarily concern for the morale of Communist regimes abroad, or for both or some mixture of the two. It is not inconceivable, for example, that Stalin intended the announcement to be understood as indicating disfavor for leaders in the Party identified with efforts to secure more resources for nondefense sectors of the economy. The significant point for this study is that Soviet authorities justified the announcement by giving loud advertising to announced defense increases in the West. If its primary purposes were domestic, the action might have been taken even if the United States and the United Kingdom had made no changes in their budgets. For that matter, Soviet rhetoric could have been the same, for Soviet publicists alleged that Western states concealed 10 to 20 percent of their actual military spending,[6] and they could have pretended that this spending was going up, even if the facts were otherwise. Since there actually had been increases on the Western side, however, and since Soviet leaders justified their own announcement in part in terms of these increases, it may form the first instance when the

military programs of one superpower were directly influenced by the postwar military programs of the other. It may thus be the first instance of action-reaction in the Soviet-U.S. military competition.

The Buildup of 1949-53

Largely from evidence of later deployments, Western analysts have attempted to reconstruct the allocation patterns in Soviet defense budgets. Before overhead reconnaissance, their evidence was even more partial and uncertain than it has been since. Especially in view of the fact that the CIA has recently found it necessary to revise dramatically its estimates of Soviet military spending in the 1970s and has not yet recalculated estimates for previous decades,[7] it has to be emphasized that any figures appearing here are at best approximations. The most that can be said for them is that, in light of such hard evidence as we possess for the period, they are not implausible.

The best estimate we can make at this time is that, after having been increased by around 19 percent in 1949, Soviet defense outlays --again excepting security forces, reserve pay, and atomic energy-- went up another 20 percent in 1950, somewhat less than 14 percent in 1951, and no more than 4 percent in 1952. In 1953, defense spending appears to have been cut back below the level of 1951.[8] Since actual Soviet budgets are surely put together well before early spring when spending plans are presented to the Supreme Soviet, these figures say that the Soviet Government made its largest increases in defense outlays <u>before</u> the giant increases in U.S. defense spending that occurred after July 1950. If this is a fact, it would appear to call into question the extent to which Soviet defense budgeting was in any way reactive. A review of suballocation within Soviet defense budgets, however, is a prerequisite for any analysis of

the paradox posed by the fact that levels of overall defense spending seem not to have been driven upward by very large changes in levels of spending on the Western side.

The first point to note is that the sharp increases of 1949-50 were partially caused by substantial growth in the numbers of men under arms. As customary, estimates from various sources disagreed as to the precise size and timing of these manpower increases. Although Khrushchev claimed in 1960 that postwar demobilization had brought the Soviet armed forces to below 3 million at the beginning of 1948, the principal Western estimates put total Soviet active duty military manpower, exclusive of security forces, as of the middle of 1948 at just under 4 million. Calculations put together by the CIA in the late 1950s traced sharp rises beginning at least by the winter of 1948-49, continuing through 1950 and 1951, bringing the total to 6 million by mid-1952. Other calculations by the CIA published in 1974 put the increase at less than 1 million, nearly all of it coming in calendar 1950. These more recent CIA figures however, are not necessarily more solidly based In fact, when using its most sophisticated 1970s method for estimating Soviet force levels, the CIA creates a retrospective estimate for 1951-53 which is much closer to that of the 1950s than to that of 1974. The calculations of the 1950s, moreover, yield the numbers most nearly consistent with independent data showing shortfalls in 1949 and 1950 in numbers of industrial apprentices. During 1946, 1947, and 1948, there had been almost exactly as many apprentices as called for in the Fourth Five-Year Plan. In 1949 the shortfall was around 300,000; in 1950 it was over 750,000. One is entitled to surmise that most if not all of the missing million-plus went into uniform and that there was a comparable callup in the

agricultural sector of the economy. Probably, therefore, Soviet military manpower between 1949 and 1952 increased by something like 2 million men.

Probably, too, much of the additional manpower went to the ground forces. The more plausible CIA estimate (that of the 1950s) judged the ground forces to have had two-thirds of the men under arms in 1948 but three-fourths of the larger numbers on duty by 1952. In absolute numbers, the increase was 80 percent. The navy and the air forces meanwhile grew by only 10 to 20 percent, and some of this growth was surely attributable to riverine forces, frontal aviation, and other components supporting the ground forces. Given this and the fact that higher manning levels necessitated some procurement and some outlays for operations and maintenance, it is clear that the rise in Soviet defense spending from 1949 to 1952 would at least have been much more gradual had there not been substantial enlargement of the ground forces.[9]

And this expansion of the ground forces seems almost certain to have derived from foreign rather than domestic concerns. It is hardly likely that Stalin increased the army to bolster internal security, for in 1952-53, when his paranoid dread of domestic enemies was at its zenith, he cut back on the size of the army. Since soldiers were sometimes assigned to harvest crops on collective farms, it is possible that the motive was to increase the agricultural labor force. This hypothesis, too, however, is only barely arguable, for it is clear that the callup adversely affected industrial development on which Stalin set such great store, and it is probable that it also resulted in a reduction of the numbers of hands on farms. One must suppose that Stalin either had in view using troops for some positive purpose outside the Soviet Union or that he thought

troops might be needed to defend against an attack.

As of 1949 Soviet leaders cannot have seen many possible opportunities or occasions for using their military forces abroad. With the success of the Marshall Plan, there seemed much less likelihood than 2 or 3 years earlier of Communists coming to power somewhere in Western Europe and, as in Czechoslovakia, calling in Soviet aid. Similarly, conditions in the states neighboring the Soviet Union on the south and east were far less turbulent than in the immediate postwar years. The only areas where realistic Soviet planners could have seen prospects for armed intervention were Korea and Yugoslavia.

When North Korea invaded South Korea in June 1950, U.S. officials were nearly unanimous in seeing the action as a deliberate attempt by the Soviets to gain control of the entire peninsula. In the decades since the event, this reading has come more and more into question. Khrushchev in his memoirs lends support to an alternative view that the plan was North Korea's and that Stalin gave his approval offhandedly and without reflection.[10] However, since control of Korea was a historic Russian objective, affairs in Korea were often featured in the Soviet press, the North Korean army and general staff were permeated with Soviet advisers, and Stalin seldom did anything offhandedly (except possibly order executions), it seems much more likely that the offensive in Korea received careful and prolonged consideration in Moscow.[11] This could have been under way in 1948 or 1949 when it became evident that the Chinese Communists would defeat the Kuomintang on the mainland and that the United States would not use military force to block this outcome. It is certainly not inconceivable that Stalin decided to take over South Korea and that his military advisers persuaded him to

build up the Soviet army just in case the venture went wrong and Russian soldiers had to rescue the North Koreans or, worse yet, defend Manchuria against South Koreans with foreign allies. Equally possible, the sequence could have run in reverse. The buildup commenced for other reasons, and the fact that it was in progress then led Stalin and his planners to feel less cautious about letting the North Koreans act. In any case, since the immediate benefits of controlling Korea hardly offset the extremely high costs of calling up 1 to 2 million men, this contingency alone is not likely to have led Stalin to order the buildup. At most, it could have been one factor.

The possibility of war with Yugoslavia would have been the basis for a more compelling argument for remobilization. According to Khrushchev, Stalin had been cavalier in 1946-48 about the risks of making too many demands on Tito, saying, "I will shake my little finger - - and there will be no more Tito. He will fall."[12] The tone of Soviet diplomatic correspondence with Belgrade was not inconsistent with such an attitude. When in fact Tito defied Stalin, expelled Soviet agents, arrested and jailed Yugoslavs who sided with the Soviets, and did not fall, Stalin must have felt both dismay and fury. Especially if Western estimates are high and, as Khrushchev alleged, Soviet armed forces were down below 3 million at the time, Stalin would have judged a military response out of the question. Remembering the humiliating Finnish war of 1939-40 and the ferocity of the fighting in Yugoslavia during World War II, he might well have reached such a judgment even with armed forces of 4 million or more.

In the aftermath of Tito's defection, Stalin could well have ordered that Soviet military weakness be remedied so that action could be taken

against Yugoslavia at some future date. The timing of the buildup, the concentration on increasing the ground forces, and very heavy investment in short-range fighters and bombers are all data consistent with such a hypothesis. The arrest and imprisonment of hundreds of thousands of alleged Titoists in Eastern Europe, though explicable in many other ways, can be interpreted as preparation for armed conflict in this area. This is particularly true if one notes the special concern shown for internal security in those areas which would be stripped of Soviet first-line troops in the event of war with Yugoslavia. In Poland the purge concentrated on the military establishment. The Polish Minister of Defense was ousted and replaced by a Russian, Marshal Konstantin K. Rokossovsky. In 1952 East Germany claimed special attention. There were reports of intensive activities by the Soviet security services, and the Soviet Chief of Staff, General Sergei M. Shtemenko, personally spent several months there.[13] During the previous year, the World War II hero, Marshal Georgi Zhukov, was reportedly recalled from quasi-exile and given command of the Carpathian front, from which any operations against Yugoslavia would commence. In 1952 Zhukov was brought back to Moscow and replaced on the Carpathian front by no less a figure than Marshal Ivan S. Konev, till then commander in chief of the ground forces.[14] Russian exiles in Europe picked up rumors that Konev and Shtemenko had a plan for an offensive against Yugoslavia but that it was scrapped because Zhukov made a compelling case that it was poorly conceived. According to these rumors, Stalin to the day of his death wanted such an offensive to take place. The hard evidence available is equally consistent with a hypothesis that the Soviet buildup was largely a <u>defensive</u> response to the Yugoslav defection and concurrent developments

in the West. The purges in Eastern Europe could have represented, to be sure, simply the displacement of Communists associated with Andrei I. Zhdanov, the chief architect under Stalin of the policies that had alienated Tito. If Stalin's heirs were right in placing much of the blame also on Beria, the purges could also have been in part an effort by him to prove that the trouble stemmed from deviationists, plotters, and imperialist agents rather than from blunders of Moscow. Even so, one has to assume that there was also some genuine fear lest Tito find imitators elsewhere in Communist Europe.[15]

The fact that Tito received first covert and then overt military aid from the United States must certainly have been known to Soviet leaders. Their contingency plans could hardly fail to take account of the possibility that a Soviet offensive against Yugoslavia could trigger some military response by the West, and they could see the progress of preparedness on the part of the NATO states. Although the United States cut back on military manpower after the crisis of 1948, its new European allies were building up their active duty ground forces, and the United States was not only serving as their armorer but was advertising loudly its projected force of land-based and sea-based bombers. While the force was rationalized in terms of a defensive strategy of deterrence, the weaponry was obviously offensive in character. Pravda, Izvestia, military journals such as Krasnaya Zvezda, and even the Literaturnya Gazeta and Voprosy Filosofii, ordinarily organs for literary and philosophical criticism, decried and thereby noted American provocations: Preparation for strategic nuclear warfare; rumored American plans to base bombers in Spain, Italy, Turkey, Iran, India, and Japan; and instances in which Western reconnaissance

aircraft were intercepted over Soviet or satellite territory. Though Stalin maintained a public pose of calm assurance that peace would prevail, he is alleged by Khrushchev actually to have "trembled with fear" before the military might of the West.[16]

The buildup of Soviet military manpower in 1949-52, with its attendant direct costs and high opportunity costs, may thus plausibly be interpreted as primarily a response to fears aroused by Yugoslavia's defection ~~and~~ the concurrent buildup of U.S. and NATO ground forces and the U.S. strategic offensive forces.

A hypothesis that the manpower buildup was largely reactive in character is buttressed if one notes that the trend in Soviet military manpower levels in some degree followed the trend in Western manpower levels. The rates of increase more or less matched one another down to the time of the Korean War. After mid-1950 Western totals rose more rapidly, but this was largely on account of the engagement of U.S. for~~ces in~~ Korea and, on a smaller scale, of French, Dutch, and British forces in Indochina, Indonesia, and Malaysia. Although 1950-51 was the period when the NATO force was formed and six U.S. divisions were moved to Europe, it was also the period when it became evident that the original NATO force goals would have to be scaled down because of domestic political resistance in each of the NATO states. By mid-1952, although there seemed a clear likelihood of eventual West German participation, there was no longer any real prospect of the NATO allies putting together forces capable of a ground offensive in Europe. And it was at this juncture that the Soviet Government began once again to cut back its ground forces.

Bombers, Fighters, and Ships

Although the added manpower certainly accounted for some of the rise in total defense spending in 1949-52, the steepest increase came not in personnel costs but in procurement. Doubling between 1948 and 1951, procurement accounted for a quarter to a third of all defense expenditures by the latter year.[17] While some purchases were for the growing ground forces, they amounted to no more than those for the navy, and outlays for the air forces were twice as large as for either of the other Services. In exploring the question of how much Soviet military programs may have been responsive to Western programs, one must look particularly at the types and numbers of aircraft being ordered.

In 1948, the 21 Soviet aircraft plants in operation turned out about 1,700 bombers, 2,200 fighters, 2,800 trainers, 730 transports, and 120 helicopters--a total of approximately 7,550 aircraft weighing more than 50 million pounds.[18] By weight, about one-half was devoted to bombers, 20 percent to fighters, and the remainder primarily to transports and trainers. Bombers were of the medium (TU-4), light (TU-2) and attack (IL-10) versions. There were no heavy bombers built nor did any use jet propulsion. Of the 2,200 fighters built, only 300 were jets. Of the latter, about half were YAK-17s and the rest MIG-9s and MIG-15s.

During 1949, overall production fell to about 6,050 aircraft and 47.5 million pounds of airplane weight. Production of TU-4s almost doubled (to 300) and constituted about one-third of the total weight produced. Light and attack bombers, however, continued to have the lion's share of the production line in terms of numbers. The jet-powered IL-28 went into serial production with 50 of them being built.

Bomber weight increased about 10 percent and, overall, comprised more than 55 percent of the annual production. Fighter production was down in numbers and weight, about 10 and 14 percent respectively, from the 1948 figures. Of the 1,700 fighters, almost 1,000 were jets (including 850 MIG-15s). Another 100 MIG-15s were built as trainers. The number of trainers (2,100) was down 25 percent, while transports increased slightly; weight, however, decreased 30 and 15 percent respectively in the two categories. Helicopter production increased slightly.

During 1950, the 18 plants in operation produced more than 7,750 planes and 56 million pounds of airplane weight. TU-4s claimed the major portion of the bomber production (440 as compared to 210 IL-28s and 29 TU-2s) and made up just under 50 percent of the total weight. Almost 95 percent of the fighters were now jets (2,700 MIG-15s and 550 YAK-23s), and they along with the 200 piston fighters were more than one-third of the total annual weight. Some 300 MIG-15 jets were among the 2,600 trainers. Production of transports decreased markedly from 790 to 620, and there were no helicopters built.

Aircraft production surged in 1951--to more than 9,000 weighing approximately 75 million pounds. The 1,100 bombers (among them 440 TU-4s and 550 IL-28s) comprised more than 45 percent of the produced weight, while 4,400 MIG-15s and 670 MIG-15 trainers together constituted another 40 percent. Only 2 piston fighter aircraft were built.

After 1951, TU-4 production turned downward--to 410 in 1952, 220 in 1953, and finally, to 20 in 1954. In contrast, IL-28 production continued to increase: 790 in 1952, 940 in 1953, and 1,100 in 1954. MIG-15 output declined after 1951, with 3,400 combat and 780 trainer versions built in 1952 and 900 and 510 respectively in 1953. MIG-17s started to flow in large numbers --

610 in 1952, 2,800 in 1953, and reaching an annual peak of 3,500 in 1954. Helicopter production rose from 13 in 1952 to 57 the next year. Altogether, the Soviet Union employed 21 plants in 1953 to produce approximately 7,350 planes weighing more than 69 million pounds.

We know from later evidence that energies were simultaneously going to designs for new bombers and fighters. Pavel O. Sukhoi had fallen from favor as a result of several design failures. Demoted and made a deputy to Tupolev, he became his former rival's adjutant in trying to develop a successor to the TU-4.[19] As would become manifest in 1953-54, the Tupelov bureau was designing two planes--the twin-jet TU-16 (Badger), with about the range of the TU-4 but with speed of some 500 knots, and the 4-engine turbo-prop TU-95 (Bear), which, with a 8000-mile range, would almost classify as an intercontinental bomber and could do better than 470 knots.[20]

The design bureau of V.M. Myasishchev had a mandate to compete with Tupelov. Formerly a subordinate of Tupelov's, Myasishchev moved in 1949 and apparently took over a complete plant (Moscow No. 23), for all airframe production there ceased until he completed his design for a 4-jet Mya-4 (Bison), which would have a 6,000-mile range, a 45,000-foot ceiling, and a speed of 500 knots.[21]

As mentioned, the Ilyushin bureau had already come up with its light bomber. With the fighter field almost to itself, the Mikoyan bureau developed successors to the MIG-15, essentially the same design with improvements in thrust, speed, and ceiling. Yakovlev's bureau provided the only competition, finally succeeding in putting into production in 1954 an all-weather interceptor, the twin-jet Yak-25.

Actual production in 1949 and each subsequent year came, of course, as a result of decisions made earlier. Whether a bomber, fighter, transport, or whatever, a new plane could take form only after the air force had defined a requirement for it. (Since air force officers were assigned to the design bureaus, the requirement could actually originate with a designer, but protocol apparently required that it appear to originate with the Service.) The bureaus were then invited or sometimes compelled to work up competing designs. The process took a minimum of 18 months. In the case of the successor to the TU-4, there is reason to believe that it took fully 5 years and was expected to do so. Myasishchev began work on the Mya-4 no later than 1949, and when the plane went into production at the end of 1953 he received a bonus for meeting his schedule And aircraft designers were constrained to build frames for existing engines, for the engine design process routinely took 4 years. (The TU-16 of 1953 used an engine which we know to have been designed in 1949.)[22] As reported in an earlier chapter,* we have reminiscences by Yakovlev on Stalin's intense interest in details concerning aircraft We also have testimony of later date to the effect that final decisions on new planes were carefully reviewed by technicians reporting to the Party Central Committee and to the Council of Ministers and that

*See above, pp. 91-92.

this review took place before any requirement became final.[23] According to both sources, the question of whether the industry could produce the given plane on schedule dominated all other considerations. Hence, we can infer that performance characteristics and the approximate time at which planes began to appear reflected deliberate decisions made much earlier at the highest levels of the Soviet government.

The numbers to be produced did not, of course, have to be decided quite so soon. On the basis of Western experience, we can assume, however, that a plant needed around 9 months to retool for producing a new model, and the process may well have taken longer in the Soviet Union in the period we are reviewing. Indeed, it may still take longer, for central planners have to make provisions for everything involved, and there is some reason to believe that both managers and workers resist retooling because of fear that it will interfere with meeting quotas.[24]

Reading back from aircraft production data, we obtain independent confirmation of Yakovlev's testimony that the requirements for the MIG-15 and the TU-4 were set by Stalin during the winter of 1945-46. It is very likely that he fixed requirements at the same time for the IL-28.

From the defector, Gregory Tokaev*, we have testimony that Stalin and other Soviet leaders were demanding a high-performance intercontinental bomber in the spring of 1947.[25] The timing of the Myasishchev bureau's move to Moscow No. 23 and of collaboration between Tupelov and the designers of the AM3 engine make it more than likely that requirements for the

*Tokaev was also known as Tokaty and published under both names. The names are used interchangeably in this chapter.

TU-16, TU-95, and Mya-4 (Badger, Bear, and Bison) were set no later than the winter of 1948-49. The requirements for the Yak-25 all-weather interceptor were probably set at about the same time, though the fact that Saratov No. 292 did not retool for it until the second half of 1952 makes it possible that production of the Yak-25 was not decided upon until the winter of 1949-50. Requirements for the MIG-17 probably date from 1947 or 1948, for the MIG-19 from 1950 or 1951, and for the MIG-21 from 1952 or 1953.

For the most part, therefore, the major aircraft designs were chosen before there was any indication that the Western powers viewed the Cold War as a military competition and before most of the events that may have triggered the 1949 upturn in total Soviet defense spending. The bomber and fighter designs responded to Stalin's expressed desire for planes that would "fly higher, farther, and faster than all others."[26] It is possible that, like the TU-4, they were partially selected on the basis of evidence as to what the United States planned to build. More than one Russian has testified that an effective method for getting the Soviet bureaucracy to proceed with a new weapons system has been to produce such evidence.[27] Except for the Yak-25, none of the Soviet fighters seemed particularly tailored to cope with strategic offensive forces possessed or projected on the American side, nor for that matter did any of the Soviet bombers seem to be planned with an eye to penetrating prospective American air defenses. It is, of course, more than likely that references to American offensive or defensive capabilities appeared in military planning papers concerning fighter or bomber requirements. All the evidence we have indicates, however, that the processes

for setting technical requirements were influenced by engineers and production specialists preoccupied not with how to overmatch a particular enemy capability but rather with how to avoid failures at the testing stages and how to carry out promises as to when planes could be produced.[28]

In regard to numbers of aircraft procured and their operational assignments, high level decisions were made inside a shorter time frame Of course, it is possible that the sequences we can see in retrospect were all or nearly all planned well in advance. By a slight margin, however, it seems more likely that each instance in which a plant commenced production of a plane reflected a specific decision made 9 to 18 months earlier.

On that assumption, it would appear that the Soviet leadership effectively decided on the size of the TU-4 fleet at the time when the bomber was first ordered, for the two largest airframe plants in the country were turning out TU-4s from the beginning of the program. The fact that Moscow No. 23 had only token production of the TU-4 was almost certainly due to a separate decision that a design team developing a follow-on bomber should be housed in that plant. Of course, it is possible that neither Stalin nor any other Soviet administrators ordained or even foresaw the total quantity of TU-4s that would be built and delivered, given the slowness with which follow-on jet or turboprop bombers were to materialize, but it is more likely that they decreed at the outset the production of a thousand or more.

For the IL-28 light bomber, on the other hand, there seems to have been upward adjustments. The design may have been approved at about the same time as the design for the TU-4, and a plant for producing the plane may have been selected from the outset. The start of production in 1950 at a second plant probably reflected air force satisfaction with the plane and a decision sometime in 1948-49 roughly to double production. Similar reasoning leads to a conclusion that there were successive decisions in 1949-50 and in 1951-52 to build IL-28s at 2 additional plants with the result that by 1953 the industry could produce as many as 1,100 a year.

For fighters, the story was much the same. In 1947-48, 4 plants were programmed to turn out MIG-15s or MIG-15 trainers. Altogether, they had capacity for producing between 2,500 and 3,000 a year. In 1948-49, 3 more plants were assigned to MIG production, raising total potential output to 4,000-4,500. In 1949-50 conversion of yet another plant commenced with the result that potential production went up by another 500 or so.

In some measure, of course, decisions to increase production of IL-28s or MIG fighters were merely decisions to use existing plants for these aircraft instead of for other now obsolete types. In each year from 1949 to 1952 there was also some significant addition to total airframe production capacity. It went from below 50 million pounds to well over 78 million pounds. Since an increase had been provided for in the Fourth Five Year Plan, it was not itself a function of annual decisions to increase output of light bombers or fighters. It is noteworthy, however, that certain other types of planes did not get built despite the increase in capacity. Production of transports

went down almost 20 percent; helicopter construction stopped; and no seaplanes were built, notwithstanding the fact that in 1947 Admiral G.M. Beriev received a medal for his new seaplane designs.[29] It would appear thus that Stalin and other Soviet leaders were hearing and responding to arguments that IL-28s and MIG fighters were needed more than other types of aircraft.

The actual allocations of IL-28s and MIG fighters may suggest what these arguments were, for most of the IL-28s went to tactical air armies supporting front-line ground force units in Eastern Europe and the Far East, and the MIGs were divided between frontal aviation and air defense, with approximately 60 percent regularly going to the latter.[30]

Thus, from evidence concerning procurement and deployment of new aircraft, one can infer that the Soviet Government elected to devote a large proportion of its production capacity to long-range bombers at a time when there was no evidence that the United States or other Western powers would engage in anything resembling an arms race. When Western rearmament did begin on a small scale in 1948, the Soviets shifted emphasis. Though completing TU-4 production programmed prior to 1948 and continuing design work on follow-on types, they assigned most available production capacity to light bombers and fighters designed either for support of theater ground forces or for homeland air defense.

This apparent shift could have been simply a function of technological lag. Designs for bombers of longer range, able to hit targets in North America, took form more slowly than expected, and productive capacity was meanwhile used for other types of aircraft. To adopt this interpretation may be, however, to view the Soviets as having had perceptions and priorities similar to those prevailing in Washington and, by doing so, to misread them.

For it is equally plausible that in the late 1940s Soviet leaders still attached relatively low priority to long-range bombers as weapons for actual warfare. This had been the attitude of most of the professional military before and during World War II. Despite Stalin's postwar emphasis on developing the long-range air force, there is little to indicate a change in attitude among his generals, including those in other elements of the air force. Debates on doctrine which were to take place after Stalin's death would provide evidence that many senior officers had yet to absorb the view that operations against a nation's economic and industrial base could have military effect comparable to those of operations against its front-line forces.* Some of those who took nuclear weaponry into account probably credited it with relatively little significance because of a view that the number of atomic bombs would be small and their actual delivery would be uncertain. As in the American military establishment, many probably left the new weaponry ~~almost~~ altogether out of account simply from lack of knowledge. If apprehensive lest the imperialists start a war at some early date or if engaged in opportunistic planning for operations against Yugoslavia or rear support for North Korean operations against South Korea, Soviet military leaders could well have argued to Stalin that long-range bombers were a comparative luxury, and Stalin could have accepted their argument.

What we know of contemporaneous Soviet naval programs suggests not only that Stalin had decided to give priority to readiness for a war that might break out in the near future but also that he may have become better able to let long-range bomber projects lag because he perceived submarines armed with rockets as an alternative, and perhaps more efficient, method of delivering nuclear weapons against distant

*See below, pp 302-16.

targets or at least of threatening to do so and thereby achieving deterrence.

In line with his pledge of 1945 to build up Russian seapower, Stalin, it will be recalled, had embarked in 1946 on a 20-year building program, the irreversible initial phase of which had involved high priority for repairing prewar shipyards and constructing new yards. As of 1949, 13 shipyards were primarily devoted to naval construction: 1 at Kaliningrad and 4 at Leningrad (Sudomekh, Baltic, Admiralty, and Zhdanov) serving the Baltic Fleet area; 2 on the Volga (Gorky and Sormovo), 2 at Nikolaev (North and Nosenko), plus 1 at Kamysh Barun for the Black Sea Fleet area; 1 monster at Severodvinsk on the White Sea providing for the Northern Fleet area; and 2 on the Amur at Khabarovsk and Komsomolsk for the Pacific Fleet area. They had almost completed construction of the Kirov- and Chapaev-class cruisers and had begun work on the new Sverdlov. Similarly, they had begun to prepare for production of new types of destroyers and escorts.[31] Special effort had gone to developing new facilities for submarine production at Leningrad's Baltic and Sudomekh yards, the two Volga yards, Severodovinsk, and Komsomolsk. They were on the verge of producing the first of a projected 336 boats of a new 250-foot-long Whiskey-class, and they were only a few years from being able to turn out the first of a projected 36-boat fleet of Zulus which would be 50 feet longer, both Whiskeys and Zulus to have oceangoing range by virtue of incorporating German snorkel technology.[32]

At some point between 1948 and 1951 Stalin ordered major changes. He is reported to have reaffirmed — or perhaps, indeed, to have affirmed for the first time — his commitment to eventual completion of a powerful surface fleet that would include aircraft carriers.[33] In the meantime, however, a program for building 12 Talinn-class destroyers was canceled outright. The projected number of small Quebec-class submarines

was reduced from 96 to 36 and a tentative decision was made to cut back projected numbers of a large diesel submarine being designed as a successor to the Zulus. Changes involving considerable expense were meanwhile made in some ongoing work. Zulu-class submarine construction, for example, was shifted wholesale from the Sudomekh yard to that at Severodvinsk. The explanation developed by Michael MccGwire, one of the most careful students of Soviet naval developments, is that Stalin decided in 1949 or 1950 in favor of a submarine-launched ballistic missile program.[34]

Among Soviet finds in Germany at the end of World War II had been technical plans for a submarine-towed V-2. The navy gave some attention to the possibility of developing a platform to be towed by a Whiskey-type submarine but abandoned the effort. Meanwhile, however, naval architects and ordnance specialists began to see at least in outline the feasibility not only of mounting cruise missiles on submarines as well as surface ships but of mounting on them ballistic missiles as well. It is unclear whether their work proceeded wholly independently or was somehow linked with that on land-based missiles. It is also unclear just when they had designs for the 300-mile-range liquid-fueled GOLEM which was to be test-fired from a Whiskey in 1955.[35] It does seem plausible, however, that the leaders of the Soviet navy would have felt confident by 1950 that some such technology would prove workable.

At the time all types of missiles were probably conceived by Soviet naval officers as primarily weapons to be armed with TNT warheads. In all likelihood, everyone from Stalin down still shared the assumption that nuclear warheads would be unwieldy and, in any case, extremely scarce. The chances are that missile-equipped submarines, like

missile-equipped surface ships, were expected primarily to strike against enemy warships and convoys. Nevertheless, submarine-launched missiles could also have been envisioned in the Soviet navy, and by Stalin, as strategic offensive weapons to be targeted against the United States.

As is nearly always the case, the available evidence is not adequate for definitive refutation of any hypothesis. The ground force buildup, coupled with intensified investment in support and air defense aircraft and in submarines, could be read as signifying that Stalin and the Politburo were readying an offensive to conquer Europe or other areas. With equal plausibility, the pattern could be read as wholly one of defensive reaction to moves by the West perceived in Russia as foreshadowing a renewed capitalist-imperialist effort to strangle the Bolshevik Revolution. The hypothesis most consistent with most evidence is, by a slight edge, that which would hold Soviet defense policy between 1949 and 1952 to have been a function neither of a long-range plan for expansion nor of fears excited by immediate capitalist-imperialist threats but rather of preparation in the short run for possible war in or over Yugoslavia or Korea and in the long run for the full range of dire contingencies which professional military men could portray.

The 1952-53 Cutbacks

For 1952-53, the last period of Stalin's reign, we begin to have an estimate of Soviet defense spending based on CIA's Strategic Cost Analysis Model (SCAM). Calculations from this model find Soviet outlays for defense falling in absolute terms by about 3 percent. The reduction is attributed in part to an apparent cutback of about 645,000 in military manpower, most of it coming from the ground forces. In part, however, it is also accounted for by evidence of deep cuts in funds for frontal aviation and the long-range air force. Only PVO Strany improved budgetarily.[36]

For the first time since the end of World War II there were absolute reductions in airframe output, most of the drop occurring in airframes for bombers.[37] In part, this was clearly due to the fact that TU-4 production was winding down and preparations were under way to shift to Badger and Bear production. Except that one plant was converting to produce the all-weather Yak-25 in place of MIGs, a coincidental leveling-off in the amount of airframe for fighters cannot be explained in the same terms. This suggests deliberate decisions to pare back some components of defense spending, one of which was to reduce procurement of heavy bombers and virtually to halt procurement of new fighters for frontal aviation while stepping up allocation of them to PVO.

Since 1952 marked the beginning of a new Five Year Plan, one might go on to infer that Stalin intended ready forces and current military procurement to take a significantly smaller share of Soviet resources through the next half-decade. It could equally well be the case, however, that the plan looked to heavy spending late in the 5-year term for

items not yet in series production, including Bears, Bisons, new long-range submarines, and intermediate-range rockets. The obvious likelihood of high end-item costs for these new systems, in fact, makes it less likely that Stalin was squeezing down the defense budget than that he was trying to hold it level over the approaching Plan period.

Even so, how is one to explain a downturn in Soviet defense outlays occurring while U.S. spending, spurred by the Korean War, was still rocketing upward?

An effort to explain this puzzling discrepancy should begin perhaps by noting that Stalin and his advisors need not have seen huge American expenditures in defense as necessarily requiring comparably urgent spending by the Soviet Union.

By the winter of 1951-52, when final decisions on the Soviet cutbacks were probably made, Western rearmament had been under way for some time. While the Truman administration was openly preparing what would be, at least in real dollars, the largest U.S. defense budget of the whole period from 1946 to the present, cool-headed Soviet analysts could easily have made out the fact that these expenditures were probably not going to equip the United States and its allies with the wherewithal to mount an invasion of the Soviet Union itself or even the Soviet perimeter. Six divisions seemed the limit of an American troop contribution to NATO. The European governments showed no signs of building up to the force levels described by their military leaders as essential for defensive operations, let alone lifting them to a point where they could threaten Soviet defenses. Senior U.S. and U.K. officials were known to believe that, even for defensive purposes, NATO would have to draw upon German troops. With the

experience from the 1930s in mind, Soviet analysts could probably foresee more easily than most Western analysts how long and difficult would be the process of clearing the necessary arrangements through the parliaments of France, Italy, and other NATO states. In addition, there was certainly awareness in Moscow of the extent to which guerrillas in Indochina, Indonesia, Burma, and the Malay peninsula were preoccupying French, Dutch, and British military units that might otherwise have been deployed in Europe. (This fact almost surely enabled the Party functionaries superintending activities in the colonial world to obtain more high-level attention and more resources than in past years.)[38]

The United States was approaching another presidential election. Although the outcome in 1948 had probably made Soviet observers wary of relying too heavily on American public opinion polls and newspaper commentators, they could hardly fail to note in these soundings not only the renewed prospect of a Republican victory but also the likelihood that the Republican nominee would be Senator Taft, an outspoken foe of stationing American military units in Europe. Only after the trimmed-down Soviet defense budget went into effect did Eisenhower emerge as a candidate and wrest the nomination from Taft, and by the time Soviet spending figures were being set for 1953 Eisenhower had revealed himself to be the equal of Taft in determination to reduce his own country's defense spending. From evidence concerning American politics, Stalin and other Soviet leaders would have had some basis for assuming that they did not face an American government likely to precipate a war.

Equally or more important would have been a feeling on the part

of Soviet leaders that they had less reason than in the past for fearing events on Soviet borders which might touch off unintended conflict. Stressing desire to prevent any widening of the war in Asia, the United States had placed maximum restraints on its commanders in Korea. This must have been reassuring to Stalin and his aides. Although we have no real knowledge of what information reached the Kremlin or how it was assessed, we can reasonably assume that, if there had been apprehension earlier about a possible attack on the Soviet sphere that might be launched from Yugoslavia, it had diminished. To be sure, the Soviet press noted and decried American military aid to Tito and rapprochements between Yugoslavia and neighbors belonging to NATO. In the U.N. the Soviet Ambassador denounced Yugoslavia as a "bastion of aggression against the USSR."[39] But extraordinary myopia would have been required to miss the clear evidence that Tito intended to cultivate a type of neutrality. And the pain and surprise which Moscow was to register when faced with demonstrations of disaffection in 1953 provides positive evidence that Soviet leaders had ceased to feel acute concern lest Titoism erupt elsewhere in Europe. All in all, in other words, Stalin and his advisors could have felt that they faced no urgent military threat requiring continuance of the level of readiness decided upon in 1949.

A sense that there was no immediate peril of attack could have been complemented by a sense that, equally, there were no immediate prospects of opportunities for gaining national advantage through use of ready military forces. Asia offered no more inviting situations like that in Korea. In any case, experience surely

gave as much force in Moscow as in Washington to the slogan "No more Koreas." Khrushchev characterized the affair as "an outright defeat" for the Soviet Union.[40] Western Europe, including West Germany, appeared to have attained a new stability. Yugoslavia had profited from American aid to strengthen and modernize its armed forces and formed an alliance of sorts with Greece and Turkey which made it, in effect, a neutral guaranteed by the United States and NATO. Although Marshal Konev's transfer to the Carpathian front in late 1952 indicated the continued high priority attached to that theater, the chances are that any plans for a Soviet military initiative had by then been shelved. Presumably, there were no serious schemes for the Red Army's lending aid if Communist agitators should score some success in Baghdad or Teheran.

A conclusion that there was for the foreseeable future no frontier which Soviet troops might have to defend and no place outside the existing empire where those troops might profitably and safely be deployed could surely have influenced Stalin and his aides to trim the ground forces.

But what of other components of this altered defense policy? Why do we see so little in the way of new spending on strategic forces to match the immense investments in such forces being made by the United States?

The answer may be simply that the Soviet Services and Soviet military industry were caught without immediately marketable weapons systems. Those specializing in air defense already had the MIG-19 in maximum production with the MIG-21 and Yak-25 coming along as rapidly as feasible. While surface-to-air missiles and

radar warning and guidance systems had had high priority in research and development at least since 1948, not much was yet ready for large-scale deployment.[41] And those who might have advocated a counter build-up of offensive strategic forces were similarly handicapped, for the new long-range bombers were not quite ready for production and, in any case, had shortcomings; long-range surface-to-surface missiles were still in early development; and problems associated with the mating of nuclear weapons and delivery systems, including key problems of command and control, had hardly even begun to become visible. Though procurement of MIGs for the PVO could be stepped up and was, there may have been no other reasonable means of immediately spending large sums on defensive or offensive strategic forces to offset the strategic forces being acquired by the United States.

Reading backward from later developments, one can reason that the Soviet leadership did react to the American buildup in ways that influenced later deliberations on resource allocation. In 1948 and 1949, the various defense measures of the regime had included some stepping up of work on strategic systems. Marshal V.F. Yakovlev, who had been Deputy Commander of Artillery during World War II and a member of the Stavka, was made Deputy Minister of Defense for "new technology," reportedly with a mandate to push work on radar and air defense rocketry. General Mikhail S. Gromadin, previously in command of antiaircraft artillery, took special charge of the rocketry effort. The Lavochkin aircraft design bureau received an assignment to take part in this effort and went to work on what would materialize as the SA-1 and perhaps even at that early date on the SA-2. Faced with a prospect that the United States would have a massive force of nuclear-armed jet

bombers and with evidence that PVO was not yet ready to counter such a threat, Stalin assigned Marshal of Artillery L.A. Govorov to head PVO. Having commanded the Leningrad front, Govorov was one of the half-dozen leading soldiers from World War II; he had just been in the powerful and sensitive post of Inspector General; and, as was to be further proven by his election in 1952 as a candidate member of the Central Committee, he enjoyed high standing within the Party and with Stalin . Although PVO was to remain until 1954 nominally subordinate to the Directorate of Artillery, it became for practical purposes an independent Service. Soon afterward, Artillery Gen. K.S. Moskalenko, one of the heroes of Stalingrad, was made head of the Moscow air defense district. These personnel changes enhanced the likelihood of PVO obtaining a larger share of the budget and of local air defense for the capital receiving high priority in PVO plans and undertakings.[42]

Additional design resources were probably put at the disposal of PVO. P.D. Grushin, who had been Lavochkin's deputy in work on fighter aircraft and had transferred in 1949 to a professorship at the Moscow Aviation Institute, formed an independent bureau working on air defense missiles. He began this effort at least by 1954 and perhaps as early as 1951. Meanwhile, the Ministry of Aircraft Production added facilities and staff for testing aerodynamic missiles.[43]

Either as a result of urging by the new PVO leadership or as a corollary, the Soviet Government decided to devote substantial resources to surrounding Moscow with SA-1 launchers. Although the SA-1 was not ready for testing until 1952, and actual deployments did not commence until 1954, planning for the deployments must have been at least by 1953 in stages

requiring decisions at the level of the Politburo. Test facilities, production plant space, engineers and other skilled personnel, transport, construction equipment and materials, and many other items had to be earmarked well in advance.[44] It may be, of course, that top Soviet officials did not at first see the resource implications of the decisions they had to make. As with air defense programs in the United States in the 1950s, the papers that passed upward may have failed fully to make clear how quickly the system became obsolete because of range and azimuth limitations and vulnerability to electronic countermeasures. It may also be that, as with the American B-47, planning papers failed to reckon the full dimensions of a procurement and deployment effort. Stalin and his advisers may not have been told in 1952 -- indeed, PVO officers and other Soviet planners may not then have perceived -- that there would eventually be 56 SA-1 sites around Moscow and a total of more than 3,600 launchers. They must have had some awareness, however, that the useful life of the SA-1 would be limited and that the deployment would involve a large number of launchers. Otherwise, there might have been evidence of preparation to deploy the system elsewhere. In all probability, therefore, the command changes in PVO, its gaining independence, its not suffering from the 1952-53 funding cutbacks, and its receiving the substantial and long-term resources required for SA-1 deployment, all represented reactions on the Soviet side to the surge of U.S. spending on strategic forces consequent upon the Korean War.

Whether there was also some reaction in the form of intensified effort to develop offensive systems is much harder to judge. Improvements in long-range bomber design had been spurred by Stalin since at least 1946. A 500-mile-range version of the German V-2, the POBEDA, was in series production by 1950, and work was continuing on long-range

ballistic missiles.[45] During 1951 a truck factory at Dnepropetrovsk was converted to augment POBEDA production. Its actual output, however, turned out to be minimal.[46] Otherwise, neither observations of Soviet bomber or missile production nor testimony from defectors supplies evidence that programs which might be classified as strategic offensive were affected by the massive change in scale of effort which took place in the United States.

This fact -- if it is such -- need not be read as evidence that the Soviets were at this time concentrating primarily on strategic defense. To be sure, it is likely that very few people in the Soviet Government were thinking in practical terms about strategic offensive operations involving nuclear weapons. Such weapons were still extremely scarce and were expected to remain so. At least Stalin said that this would be the case. Those that existed were in the hands of a special organization, probably under Beria, and it seems doubtful that Stalin had as yet -- or ever -- made up his mind about a method which would put the weapons in the hands of men who might use them but still ensure that they would not be used without his explicit sanction. Not until after Stalin's death did Western observers begin to detect evidence that Soviet pilots were training specifically for nuclear bombing missions or that rocket technicians and weapons technicians were working together on problems of mating missiles and nuclear warheads. Even then, the pilots were in short-range IL-28s, not even in medium-range Badgers, and other missile technicians were working SS-3s which, with a range of 630 miles, were limited as strategic weapons.[47] Though some Soviet officers and engineers must have been occupied with strategic offensive plans and systems, and some of them probably sat in high places,

they must have been very few .

Yet Stalin and some of his coadjutors may have attached to strategic nuclear offensive capabilities an importance not reflected in apparent decisions on resource allocation and operational planning. After the first Soviet atomic test, the party line was, as Vorishilov put it in an election speech in 1950, that this test "put an end to the atomic blackmail of the imperialists." Like Stalin's earlier depreciation of atomic weaponry, these words are readily interpretable as designed to soothe fears at home. Following a series of tests in September-October 1951 involving a pair of devices, one of which yielded 30 KT, and one or both of which represented, in all probability, the first plane-deliverable packaging for a bomb, Stalin himself made the disclosure in an interview with a Pravda correspondent. "Atom bombs of various calibers," he went on to say, "will continue to be tested in future in accordance with the plan for the defense of our country against an attack by the Anglo-American aggressive bloc." He said flatly that "...in the event the U.S.A. attacks our country, the ruling circles of the U.S.A. will use the atomic bomb." He continued, "It is precisely this circumstance which has compelled the Soviet Union to have atomic weapons, in order to be fully prepared to meet an aggressor."[48] Addressed to Russians, these words can easily be thought further whistling in the dark. On the other hand, they can equally well be evidence that Stalin believed the Soviet Union to have acquired or to be on the verge of acquiring a nuclear deterrent. Conscious of the extent to which American strength centered in a few industrial and commercial cities, of the degree of alarm seemingly provoked by

the first Soviet nuclear test, and of the outcries in America and Europe occasioned by Truman's saying that he might conceivably use atomic bombs in Korea -- all of which had been reported in detail in the Soviet press - Stalin may have concluded that a handful of bombs, together with a capability for dropping them, even if through suicide missions, would so frighten the U.S. Government and its European allies that they would never use nuclear weapons against Russia.

At any rate, he could have concluded that the mission of a strategic offensive nuclear force was to deter and that a minimal force was as likely to accomplish that objective as was one larger, more expensive, and more dangerous. If Stalin reasoned so, that would help to explain why strategic offensive forces cut such small figures in defense allocations during the last year of his rule.

Yet another possibility is that the size and shape of Stalin's last defense budgets were influenced by domestic concerns that had little or nothing to do with preparedness for actual war or concern about the perceptions of Westerners or other foreigners. Close students of the twilight period of Stalin's reign contend that he had become anxious about the growth in power of the experts and technicians engaged in planning and managing Russia's industrial economy. In 1949 he had done away with N.A. Voznesensky and a whole group of associated economists, planners, and administrators. He was surely prompted in part by suspicion that this so-called Leningrad group was conspiring to undermine his autocracy. In the autumn and winter of 1952-53, while he allowed Malenkov to give the key address at the Nineteenth Party Congress, he simultaneously took measures which had the effect of

putting Malenkov in eclipse, and in January-February 1953 the name of Malenkov practically disappeared from the Party press.[49] The dominant theme became the "Doctors' Plot" -- the alleged conspiracy of Jewish doctors, inspired by Zionist organizations and Western intelligence agents, to poison a roster of Soviet political and military leaders. Emigré analysts of Stalinist politics are certain that these crazy charges constituted a prelude to a purge intended to be at least as extensive as those of the late 1930s and the immediate postwar period, with Malenkov and the corps of industrial managers associated with him and Beria and his technicians and most of the old Bolsheviks as prime and early targets.[50] Again, paranoid fear of conspiracy doubtless provided most of the motive force, but a case can be made that Stalin additionally was partly attacking the soulless monster he had created, much as Mao was to do in the time of the cultural revolution, and partly flailing out because age and change together made it impossible for him any longer to oversee and manage Russia all by himself. Whatever the merits of these speculations about the state of Stalin's mind and soul, the fact that he did appear to single out industrial management as a particular enemy of the regime could have contributed to his exhibiting parsimony when allocating resources to the large group of managers in defense industry.

None of these hypotheses is rendered implausible by the evidence in hand. If it is a fact that the Soviet defense budget went down while the American defense budget was shooting upward, and if cuts were made in allocations to all functions except air defense, the explanation may be that the Soviets nevertheless saw the Western threat to be diminishing. It may be that they saw the non-Communist world being so fortified as to offer little opportunity for advantageous use of Soviet military power

within the near future. It may be that they actually decided to put more resources into defense and into strategic weaponry but that such allocations did not become apparent because new systems happened not to be quite ready to consume substantially greater resources. It may be that Stalin thought deterrence did not require large forces. Or perhaps his defense policy merely reflected distrust of the industrial-managerial establishment and an inclination to withhold resources awaiting a purge. Whatever the case — and even if our general estimate of the Soviet defense budget is off in some particulars - - it does appear that Stalin and the Soviet Government responded to the massive Western strategic force buildup of the Korean War era with comparative sangfroid. There is simply no way of construing the evidence to indicate that the Soviets felt themselves driven to take part in a strategic arms race because of the gigantic American strategic buildup of the Korean War era.

From Stalin to Khrushchev

On March 6, 1953, Stalin died. On the following day Pravda and Izvestia announced that, "to ensure uninterrupted and correct leadership of the whole life of the country, ... the greatest unity of leadership and prevention of any kind of disorder and panic," organizational changes recently introduced by Stalin would be reversed: The Party Presidium would be restored to its former, smaller size, with much the membership that it had had before Stalin enlarged it in 1952, and most members of the Presidium would once again function additionally as ministers. Indications were that Malenkov, Beria, and Molotov formed a leadership triumvirate

within the Presidium, with Voroshilov, Khrushchev, Bulganin, Kaganovich, Mikoyan, Saburov, Pervukhin, and a few candidate members making up a second tier.

Reorganization of party and government made it clear that the heirs of Stalin, for all their reverential praise of his memory, had no intention of simply carrying on what he had begun. This became even more plain in a matter of weeks when the new leaders announced that the so-called "Doctors' Plot" had been a frameup. Credit for preventing a miscarriage of justice was assigned to Beria, head of a Ministry of Internal Affairs (MVD) which included the previously separate Ministry of State Security (MGB). Beria was said to be responsible for "many judicial and internal security reforms."[51] Functionaries who had handled the case were removed and punished. Chief among them was Semyon D. Ignatiev, who had headed the MGB when it was independent and who was identified by emigré Kremlin-watchers as a particular enemy of Beria.[52] All this indicated that Beria might be on the rise within the triumvirate.

Coincidental signs suggested that Molotov was slipping. In the reorganization he had resumed his former post as Foreign Minister. Hardly had he done so, however, before Pravda on 10 March 1953 published portions of a speech by Tito accusing Molotov of personal responsiblity for forcing the 1948 break. Direct quotation of Tito was itself a departure from precedent. The printing of his attack on a member of the triumvirate indicated at the very least that the triumvir's interests were not being carefully protected by the other two. According to rumor that reached not only emigré circles but also some Western journalists, Molotov was meanwhile losing

both substantively and bureaucratically in a dispute with Beria about diplomatic tactics. Beria allegedly advocated pursuit of detente with Yugoslavia and with the NATO powers. He was said to be arguing for an effort to negotiate compromise arrangements concerning Germany with the double objective of quieting East German unrest and preventing West German rearmament. In spite of Molotov's objections, Beria persisted in pursuing these objectives through channels separate from those of Molotov's ministry.[53]

Neither in the press nor elsewhere did outside observers detect any evidence of inroads on Malenkov's standing. Hence, foreign observers tended to surmise that the Soviet Union was on its way toward two-man rather than three-man rule.

In June 1953, however, Beria fell. From various accounts, it appears that all others in the Politburo, including Malenkov, had become uneasy over Beria's initiatives. Aware of murders committed by the secret police in Stalin's day -- indeed, made more aware than ever as a result of research on the Stalin era by the Party Secretariat -- they felt doubly uneasy because of the particular post that Beria occupied. Their own bodyguards, after all, came from his ministry. By June they had become sufficiently concerned and sufficiently brave to put into effect a plot for Beria's downfall. With help from the military and from PVO troops in the Moscow area, they made Beria a prisoner, removed him from office, and thereafter effected a new reorganization, reducing the stature of the MVD and creating a new Committee of State Security (KGB) directly under the Council of Ministers, to include the secret police, security forces,

border units, and elements engaged in espionage and counterespionage. Described immediately as a criminal in the official press, Beria was later reported to have been tried in secret, found guilty, and executed by firing squad.

In September 1953 it was announced that Khrushchev had become First Secretary of the Party. Having been the only member of the Politburo not to be assigned a ministry after Stalin's death and having simultaneously lost his post as head of the Party organization in Moscow, Khrushchev had not at that time seemed a rising star. With Molotov's standing diminished and with Beria gone altogether, however, Khrushchev's new eminence made him appear to be next in power to Malenkov.

As foreign analysts read the evidence the subsequent 12 to 18 months saw a contest between Khrushchev and Malenkov. Since the period from March to September 1953 had been marked domestically by a marginal shift toward production of consumer goods and externally by some slight toning-down in anti-Western rhetoric, foreign analysts assumed these to be courses of action favored by Malenkov. Through exegesis of his public speeches, the same analysts concluded that Khrushchev espoused opposite policies, i.e., continued emphasis on producer goods, coupled with a hard line toward the West.

It may be that Malenkov and Khrushchev differed along these lines. It may equally be the case, however, that their divergences were entirely different. One of Malenkov's advantages was the fact that many members of the Party thought him Stalin's chosen successor, for he had delivered the key address at the Nineteenth Party Congress. Like Western Kremlinologists they may have seen subsequent signs of a slip in Malenkov's standing. Still, Party functionaries

asking themselves whom Stalin would have trusted to carry on his work would most likely have answered with the name of Malenkov. This being the case, it was a natural tactic for Malenkov's rivals to attempt to represent him as departing from strict Stalinist tenets. Since primacy for heavy industry and unremitting struggle against imperialism were among those tenets, any rival of Malenkov would have had good reason to couch his speeches so as to seem an opponent of others within the hierarchy who were edging toward heresy. All that is certain is that there was rivalry between Malenkov and Khrushchev and that Malenkov, while exercising , as Khrushchev conceded, "more influence in the Presidium than the rest of us," did not have the power to make Khrushchev and the others toe his line.[54] How the Presidium divided on actual policy issues, if its members divided at all, remains a mystery.

In February 1955 Malenkov stepped down as Chairman of the Council of Ministers, being replaced by Bulganin. It was evident that, at least temporarily, Khrushchev had gained the advantage. According to reports circulating within the Soviet Union, the shift had actually taken place late in 1954, but the Presidium had agreed to defer Malenkov's formal loss of power until the convening of the Supreme Soviet.[55] In any event Khrushchev emerged immediately as, in greater degree than had ever been the case with Malenkov, the first among equals.

Although the announcement of Malenkov's reduction in status was accompanied by Presidium resolutions reaffirming the primacy of heavy industry and the need for Soviet military strength and was followed soon afterward by an apparent stiffening in Soviet official criticism of Western proposals for arms control, the ascension of Khrushchev

turned out not to spell reversal of the policies ascribed to Malenkov. Partly through price manipulation but also partly through reallocation of resources, production of consumer goods increased. And far more ambitiously than Malenkov, Khrushchev proceeded to pursue a stated goal of peaceful coexistence. With him as leader, the Soviet Government signed a state treaty with Austria and terminated military occupation of that country. It commenced a slow process of normalizing relations with Yugoslvia. Most dramatically of all, arrangements were made for a July 1955 "summit" conference in Geneva where Khrushchev dealt face to face with President Eisenhower and the British and French Prime Ministers. During and after that conference, the Soviet Government submitted proposals for a German peace treaty and for limiting both nuclear and nonnuclear forces. Though judged at the time in the West mere propaganda, these proposals have since been read by some analysts as possibly having been overtures genuinely aimed at achieving agreement which would lessen at least temporarily the danger of war.[56] In any case, they suggested energetic continuation by Khrushchev of the line of policy previously associated with Malenkov.

In July 1955 Khrushchev issued a call for a Twentieth Party Congress. When that Congress met in Moscow in February 1956, the delegates heard Khrushchev deliver a secret speech detailing the arbitrary and brutal nature of Stalin's regime.

During much of the remainder of 1956 and, indeed, for a long time afterward, the Soviet Government was preoccupied with problems which Khrushchev's secret speech almost certainly intensified. There was a rush to rehabilitate victims of Stalin's purges. Dissent against orthodox opinions found new voice and in some instances appeared in

print. Westerners began to hear reports even of strikes and student demonstrations.[57]

Worse yet, there were upheavals in Communist states in Eastern Europe. The leadership changed in Poland, and the new heads of the Polish Party declared, in effect, that they would manage their country's affairs without interference from Moscow. In Hungary the same thing happened. Indeed, the possibility emerged that Hungary could end up with a government not Communist at all. Facing such a prospect, the Soviet leaders elected to intervene militarily, suppressing dissidence and putting back into power the Party leaders who had previously been amenable to instructions from Moscow.

The political effects of the secret speech, coupled with the fact that Khrushchev was meeting difficulty in fulfilling promises to increase agricultural output, helped to stimulate an opposition combination within the Presidium. According to rumors reaching Western Kremlinologists, the combination manifested itself at the end of 1956 and the early part of 1957, during which period Khrushchev retained nominal primacy but in fact lacked the support necessary to have his views prevail. Policies adopted by the Presidium are said to have reflected much more the opinions of his critics.[58] Whether this is true or not, Khrushchev was surely in the ascendant again by the spring of 1957. He personally sponsored a massive reorganization designed to decentralize most of the economy and in theory attune production goals and the like much more closely to the needs of consumers. He also reemerged as the principal spokesman on foreign policy.

In June 1957 opponents attempted to overturn him. The economic reorganization seems to have tipped into the opposition camp one or more members of the Presidium who had previously wavered from one side

to the other. Khrushchev faced a clear majority demanding his resignation. He took the position, however, that he could be unseated only by a vote of the full Central Committee, and, while he pleaded this case, members of the Central Committee who happened to be in Moscow learned what was going on and joined in insisting that the full body be convened. Khrushchev's opponents at length gave in. In the larger body, they found themselves outnumbered. Khrushchev's powers were reconfirmed. Labeled "the anti-Party group," the opposition was then publicly condemned and its leaders -- Malenkov, Molotov, Kaganovich, Shepilov, Pervukhin, and Saburov--were removed from the Presidium and relegated to lesser offices.

If any question remained concerning Khrushchev's primacy, it was dispelled 4 months later. At the time of his triumph over the "anti-Party group," he was backed by Marshal Zhukov. Allegedly, Zhukov used military aircraft to fly to Moscow members of the Central Committee known to be loyal to the First Secretary. Previously, in the presumed divisions between Khrushchev and Malenkov, there had been an assumption of identity between the positions and interests of Khrushchev and the military leadership. The power and growing independence of the military had meanwhile served as a subject for occasional critical comment by functionaries who believed that professional soldiers should be firmly held in subordination to political advisers selected for knowledge and understanding of Party doctrine. But any speculation supposing Khrushchev to be dependent on his military supporters evaporated in October 1957 when he engineered a vote in the Presidium requiring Zhukov to resign from his posts and publicly to declare himself guilty of putting personal ambition

ahead of Party loyalty and to say that he deserved removal from office.

October 1957, the month also of the Sputnik, thus marked the end of uncertainty as to who would be Stalin's successor. It concluded the period of collective leadership and opened a new period more appropriately styled as that of Khrushchev's dictatorship.

The Post-Stalin Transformation of the Military Establishment

During the 4 1/2-year transition period, actual and prospective Soviet force posture altered significantly. These alterations were accompanied by organizational changes and by indications of new departures in military doctrine.

When Stalin died, the new leaders assumed control of a military establishment with about 6 million men under arms. As indicated earlier, a reduction in manpower levels, especially in the ground forces, had commenced well before Stalin's death. The total, however, still stood 1 to 2 million above what it had been before the commencement of remobilization in 1948.

The ground forces accounted for almost two-thirds of the men under arms and slightly more than one-third of defense expenditures. The air forces and PVO Strany together were responsible for around 30 percent of outlays for defense and were quite obviously going to become more expensive in the near future.[60] The long-range air force as of 1953 had slightly more than a thousand TU-4s and was still taking delivery of the last few from 2 plants. There were to be over 2,000 by the end of the run. By the close of 1954, 3 plants had been re-equipped to turn out TU-16s at a combined rate of over 40 per month and 2 other plants would be ready to commence series

production of the TU-95 (Bear)and Mya-4 (Bison). Frontal aviation and PVO Strany would meanwhile be receiving the full flow of production of MIG-17s and the first runs of the new MIG-19 and Yak-25. Frontal aviation commanders would also be able to draw on the aircraft industry's 90-a-month capacity for producing IL-28 light bombers, and PVO would be installing and manning SA-1 launchers around Moscow and expanding and improving radar networks elsewhere. An increase in expenditures on the air forces and PVO Strany during the period 1953-55 was almost certainly already programmed.

The cost of the navy had risen steadily since 1946, as a result of Stalin having authorized cruiser, destroyer, and submarine construction and also having allocated to the navy a number of the newer fighters and light bombers for its role in home defense. As of 1953 the surface fleet included 14 light cruisers and more than 100 destroyers, all added since World War II. The fleet of submarines classifiable as modern totaled 235. The navy had more than 2,000 MIG fighters, approximately half as many as frontal aviation, and it had 200 IL-28 light bombers. In addition, it was on the verge of successfully adapting to its purposes new and extremely expensive technologies, namely nuclear propulsion and rocketry. Outlays for the navy were to rise by no more than 3 percent in the 10 years following Stalin's death. As with the air forces and PVO Strany, this nominal increase was almost certainly part of plans which the new leaders inherited from Stalin.

By late 1957, when Khrushchev's preeminence became fixed, Soviet military forces numbered something like 4 million. They were down to the level of a decade earlier. The ground forces accounted for about half of this total, and expenditures on the ground

forces represented about a quarter of total expenditures for defense. This diminishment had not, however, produced additional funds for the air forces and navy. On the contrary, though the air forces had more manpower, the amount of money being spent on them had gone down. In rubles of constant value, the air forces in 1957 were receiving a little more than three-quarters of what they had been receiving in 1955. The navy's allocations, which had also dropped, were about four-fifths of what they had been in 1955.

In part, these three Services had less because the whole military establishment had less. After allowing overall defense expenditures to rise around 10 percent between 1953 and 1955, Stalin's successors effected a cutback before 1958 of about 15 percent, meaning that, in rubles of constant value, they had trimmed absolute outlays for defense by something like one-twentieth. The ground forces, air forces, and navy all lost more than this because the highest priced personnel and equipment went to new organizations. PVO Strany, practically autonomous since 1948, became an independent Service in 1954, and it continued some modest expansion during the years when the older Services were experiencing retrenchment.[61] Meanwhile, the missile force acquired an identity separate from its parent arm, the artillery. The process began in the late 1940s when rocket specialists, whether concerned with surface-to-air or surface-to-surface versions, began to differentiate themselves from other artillerymen. It must have been accelerated if, as Khrushchev alleges, conspicuous lack of sympathy for their enterprise was manifested by Marshal S.S. Varentsov, the head of the Artillery Directorate from 1952 to 1955 and the Commander

of Artillery thereafter. According to Khrushchev, Varentsov was a champion of field artillery who argued that missiles could not be successfully camouflaged when fired and who said, "An artillery barrage is a symphony; a rocket launching is a cacophony."[62] After the PVO became independent and research and development work on surface-to- air missiles became the responsibility of a new, separate organization in the Ministry of Defense, the surface-to-surface missileers reportedly moved toward creating a comparable organization of their own not under the Artillery Directorate. Those concerned with operational use of the weapons apparently also distanced themselves from the artillery commands, for arrangements appear to have been made for most of the 630-mile-range SS-3 and the 1,050-mile-range SS-4 to be assigned to the long range air force and for the targeting of missiles to be handled by the branch of the Intelligence Directorate that provided targeting for the LRA.[63] Although the strategic rocket forces would not become independent until 1959 or 1960, they had some degree of autonomy earlier, and it was this nascent Service that, even more than the PVO, thrived during the period of stringency. From having a budget allocation almost too small to be measured, the rocket force was by the end of 1957 accounting for between 3 and 6 percent of all military expenditures. Three years later, by the time of independence, the SRF's annual budget would approach that of the PVO.

Matching the alterations in budget allocation were major alterations in the missions assigned to the Services and in actual and prospective deployments. Although the LRA had nothing but medium-range TU-4s at the time of Stalin's death, it had the assignment of conducting strategic operations over intercontinental distances.

During the period of collective leadership, the LRA was for practical purposes stripped of this mission and made almost exclusively a force for strategic operations on the Soviet periphery. It never acquired more than a small complement of either Mya-4s or TU-95s, nor was much effort made to develop a more efficient plane with intercontinental range. Instead, after completing its 1300-plane TU-4 force, the LRA began substituting for the TU-4 the all-jet TU-16 which was much faster (500 knots maximum as opposed to 240) but which had no greater range. The LRA, to be sure, was assigned operational control of the first medium-range ballistic missiles. This indicates that it retained a monopoly of the strategic attack mission during the period when the separate rocket force was taking form inside the artillery establishment. Before longer range missiles were perfected, however, the LRA was deprived of all strategic missile missions except that of offensive operations against strategic targets in nearby theaters. In view of the weak effort to develop an intercontinental bomber, the fact that developmental work on missiles seemed to be wholly the province of artillerists, and the further fact that bomber pilots stood well below artillerists in the Soviet military pecking order, it seems likely that the transfer of the intercontinental strategic mission was decided upon when it was decided to establish a rocket force with substantial autonomy. Even earlier, the mission may have been shifted to the artillery.

The missions of the navy were meanwhile also redefined. As of 1953, substantial effort was going into nuclear propulsion plants which might prove adaptable to submarines. Substantial effort was also going into development of submarine-launched cruise missiles and ballistic missiles.

If both were successful, these efforts would give the Navy some strategic offensive capability. All the same, the projected Soviet fleet remained a force primarily suited for coastal defense and secondarily suited for showing the flag in distant waters. It was planning to have by the end of the decade 24 new Sverdlov-class cruisers, almost 200 new destroyers and escorts, and more than 450 new submarines, only 42 of which would classify as large or long-range and only 6 of which were to be equipped as missile launchers.[64]

By 1957 the projected Soviet navy was to have quite different characteristics. Except for a small number of light cruisers, destroyers, and escorts, nearly all designed primarily as SAM or cruise missile platforms, surface ship construction had halted. Most of the ways previously set aside for constructing large surface ships had been converted for construction of merchantmen. The major naval yards were primarily devoted to submarine construction, with plans calling for far fewer small- and medium-sized boats (276 instead of 1,108), reduction in numbers of large diesel torpedo boats, and production instead of 50 missile-launching submarines, 14 of which would be nuclear powered, plus a shift to nuclear propulsion for most large attack submarines to be built after 1958. In addition, the navy no longer controlled any interceptor aircraft. All MIGs and Yak-25s assigned to air defense had been placed under PVO Strany. Instead, the navy had its own long-range or medium-range bomber forces, with 90 TU-95s and 275 TU-16s. Presumably, the navy still had a major defensive mission, but that mission must have been to reach out, find, and destroy enemy carrier forces at great distances away from home shores. It had exchanged a manifestly defensive assignment for one involving counterattack or perhaps even preemption. Furthermore, as was to be stressed

by the Service's new chief, Admiral Sergei Gorshkov, the navy would be increasingly well equipped to strike targets not only at sea but in coastal regions of the enemy's homeland.[65]

Nuclear Weapons and Shifts in Military Doctrine

At least after 1947 or 1948, Stalin had been unrelenting in pressing forward work on nuclear weapons.[66] The first plant for production of heavy water, constructed in large part on German models, had begun limited operation in 1947. By 1950, five more such plants had been built. The first experimental reactor, using natural uranium with graphite as a moderator, had gone critical in 1947. A second experimental reactor, making use of heavy water as a moderator, became critical in April 1949. Meanwhile, a plutonium production reactor, graphite moderated and water cooled, had been under construction at Kyshtym, south of Sverdlovsk. It went critical in the summer of 1948. A gaseous diffusion plant at Verkh Neyvinsk began to produce U-235 perhaps as early as 1950. Subsequently, the Kyshtym facility was to be expanded, two other large plutonium reactor complexes were to be built, and three additional gaseous diffusion complexes were to be put up in the Urals and in Siberia. Together with intensive efforts both in the Soviet Union itself and in Eastern Europe to locate and mine uranium, this vast construction program gave evidence that whatever had been the case in the immediate aftermath of World War II, Stalin had come to attach very high priority to development of the Soviet nuclear industry.

The pace of work set for weaponry was as brisk as that set for development of the infrastructure. Although the successful test of late August 1949 involved detonation of only one 20-KT device and no

further tests were conducted until October 1951, construction work proceeded at the Semipalatinsk proving ground, for it was not only able by 1951 to accommodate the second test series but able by 1953 to accommodate a third series that included a thermonuclear device. Possibly too, preparation began in the late 1940s or early 1950s of the additional proving ground at Novaya Zemlya, where underwater and other special effects tests were to be conducted in 1955, and of yet another at Totskoye, adjoining the missile test range at Kapustin Yar.

Responsiblity for development of the nuclear industry and nuclear weapons had been assigned to Beria, who had driven the work forward, making maximum use of prisoner labor, captured German materiel and personnel, and, in all probability, the foreign intelligence apparatus which also lay in his domain. From the accomplishments of the period up to 1955, almost all of which must have been set in train by early 1953, one can infer that Beria had orders from Stalin to expand fissionable material production as rapidly as possible, to employ every available technology for this purpose, and simultaneously to pursue every line of weapons development. In connection with the 1951 test series, it will be recalled, Stalin boasted of developing weapons of "various calibers." The successful 1953 test of a thermonuclear device indicated that Stalin, like Truman, had also invested a large quantity of fissionable material in a gamble on the feasibility of a fusion reaction. It is estimated that the Soviet stockpiles of fissionable material and weapons were expanding geometrically as of the time of Stalin's death.

U.S. stockpiles at the point in the beginning of the 1950s when Americans began to speculate on the prospect of nuclear plenty.[67]

Though the available analyses of Soviet defense expenditures do not include separate estimates for nuclear programs after 1951, evidence concerning reactor and test-site construction argues that outlays continued to rise in the period when Stalin was cutting back most components of the military budget. Together with the apparent emphasis on experimentation in the test program, this suggests that, at least for the short run, Stalin may have been more interested in having the most up-to-date and most powerful weapons that could be developed than in necessarily having a large number of deliverable warheads. Of course it could be that weapons development was paced as it was simply because of recognition that it would be some time before the Soviet Union had long-range bombers or missiles. Reactor development certainly provided a basis for later large-scale production of weapons. On the other hand, an emphasis on power rather than numbers would be consistent with the hypothesis, already adumbrated, that Stalin tended to think of strategic offensive forces more in terms of use in diplomacy than in war. While he might have wanted an armada of TU-4s so that the English and Europeans would see visions of their skies blanketed with Soviet bombers as Germany's skies had been blanketed by those of the Allies, he would no longer have considered large numbers of planes or long-range missiles to be necessary, once the Soviet Union had nuclear weapons, for he would now expect the English and Americans to imagine a lone bomber or missile bringing upon London, Montreal, New York, Washington, or Chicago devastation such as that of Hiroshima and Nagasaki and to be paralyzed thereby.

(This is not to suggest that Stalin shrank from having large numbers of nuclear weapons. It is merely to say that he may have attached relatively low value to numbers per se.)

Yet another explanation of the character of Stalin's nuclear program could be that it reflected the preferences of scientists and engineers involved in research and development rather than the preferences of military men concerned with the use of weapons in war. Until 1953, every aspect of the nuclear program seems to have been under the control of Beria. Custody of weapons was certainly a function of the security troops, for Stalin must have had at least as many misgivings as Truman about putting one in the hands of a man who had the wherewithal to place it on a target.[68] If military men were involved in the nuclear program, they were very few in number. They were probably less communicative than their counterparts in the American military. In all likelihood, therefore, decisions in Moscow were not subject to much of the type of influence exerted on decisions in Washington by soldiers privy to activities in the AEC. Stalin may have adopted policies which were essentially those of Beria's scientists and engineers not because he had thought them through but because they did not jar with an instinctive emphasis on the political-psychological power of a limited nuclear arsenal.

After Stalin's death, Beria retained control of all nuclear programs. While Malenkov and one or two others knew something about these programs, others did not. Khrushchev says that he was almost completely ignorant.[69] When Beria was deposed and his empire partitioned, the nuclear program was assigned to a Ministry of Medium Machine Building headed by V.A. Malyshev. Although Malyshev was a Deputy Chairman of the Council of

Ministers and a figure of some consequence in the Party, he had nothing like the eminence or independence of Beria. Subject to oversight by both the Council of Ministers and the Presidium, the new ministry had to divulge its secrets to a larger audience. Formally on a par with the Ministry of Defense, it was also more open to inquiry and influence from the military establishment than had been the predecessor organization, which the military had had to approach by way of Beria or perhaps even by way of Stalin.

Several currents converged. The scientific-industrial apparatus was at or near the point of being able to produce nuclear weapons in considerable variety or quantity or both. It needed guidance. Unfamiliar with the issues, the members of the Presidium were not prepared to give such guidance unaided. They were probably less suspicious of the military than Stalin had been. (To say this is far from saying that they were trustful.) In any event, they had to be more considerate, for they had been dependent on the military at the time of the coup against Beria; it was important to them to have military organs proclaiming their loyalty to the new regime; and it was useful for the maintenance of foreign as well as domestic tranquility that the world see relations between the civilians and the armed forces as harmonious. And at just the time when opportunity arose for the military to obtain more information about nuclear weaponry, their incentives for doing so became greater because they were adjusting both to the stringencies imposed by Stalin's final budget and to the augmentation in peril to the Soviet Union represented by Western strategic forces funded after June 1950 but only now being deployed . Given these factors, it is a reasonable supposition

that the summer of 1953 saw the upper echelons of the Soviet military begin for the first time to gain detailed knowledge of the characteristics and potential of nuclear weapons, to incorporate such knowledge into their planning, and perhaps to influence nuclear research and development.

Stalin had discouraged military men from even thinking about the implications of the discovery of nuclear weapons. Apart from deprecating the atomic bomb as a terror weapon of limited ability, Stalin had personally published a list of "permanently operating factors" which, he alleged, were the true keys to victory in any war. They were the basic strength, solidarity, and morale of a people. According to Stalin's dogma, no expedient of military strategy or tactics, such as massive surprise attack, could alter the outcome. Among other things, this dogma rationalized Stalin's failure to prepare more effectively for the Nazi attack of 1941. It also dictated, however, that Russian officials either ignore or skirt the question of whether wars in the nuclear era might be fundamentally different from wars in the past.[70]

Since 1949 there had been in the General Staff a special Bureau for the Study of Modern Warfare, directly under General Shtemenko, the Chief of Staff.[71] Officers assigned to it had presumably acquired at least rudimentary information about nuclear weapons technology. After Stalin died, some officers began cautiously to air thoughts which had not been given currency earlier. Before long, certain issues came into the open not only in publications circulating among the officer corps but in periodicals of wider distribution and in public speeches.

Although Stalin had spoken of the successful Soviet tests of nuclear weapons, he had disclosed few details. Whatever his opinions in private, his posture in public seemed based on an assumption that, once both sides possessed these weapons, they would not be used in actual warfare. His successors maintained this posture for a time. The public announcement of the first thermonuclear test did say "the power of the hydrogen bomb is many times greater than the power of the atom bomb." Not until January 1954, however, did there begin to appear in unclassified Soviet publications any details concerning blast, heat, and radiation effects of nuclear and thermonuclear weapons. The Ministry of Defense organ, Krasnaya Zvezda, led the way. After a cautious start, it published in April 1954 a series on "The ABCs of Atomic Energy" which had some loose resemblance to the Smyth report issued in the United States 8 years earlier. In August a navy magazine, by the device of describing a U.S. thermonuclear test, disclosed additional information on weapons effects.[72] By the end of the year, such knowledge had spread sufficiently widely within the Services to make possible ground forces exercises in a simulated nuclear environment and open discussion in many publications of the defensive problems which would face surface ships under nuclear attack.[73]

Just knowing of what had happened at Hiroshima and Nagasaki, Soviet military planners must all along have felt some concern about the possibility of atomic bombs being dropped on Soviet cities. Now they had specific knowledge of what their bombs could do and of the truly devastating power of hydrogen bombs. At the same time, they were made aware by their own press that a ring of hostile bomber bases was rapidly going up around their borders, that Secretary Dulles had threatened "massive" strategic attack in the event of war, and that Admiral Radford had said all American

forces could be nuclear-armed. If privy to information published in the foreign press they knew also that the United States was deploying hundreds of B-47s to these bases; starting to produce faster, longer range, and less vulnerable B-52s; testing sea-launched and surface-launched cruise missiles (the REGULUS, SNARK, and NAVAHO); and commencing what appeared to be a crash program for intermediate-range and intercontinental ballistic missiles, for all these developments figured prominently in American newspapers and magazines during 1953 and 1954. Soviet military officers faced the fact that their most probable enemy possessed and was expanding a capability for commencing warfare with large-scale nuclear and thermonuclear attacks on their centers of population and industry. Those with any planning or significant command responsibilities had to ask themselves what would be the effects of such attacks on their country's ability to sustain and wage a war .

It was not easy for Soviet officers to contemplate this question. Like their counterparts in the United States, they probably found it hard to think of a great war that might be entirely different from that which had just been their preoccupying experience. It was harder still if, like old-time cavalrymen trying to envision a war without horses, they had to think of a future with little room for the weaponry or type of unit most familiar to them. But Soviet officers labored under even greater handicap because of the obligation that they consider issues within the framework of Marxist-Leninist-Stalinist dogma.

It had to be accepted as an article of faith that war was inevitable, for Lenin had taught that capitalism would not go under without a violent effort to save itself and without a revolution born of war comparable

to that which had originally won Russia for Bolshevism. It had further to be accepted that, as both Lenin and Stalin had taught, the socialist states were bound to be victorious, for the will and morale of their people would remain strong by virtue of recognition that the interests of people and states were identical while the will and morale of people in the capitalist world would disintegrate as recognition dawned that the interests of people and rulers were at odds. This particular dogma held only for the long run, admitting for the short run the possibility that socialist states could suffer reverses and that capitalist states could fight wars without undergoing revolutions. There existed in addition, however, Stalin's dicta about the "permanent operating factors" which would determine outcomes even in particular conflicts, from which it followed that the Soviet Union could not suffer defeat even if the victim of surprise attack from an enemy which had built up temporary superiority in ready military forces.

These postulates put out of consideration a variety of contingencies to which either hope or prudence would otherwise have drawn the attention of at least some Soviet planners. It was out of the question that negotiation or the achievement of an equilibrium in power or some combination of the two could yield long-enduring peace. It was equally out of the question that the Soviet Union could be so crippled by strategic attack as to be incapable of rallying, recovering its borders, and eventually conquering, as in the late war. Contingencies toward either of these extremes could not be considered even clandestinely unless and until the relevant dogmas were modified.

Confronted with the realities of nuclear and thermonuclear technology together with evidence of the growth of Western strategic offensive forces, leaders in the Soviet military establishment began cautiously to review the inhibiting tenets. The major organ through which the Ministry of Defense and General Staff disseminated military doctrine to officers of the various armed forces was Voennaya Mysl' (Military Thought). In September 1953 its editor, Maj. Gen. N. Talensky published over his own name a rambling and ambiguously worded article inviting discussion of "the laws of military science." Talensky suggested that the dogmas set forth by Lenin and Stalin had to do with war but not necessarily with armed conflict. He did not question the inevitability of both, nor did he express doubt that, in the struggle between socialism and capitalism, socialism would eventually prevail. He did, however, open up a possibility for holding that a particular episode in that struggle could take the form of an armed conflict which the Soviet Union lost. Indeed, he went so far as to say that military science should "not exclude the possibility of a decisive defeat in a limited time of one or another opponent, given the existence of certain conditions."[74]

Talensky's article produced a series of published responses over the succeeding 20 months. For the most part, they attacked Talensky and affirmed that the socialist camp would prevail in armed conflict as in war because of Stalin's "permanent operating factors." The issue for November 1954 contained 40 letters, mostly in criticism of Talensky. One went as far as to say that he drew upon Douhet and Fuller instead of Marx and Lenin. Talensky ceased to be editor of the journal. All this suggested that his initiative had led nowhere.

Meanwhile, however, discussion of the doctrinal issues cropped up in other places. In a Leningrad magazine there appeared in November 1953 an article by an obscure writer named M. Gus, setting forth the heretical proposition that the advent of thermonuclear weapons might put the Soviet Union "in a position to prevent war, and to paralyze the action of Lenin's law." This produced a barrage of writings in direct and indirect refutation, including one by V. Kruzhkov, head of the Agitation and Propaganda Section of the Central Committee. On the other hand, Pravda and Izvestia in December 1953 published without comment a speech by Eisenhower warning that continued hostility between the "two atomic colossi" created "the probability of civilization destroyed." Subsequently, Izvestia printed a letter from an unnamed "retired general" which expressed agreement with Eisenhower and in effect restated the thesis of Gus. More authoritative still was the election address of then-Premier Malenkov in March 1954 which included the assertion that "a new world holocaust ... with the present means of warfare, means the destruction of world civilization."[75]

Although the same position was taken by other members of the Presidium, including Khrushchev's ally, Mikoyan, it apparently evoked frowns from Party theoreticians. Without direct reference to any of the election speeches, Kommunist, the principal organ of the theoreticians, restated the dogma that war would result in the destruction of capitalism, and Malenkov and others did penance by including such a declaration in later speeches and by refraining from the use of any language which might call it into question. After Malenkov's demotion in 1955, Kommunist criticized him by name for the doctrinal error embodied in his election speech. Not until 1958,

when Khrushchev described nuclear war as likely to lead to "the annihilation of almost all life," was a Soviet leader again to call into question either the ultimate inevitability of war or the gospel that the socialist camp would necessarily survive and prevail.[76]

December 1953 to May 1954, the period between Pravda's publication of Eisenhower's speech and Malenkov's recantation, happened not only to be that in which members of the collective leadership were campaigning for 100-percent endorsement at the polls but also that in which they were waging a diplomatic and propaganda campaign aimed at preventing creation of the projected European Defense Community. To the latter end, they made the most of opportunities to divide the French from the Americans and British, not least by salting the wounds which France was suffering from defeat in Indochina and they used every device for stimulating among the French, British, and other Europeans fear of a revived Germany and fear of a nuclear war which might leave the Continent a desert. Malenkov's repair of the doctrinal error occurred when defeat of the EDC by the French parliament had become a virtual certainty. It may be that his previous words were no more than a witting or unwitting slip committed when his thoughts were elsewhere.

On the other hand, it is at least barely possible that all these words in fact were echoes of a policy debate in and around the Presidium, focusing on the question of how the Soviet Union should adapt to the threat posed by U.S. strategic forces armed with thermonuclear weapons and continuing well beyond the point when Malenkov accommodated himself to the criticism from Kommunist. The chief indications that this might have been the case come from the immediately subsequent period. Through the winter, spring, and summer of 1953-54 leading spokesmen for the

military establishment were saying much what was being said in Voennaya Mysl' by critics of Talensky Marshals Voroshilov and A.M. Vasilevsky praised the existing strength of the armed forces. Vasilevsky, the professional, published in the daily Krasnaya Zvezda articles cautioning against any supposition that the outcome of a war could be decided by "transitory factors." The possible implication was that Soviet strategy and force planning required no alteration on account of new conditions. At the end of September 1954 there occurred a major shift in Soviet negotiating posture with regard to arms control. Abandoning their previous insistence on total destruction of all nuclear weapons as a prerequisite condition, the Soviet delegation to the U.N. General Assembly proposed step-by-step reductions in both nuclear and nonnuclear forces. Whatever its rationale, this position was the first taken by the Soviet Government since 1946 which detached observers regarded as a possible basis for negotiations. A few weeks later, Deputy Premier M.Z. Saburov served as spokesman for the Presidium on the anniversary of the Revolution. He voiced cautious optimism about prospects for peace and conspicuously omitted the traditional call for an increase in Soviet military might. Subsequently, Kommunist gave an endorsement to Saburov's position, declaring editorially that "a certain diminution of international tension has been attained."[77]

Although actual protests could not have passed the censorship, passages that could be so characterized appeared immediately in various military organs, some as quotations or contributions from eminent military men such as Marshal Timoshenko. A hint of division within the Presidium itself appeared in statements approved by or even uttered by Bulganin,

the Minister of Defense, emphasizing that the armed forces continued to need strengthening. Nevertheless, the conclusions toward which most evidence pointed as of November 1954 was that the Soviet leadership had decided against any major modification in defense doctrine and would proceed on an assumption that nuclear weapons either could be negotiated out of existence or would not play a significant part in a war, perhaps because both sides would be deterred from using them as they had been deterred in World War II from using poison gas.

During the first half of 1955, the accumulating evidence pointed toward an entirely different conclusion. At the very end of 1954, Pravda turned. First of all, it declared that "the international situation, which had eased considerably at the beginning of the U.N.G./eneral/ A./ssembly/ session, has not only failed to improve, as a result of aggressive U.S. policy, but has become somewhat more complex." A few days later, in a lead article calling to mind the "arms race" editorials which had preceded Stalin's boosting of the defense budget back in 1948-49, Pravda catalogued increases in Western military spending, pointing out that that of the United States had more than trebled over the preceding 5 years. Krasnaya Zvezda termed "vigilance and political keensightedness increasingly important today, as the forces of aggression prepare to unleash a new war." Kommunist reversed itself completely and in its December 1954 issue warned of greatly increased danger of war.[78]

Not in his former professional journal but in the more widely circulated Mezhdunardonaya Zhizn (International Life), General Talensky declared in January 1955, "at any moment ... mankind might be faced with the accomplished fact of the beginning of a destructive atomic

war." A Pravda article that was at once alarmist and blustering reported U.S. Air Force claims of ability to deliver a "lightning blow" against the U.S.S.R. but observed that Western reconnaissance planes had been shot down or turned back and added: " Zealous U.S. atom mongers should remember that the U.S.S.R. possesses all the means necessary to crush aggressors." Lest such language be taken to imply complacency, Dimitri Shepilov, the editor, signed his name to a leader calling for forced-pace development of "heavy industry, machine construction, energy, chemical industry, electronics, jet technology, guidance systems, and so forth" and condemning as "anti-scientific, rotten theory" any resistance to such a policy.[79]

Contemporaneous editorials in Izvestia were different in tone and substance. At least by implication, they argued for slightly greater emphasis on the production of consumer goods. Western analysts have inferred that the editors of Izvestia were allied with Malenkov and that differences between Pravda and Izvestia were outward and visible signs of a contest between Khrushchev and Malenkov, perhaps between Party bureaucracy and government bureaucracy, which would climax in February on Malenkov's resignation from the premiership.[80] The fact that all organs except Izvestia made an about-face in late 1954 and early 1955 is consistent with this theory and with the report that Khrushchev had actually bested Malenkov before the turn of the year.

The resignation of Malenkov was accompanied and followed by many indications of a gain in strength for the military establishment and the professional military in particular. Marshal Bulganin moved into Malenkov's place. More significantly, his own replacement as Minister

of Defense was Zhukov. Eleven generals were promoted to the rank of marshal. On various ceremonial occasions, military men figured much more prominently than had previously been the rule. And the state budget presented to the Supreme Soviet included a 12-percent increase for defense, the largest announced increase since that in Stalin's budget for 1949.[81]

Meanwhile, the debate over military doctrine took a new and dramatic turn in the open literature. Marshal V.D. Sokolovsky, Chief of the General Staff, published in Izvestia a scornful appraisal of all recent writings concerning strategy, implying that they were hidebound and saying explicitly that they had not drawn sufficiently upon theoretical writings elsewhere. In Voennaya Mysl' appeared almost simultaneously a long article by Marshal P.A. Rotmistrov which departed from Stalinist doctrine far more abruptly than had Talensky.. Rotmistrov declared that "surprise, successfully accomplished, not only influences the course of battles and operations but in certain circumstances can influence to a significant extent the course and even the outcome of the whole war." He specified that surprise attack with atomic and hydrogen bombs could have enormous effects. He concluded: "The duty of the Soviet armed forces is not to permit an enemy surprise attack on our country and, in the event of an attempt to accomplish one, not only to repel the attack successfully but also to deal the enemy counterblows, or even preemptive surprise blows of terrible destructive force."

In the March issue, the editors of Voennaya Mysl' praised Rotmistrov's article and condemned themselves for having held up its publication. They added, "we must always be ready for preemptive actions against the perfidy of the aggressors." The warning that nuclear surprise attack could be nearly decisive in war and the corollary propositions that the Soviet Union needed to maintain defensive readiness, ensure the receipt of warning, and be prepared for preemption then found utterance in a speech by Deputy Defense Minister Marshal Vasilevsky (previously a proponent of Stalin's "permanent operating factors") and in Krasnaya Zvezda, the official military newspaper, and even the Literaturnaya Gazeta.

The turnaround in doctrine was effectively completed in May when the editors of Voennaya Mysl' published a long editorial article which was thereafter for some time to have the character of new scripture concerning military science.[83] Although the Presidium's repudiation of Stalinism was not to come until the following year, the article set forth a summary of the history of World War II sharply different from that previously current. Stalin's name seldom appeared. The Nazis were described as having gained great advantage from their surprise attack. The Soviet side was acknowledged to have committed serious errors. Victory was said to have been due to the zeal of the armed forces, the wisdom of the Party, and the heroism of the masses. With regard to the future, the article set forth a variety of precepts. One was that the role of surprise had grown greater, "especially with the appearance of weapons of mass

destruction." Another was a corollary: "The conduct of war with a powerful, technically equipped enemy demands from the Soviet armed forces complete preparation, constant fighting readiness, high alertness and the ability to overcome serious difficulties." The emphasis on need for readiness was partially offset by a point made with emphasis: "that not a single modern war has begun without a chain of provocations preceding it." The implication was that the forces need not be prepared for a bolt from the blue but only for surprise attack, like those of the Japanese at Pearl Harbor and the Germans against Russia in 1941, which would have been foreseen from some distance in time had intelligence data been interpreted rightly. The task for the armed forces was described as "above all ...working out the ways and means of preventing surprise attack by the enemy and inflicting on the opponent preemptive blows in all dimensions--strategic, operational and tactical."

Although the Voennaya Mysl' editorial concluded by echoing Marshal Sokolovsky's appeal for more study, its publication marked the end of open debate about doctrine. Articles and books appearing over the next several years were mere glosses, seeming to indicate that dispute no longer turned on fundamentals but rather, as in the West, on shadings that affected the interests of particular organizations. Thus a ground forces general expressed concern lest concentration on possible surprise and the initial phase of a war lead to neglect of planning and preparation for the long drawn-out land operations that might ensue, and naval officers publicly called attention to the fact that ships and submarines had capabilities for delivering nuclear bombs

or rockets on far distant targets. That there may have been much more of this type of dispute—so familiar in the West—than appeared to be the case is suggested by the 1960-61 examples of the highly classified version of Voennaya Mysl', designed for senior officers, which Oleg Penkovsky turned over to Western intelligence, for those pages teem with evidence of conflicting Service claims for portions of the strategic offensive and defensive missions.

The basic elements of Soviet doctrine seem to have been settled by the summer of 1955. The paramount threat was strategic nuclear attack on the homeland. The response to this threat required a high level of readiness, with emphasis on forces in being rather than reserves, able to escape destruction and commence promptly to conduct defensive and offensive operations in a nuclear environment. It also required development and maintenance not only of strategic defensive forces such as those of PVO Strany but also of strategic counteroffensive forces.

Since the terms of the Soviet debates were not well understood by Western observers at the time, it is worth underlining the perhaps obvious point that the Soviet angle of vision as of the 1950s was different from the American. Once they accepted the proposition that strategic nuclear attack could have a decisive or almost decisive effect in war, Russian officers had to confront the reality that the United States was far ahead in capacity for launching such an attack. The problem that preoccupied them was therefore how to minimize the crippling effects of such an attack. Americans, by contrast, looked primarily at the problem of how to inflict maximum damage. Not until quite late in the day did "damage limitation" become a problem attracting close

attention in the Pentagon, and the posture then adopted by most officers in the strategic forces was to dismiss such an objective as unrealistic. Although there were a few notable exceptions as early as the mid-1950s, it was only in the 1960s that any significant number of American military planners came to appreciate the concept of developing and deploying strategic forces targeted against the enemy's strategic offensive forces. Soviet writings of the 1950s were generally read in the West at the time as implying a doctrine of preparing for preventive war or for a paralyzing first strike. In fact, Soviet strategic thought was then almost exclusively guided by defensive concerns.

"Leapfrogging" to the ICBM

Among the many changes of the period of collective leadership, the one that attracted most attention and caused most surprise among Western military analysts was what appeared in retrospect to have been a conscious decision in Moscow to shift from the heavy bomber to the ballistic missile as the mainstay for intercontinental strategic offensive forces.

The Mya-4 (Bison) was put on public display in May 1954, the TU-95 (Bear) a year later. Although Soviet official statements boasted neither that armadas of these planes were in prospect nor that either could deliver nuclear weapons across intercontinental distances, Western observers assumed that one or both would be produced in large numbers and that their primary mission would be strategic offensive operations against the United States. The first of these assumptions rested on knowledge that the TU-4 (Bull) fleet had already grown to around 1,300 and that Soviet bomber plants were capable of producing comparable numbers of the newer aircraft. The second had its basis in Soviet rhetoric about "crushing blows against any aggressor," together with a natural supposition that the development of strategic forces in the Soviet Union would follow the pattern set by the United States.

In fact, neither the Bison nor the Bear was produced in quantity matching the Bull. Only a hundred-odd Bisons and a little over twice that many Bears were ever deployed. Not until early 1956 were there reliable sightings indicating development of equipment and techniques for aerial refueling which could enable Bison to carry out a round-trip intercontinental mission. Practical preparation for air delivery of nuclear weapons involved shorter-legged aircraft, primarily IL-28s.[85]

In 1957, when the Soviets successfully tested an ICBM and then sent into the skies the two Sputnik satellites, these events seemed to provide an

explanation for the otherwise puzzling evidence concerning Soviet strategic offensive forces. It came to be surmised that they had chosen to "leapfrog" into an advanced technology. While the Americans were moving from one manned bomber to another and just experimenting with the high-speed, unmanned missiles recognized possibly to be the strategic weapons of the future, it was argued, the Soviets had decided to skip the next stages in work on bombers, put their resources instead into rocketry, and gamble that they could thereby catch up with or perhaps even get ahead of the United States. This interpretation has since been put forward by Soviet writers, ascribing farsightedness to the leadership of their Communist Party.[86] What probably happened in reality was that Soviet leaders, beginning with Stalin, made a series of less than Olympian decisions, not all of which had the intended outcomes, and the aggregate result was that they found themselves with a long-range ballistic missile program more promising than any of their long-range bomber programs. Even so, the fact that this could occur is significant because of what it implies about Soviet perceptions and decision processes.

Apparently, as already recorded, the Bison and Bear were at or near prototype stage by the time of Stalin's death, for a version of the latter was glimpsed in April 1953 and a version of the former in July of the same year. If both aircraft had been dealt with in standard fashion, they had already undergone elaborate preflight testing at the Ministry of Aviation Production's flight research institute at Ramenskoe, and the prototypes were in process of being flight-tested by the Ministry's own pilots. The next stage would be flight tests by pilots from the long range air force. Once they gave approval, the Service would propose to the Ministry of Defense a schedule for procurement. Whatever was agreed upon within the Ministry would then go to the Presidium, perhaps via a military-industrial commission which

reviewed prospective impacts on defense industry as a whole.[87]

In 1953-54 these routine procedures may have been delayed or confused because of administrative changes attending the transition to collective leadership. In March 1953 the Ministry of Aviation Industry was merged with the Ministry of Armaments to form a Ministry of Defense Industry. D.F. Ustinov, who had been Minister of Armaments, headed the consolidated ministry. In September 1953, however, the Ministry of Aviation Industry was restored to autonomous existence. Although Ustinov retained his new title, he was left with approximately the jurisdiction he had had before the merger. The change occurred during the period when Beria's empire was being partitioned and nuclear programs were becoming the jurisdiction of V. A. Malyshev's new Ministry of Medium Machine Building.[88]

One can speculate that these organizational changes were linked and that they were not wholly unconnected with Khrushchev's emergence as First Secretary and his espousal in early 1954 of a program for increasing agricultural output by developing "virgin lands." For Ustinov's orientation was entirely toward production of military hardware. Within the Ministry of Aviation Industry, [redacted] there was already in progress a fight over the possibility of converting some plants to production of nonmilitary goods. [redacted] advocates of this strategy won at least one early skirmish, getting in one plant a changeover to manufacture of electrical equipment. Over the decade of the 1950s, the directorate of the ministry that scored this victory--the one concerned with nonmilitary output--was to flourish bureaucratically, expanding to occupy an entire floor of the ministry's Moscow headquarters.[89] One would suppose that people in that directorate had seen the merger and Ustinov's appointment as moves in the wrong direction. As it turned out, the "virgin

lands" project was to entail high demand for nonmilitary aircraft, particularly crop-dusting planes, and for transports as opposed to fighters or bombers. It is at least possible that Khrushchev foresaw this and reckoned that he would have an easier time extracting such production from an independent ministry. In any event, independence probably did facilitate contemplation of such transfers of plant, and because the Bear and Bison were the most costly programs on the horizon, in terms of space and skilled manpower, they were almost certainly among the planes that figured in trade-off calculations. One may be entitled to suppose that the ministry did not function as an unqualified advocate of large-scale production of these two bombers.

While Myasishchev and Tupelov were potential lobbyists for the other planes they had designed, they had no practical incentive to press for large fleets. The moment the first plane of a series came off the line, they received their final payment.[90] Their nonsentimental interests were thereafter bound up entirely in designs for newer craft. Furthermore, there is some evidence indicating that Myasishchev and Tupelov, who were allied by marriage (Myasishchev was Tupelov's son-in-law) did not enjoy quite the same status as in Stalin's time. In 1954 Sukhoi would cease to be Tupelov's deputy and once again get his own design bureau. In the following year Lavochkin was to be singled out for a special decoration. Antonov, whose plant was in Kiev, may have enjoyed special access to Khrushchev, the former boss of the Ukraine.[91] While Myasishchev and Tupelov may have hoped to see the skies bright with Bison and Bear, prudence may well have kept them from pressing for such a result.

If neither the ministry nor the designers acted as strong advocates, that left the role to the long range air force. As noted earlier, that Service did not have standing comparable to SAC in the United States. On the contrary, despite Stalin's show of support and material encouragement, it remained a dubious quantity in the eyes of most military men. The fact that most officers were just beginning to learn about nuclear weaponry probably contributed to continued reservations concerning the viability of strategic bombing. Before 1953, such reservations may have been partly counterbalanced by awareness that the long range air force was commanded by General A.E. Golovanov, famed as one of the daring air heroes of World War II. They were counterbalanced even more heavily by knowledge that Stalin set high store on building up bomber forces. In the early period of the collective leadership, both of these factors were absent. Golovanov apparently ceased to command the long range air force sometime in 1952. We do not know who held the post in 1953. There is some reason to believe that by 1954 it was General V. Aladinsky, a man of considerably less stature than Golovanov. On the other hand, it may have been General Sudets, who was one of the heroes of Stalingrad and an officer with important Party connections.[92] In either case, however, the commander was new. He had not been involved in setting requirements for the Bison or Bear.

He did not have to defend them against critics in the Ministry of Aviation Industry or elsewhere.

And, whatever may have passed within the Ministry of Defense, criticism in plenty was apparently heard when the question of scale of procurement reached the Presidium. Khrushchev remembered becoming convinced that the Bison could not carry out a round-trip mission against the United States and expressing doubt that if one landed in Mexico the Mexicans would hand it back: "What do you think Mexico is -- our mother-in-law?" As for the Bear, he recalled concluding that it had adequate range but was much too slow to get past American defenses. [93]

It is not likely that this judgment was based on intelligence concerning U.S. capabilities, for the U.S. Air Force was still having trouble developing an interceptor force able even to cope with B-29s. The original F-86 was effective only in daylight. The F-86D and F-89, while theoretically capable of night and bad-weather operations, were rated unsatisfactory by the men who flew them. Intramural trials, publicized in the American press, showed the interceptor force a poor match for the B-36, and actual development of "Century" series fighters demonstrably outmatching the Bear was a late occurrence While NIKE tests had been taking place since 1951, the first deployments did not occur until late in 1953 and open-source evidence on U.S. air defense missile programs indicated that development of systems integrating warning nets with launchers lay a long way off. [94] If the decision on the future of the Bison and Bear had been a function of well-informed interaction, it probably ought to have been the reverse of what it was, for a large fleet of Bisons and Bears would have given the Soviets an apparent strategic offensive capability which the Americans would have been hard put to offset.

To be sure, the KGB or Soviet military intelligence may have misestimated American progress in air defense technology. With good reason, Russians tended to credit American engineers with herculean powers. Since they themselves attached so much importance to strategic defense, they could well have assumed that the Americans had a lead in this as in other areas of military technology. Even if Soviet intelligence services read the evidence accurately, Khrushchev and his associates need not have done so. They presumably knew that their own MIG-19s and Yak-25s could bring down Bears and they were aware not only of the capabilities of the SA-1, already on the verge of large-scale deployment, but of the SA-2, which was well along toward development.

One cannot discount the possibility of misinformed interaction--a decision based on an erroneous estimate of what the United States could do.

On balance, however, it seems most likely that scaling down procurement of long-range bombers did not grow out of perceptions of what was happening on the other side but rather from the fact, first, that bomber advocates were weakly situated within the Soviet Government and, second, that, technically, the Bison and Bear designs fell short of an ideal which was more a function of the general state of technology than of specific conditions in the Soviet-American competition.

The decision is also to be explained by the complementary facts that missile advocates were well placed to advance their cause and that rocketry seemed an area of comparatively rapid technological progress.

As has already been noted, most missile programs in the Soviet Union originated within the artillery component of the ground forces. Rockets were looked upon as ordnance, not as pilotless aircraft. At the end of

World War II the task of studying German programs, including the V-1 as well as the V-2, seems to have been assumed by General Voronov, the commander of artillery forces. Research and development was pursued within the artillery directorate of the General Staff, headed originally by General Yakovlev. In 1948, the function was separated and placed under a special deputy minister of the armed forces, but Yakovlev kept the duty, merely taking the new title and its broader jurisdiction. When he stepped down in 1952 his place as deputy minister went to General Nedelin, who had been his successor at the artillery directorate and had also for a time been commander of the artillery. Nedelin then remained in charge of rocket programs until his accidental death in 1960.[95]

Other Service elements were interested in rocketry and doubtless had some influence. Each had a main weapons directorate, and the navy had two, one of which concentrated on artillery and rockets.[96] As the status of the PVO improved, its commanders undoubtedly gained increasing voice. Many of them, however, were also artillerymen in origin. By the time the SRF became a separate Service, missileers and cannoneers may have gained as much separate identity as had airmen and soldiers in the United States by the time the Air Force broke away from the Army. On the other hand, it may have been as little as that of missileers and airmen in the U.S. Air Force of the 1960s. In any case, the formative years of Soviet missile programs were ones in which these programs belonged to the most prestigious element of the dominant Service, one whose standing was probably less nearly equivalent to that of SAC within the American military establishment than to that of SAC within the Air Force or to that of the carrier forces in the Navy.

From testimony by the defector G.A. Tokaev, one can infer that missile programs benefited in their early days from having sponsorship not only from

artillerists but perhaps even more importantly from Malenkov. Tokaev says that Malenkov prodded the managers of military industry to satisfy Stalin's call for weapons that would threaten the United States. He also reports that Malenkov disliked M.V. Khrunichev, who headed the Ministry of Aviation Industry.[97] One can infer that, though Malenkov spoke of both bombers and missiles, he may in practice have given preference to the latter because missiles lay in the province of the Ministry of Armaments.

In any case, a missile development effort did suit Stalin's expressed purposes, and, like the long-range bomber effort, it received his backing during the period of postwar reconstruction when proponents of many differing programs were clamoring for resources and support and being turned away. In October 1946, for example, the Soviet artillerists rounded up and transported to the U.S.S.R. some thousands of German engineers and technicians previously involved in work on V-weapons. Two laboratories near Moscow, NII-88 at Kaliningrad and Factory No. 456 at Khimki, became centers for rocket research, complementing the older center, NII-1, nearer Moscow, and test facilities went up at Kapustin Yar on the lower Volga and at Sukhumi on the eastern coast of the Black Sea.[98] This indicated not only that Stalin had overruled the Party agents and others who were pleading at the time for building up a Communist Germany rather than treating German assets as booty; but he also was prepared to allocate to missile development construction materials, transportation facilities, machine tools, and laboratory equipment which were all in extremely scarce supply.

At the end of 1945 Stalin had created special committees to coordinate work in rocketry. One was under the Council of Commissars, another in the armed forces. Ustinov and Nedelin were among those in charge. In March 1947

he set up another special commission, under the Ministry of State Security, to investigate yet another technology which might yield a rocket-powered glide bomber of intercontinental range. According to G.A. Tokaty, Stalin recognized that the best German rocket technicians and most of the documents relating to German research had been captured by the Americans, and he was insistent that Russian scientists push ahead so that the Soviet Union not be behind the United States.[99] One can speculate that more information about the German programs, especially if exclusively in Soviet hands, would have produced faster paced development of long-range missiles. The impulse was thus partially competitive, and one can speculate that the pace of the effort might have been a little slower if this impulse had been absent and that, had the pace been slower, conditions would have been different when the collective leadership made bomber and missile decisions in the mid-1950s. On the other hand, it is possible that the Soviet effort would have been much the same, even if the Red Army had captured nearly all the German personnel and records, for another impulse behind the missile effort was that which led simultaneously to buildup of the long range air force. Tokaty quotes Stalin as saying directly to him that he wanted "an effective straightjacket for that noisy shopkeeper Harry Truman."[100] The early Soviet effort thus should not be too readily construed as primarily a function of what was happening on the Western side.

The rapid progress of that effort did, it is true, make possible the decisions of the mid-1950s. In Tokaty's judgment, the Soviet Union by 1946-47 had a V-2 program on a level with that which the Germans had had

and by 1949-50 were well ahead. They had tested and actually deployed a missile with a range in excess of 100 miles, and in 1950 they had tested successfully another with a range of more than 500 miles.[101]

Meanwhile the research efforts at NII-88, Factory No. 456, and the associated test facilities had developed along competitive lines, with one group at NII-88, headed by S.P. Korolev, and another at Factory No. 456, led first by N.L. Umanski and then by M.K. Yangel. Korolev's group was said to consist primarily of Soviet nationals who were veterans of prewar and wartime rocket research, while the Umanski-Yangel group had a higher proportion of Germans. Korolev's was the one that produced the first successful long-range missiles and by the early 1950s it was prepared to test the SS-3. Almost 70 feet long, this missile developed 100,000 pounds of thrust and could deliver a 2,200-pound warhead at a distance of over 600 n.m. it had a CEP of 1 n.m.[102]

The SS-3 had the drawback of requiring cryogenic liquid fuel, i.e., fuel which had to be kept at subzero temperatures until fired. It was, however, an awesome weapon, and it had enough payload capacity to carry nuclear devices in the size range tested in 1951. The SS-3 itself underwent successful flight testing sometime in 1955.[103]

In the same year, the Umanski-Yangel team reportedly experienced some major failures. It had previously succeeded in developing 2 short-range missiles using storable liquid fuel. Following a major failure in 1953, the whole team was moved from Moscow to Dnepropetrovsk, where it took over an old truck factory and then gradually expanded until it formed a complex comparable to the Kaliningrad-Khimki complex outside Moscow. In the

Soviet system, this was a surprising reward for failure. It eventually paid off, however, in a successful test in 1957 of the SS-4, a missile using storable liquid fuel which could carry as large a warhead as the SS-3 and deliver it with comparable accuracy on a target more than a 1,000 miles away.[104]

Reading back from the tests of the SS-4 in 1957 and the first system test flight also in 1957 of the intercontinental range SS-6 produced by Korolev, together with 1960 tests of a 2,200-mile range SS-5 from the Yangel bureau, one has to conclude that development of these systems was approved by the Soviet party leadership earlier than 1955. This decision entailed allotting very substantial resources to both the Korolev and Yangel bureaus. It is unclear to what extent Soviet planners and political leaders saw missile and aircraft production as directly competitive. There were some overlaps in demand for basic resources such as transport and construction materials and for skilled workmen and engineers. Indeed, most of the investment in long-range missile systems went to launch area construction, fuel storage facilities, and the like. Since Soviet missiles used aluminum where American missiles used stainless steel, however, and since the early missiles depended on radio guidance systems, missiles competed with airplanes in markets for rolled aluminum alloy and for certain products of the new Ministry of Radio-Technical Industry established in early 1954. Apparently, however, separate production facilities already existed for missiles and most of their components. Ustinov had succeeded in setting up an industrial complex independent of the Ministry of Aviation Industry. The defector who is our best witness concerning that Ministry reports that its highest officials professed as late as 1959 to be largely ignorant of what was in progress in the missile field.[105]

Given the fact that the aircraft industry proceeded with large-scale production of fighter and medium bombers, it seems virtually certain that the members of Politburo did not face a situation in which they felt that they had to choose between missiles and bombers because of specific resource constraints which made it impossible to produce both simultaneously.

Of course, Soviet leaders may have seen missiles and bombers as more generally competitive, both requiring large resources that might otherwise go to agriculture or housing or a variety of other uses. Khrushchev and his colleagues could have felt that the Soviet Union could not afford both.

Soviet diplomacy of the period can be interpreted as indicating that Soviet leaders were concerned about the costs of military competition with the West and had concluded that it was worthwhile to seek detente. In the autumn of 1954 the Soviet delegation at the UN began to alter its line, shifting from a blanket demand for the abolition of nuclear weapons to advocacy of stage-by-stage reduction in nuclear arsenals. In the spring of 1955 came an indication that the Soviets might even accept limited provisions for inspection. By October this had become a suggestion that aerial reconnaissance might be permitted to a certain depth within European Russia.[106] Meanwhile, the Soviet Government negotiated the Austrian state treaty and voluntarily withdrew occupation troops from that country, surrendered to Communist China and Finland naval bases which it had held at Port Arthur and Porkhala, made successful overtures for resumption of trade and other relations with Yugoslavia, and commenced efforts to establish such relations with the Federal Republic of Germany. In September 1955 Chancellor Adenauer was Khrushchev's guest in Moscow.

These gestures are open to a variety of interpretations. One is that Soviet leaders were genuinely fearful of German rearmament and were willing to make concessions in order to prevent it or postpone it. Another possibility is that they had begun to think of Europe as a stabilized theater and to think of other parts of the world as the areas where the struggle against imperialism could be advanced, for the period also saw visits to East and South Asia by Khrushchev and Bulganin, a state visit to Moscow by Indian Prime Minister Nehru, the beginning of Soviet aid to India, and arrangements for the supply of Czech-made weapons to Egypt. Heightened concern with the world beyond Europe could also have been a result of dawning perception in Moscow that Mao Tse-tung might prove a rival leader within the Communist sphere.

Alternatively, Khrushchev and others in the Presidium could have been acting primarily on account of concern about the preservation of Soviet control in Eastern Europe or even about the preservation of their own control inside the Soviet Union. There had been disturbances in Poland and East Germany in 1953. There were to be much more serious disturbances there and in Hungary in 1956. Efforts to patch up relations with the Yugoslavs and West Germans, together with formation of the Warsaw Pact, could have been inspired in part by hopes of curbing potential unrest in the satellites. Or these efforts, along with moves encouraging hopes of arms control accords, could have been connected with plans for the 1956 Party Congress, where the crimes of Stalin were to be exposed. If Khrushchev and his fellows expected shocks to run through the party apparatus at home as well as abroad, they could well have pursued the aim of tranquilizing the Western powers in order to minimize the chances of their acting provocatively during the period of adjustment. This particular theory finds some

support in the fact that Khrushchev resumed opposition to any inspection of the Soviet domain, aerial or other, as soon as his secret speech had been delivered and its effects had been successfully weathered by the party structure at home.

Without denying the possible influence of a variety of foreign policy considerations and domestic factors, one can add that any realistic estimate of the possible costs of operational ICBMs and of a nuclear-powered submarine fleet capable of launching missiles from under water, let alone the possible costs of a triad including manned bombers, would have provided a buttressing argument for an effort to reduce tension with the West and thus perhaps make possible more slow-paced investment in enormously expensive new weapon systems. Hope for success could equally have made members of the Presidium feel that they could afford to go through a period during which the Soviet Union would lack more than a token capacity for delivering nuclear weapons on targets in the United States.

A deliberate Soviet decision to forego deployment of a large long-range bomber force and to gamble on missiles as the vehicles for the intercontinental strategic mission is thus partly to be explained by the political weakness of bomber advocates, the technological limitations of the bombers themselves, the expensiveness of parallel effort in several lines of strategic offensive forces development, and confidence on the part of the Soviet leaders that they could buy time by means of diplomacy. Some part of the explanation may lie also in the personality of Korolev, who seems to have been an enthusiast capable of inspiring others with his own faith and zeal, and in the fact that Korolev had as collaborator and ally I.V. Kurchatov, whose scientific acumen had been proved by Russia's rapid development of

thermonuclear power and who apparently joined in promising Khrushchev and others that a marriage could be made between Korolev's missiles and multimegaton warheads.[107] The extent of confidence in Korolev shown by the collective leaders-- and earlier by Stalin--owed something, too, to recognition that Soviet scientists who promised results knew that they risked prison if not execution if they failed to deliver. Furthermore, since so many Soviet leaders had extensive experience as engineers or factory managers they may have been better able than their American counterparts to judge prospects of success and failure in highly technical undertakings. All these factors help to make more understandable the Soviet decision to invest heavily in long-range missiles and not to put equivalent resources into long-range bombers.

Finally, one has to note the coinciding turn in Soviet strategic doctrine. Politburo decisions on scaling back bombers and funding an ICBM program occurred just as Khrushchev was displacing Malenkov and the pages of Voennaya Mysl' were recording the abandonment of Stalin's "permanent operating factors" and adoption instead of the new doctrine concerning the peril of surprise attack and the need for ready forces and preparedness for perceptive action. It was just at this juncture that a new, higher level committee on rocketry was established and work commenced on a new facility at Tyuratam, located so as to permit tests of very-long-range missiles[108] The new doctrine served to rationalize these actions, for the premium put on damage limitation argued for missiles as opposed to bombers.

The bomber was a weapon suited to deterrence. A threat could be made good if a single plane got through. It was not, however, a weapon suited to the defensive purpose of minimizing the harm an enemy state could do with

its strategic forces. For this purpose, the missile was much better, for, like an artillery shell, it could reach its target in a hurry and, at least with current technology, it could not be stopped. From the outset, Stalin had emphasized the importance of missiles.[109] The fact that Soviet leaders, military and civilian, were preoccupied with the strategic defensive may well have had more influence than any bureaucratic or political or technological considerations on their decision to "leapfrog" into the era of the ICBM. The result of this decision, roaring across the sky in the satellites placed in orbit by Korolev's SS-6 launchers, set in motion on the American side another major phase in the strategic arms competition.

CHAPTER VII

KHRUSHCHEV'S MISSILE RATTLING AND SOVIET STRATEGIC PROGRAMS, 1957-62

The period from the latter half of 1957, when the Soviet Union's first ICBM and Sputnik launchings startled the world, until mid-1962, just before the Cuban missile crisis, is of exceptional interest in the history of Soviet-American strategic competition. Much of it was dominated by Nikita Khrushchev's flamboyant attempts to profit politically from early Soviet missile and space successes, and by the so-called "missile gap," which arose in part at least as a byproduct of Khrushchev's missile rattling. The missile gap was to be deflated by the end of the period, but not before it helped to stimulate an accelerated U.S. strategic missile buildup.

On the Soviet side, strategic developments of the 1957-62 period are important not only in the context of Khrushchev's missile diplomacy, but also because they reflect many of the basic policy and program decisions bearing on the Soviet Union's strategic posture at the onset of the missile-space age. At the time, these decisions were more often than not either poorly understood by Western analysts or not perceived at all. With the aid of hindsight and the logic conferred by the passage of time, it may be possible to throw additional light on some of the salient strategic issues requiring decision during the period.

Factors Shaping Soviet Strategic Policy in the Late 1950s

As a distinguished student of Soviet affairs has observed, Khrushchev's regime between 1957 and 1962 pursued two apparently

contradictory policies abroad: One of "militant Communist expansionism" designed to push the United States and its Western allies out of Berlin and to weaken their positions elsewhere; and the other, a "strenuous search for accommodation" with the United States.[1] The latter course might be seen as an attempt to mitigate the dangers inherent in the first .

Soviet strategic policy during the same period was marked by a large measure of ambivalence as well. On the one hand, in the several years following the Soviet Union's dramatic launchings of its first ICBM and Sputniks in the latter half of 1957--which advertised visible Soviet entry into the missile-space age ahead of the United States--Khrushchev sought to intimidate his adversaries by a campaign of vigorous rocket rattling. On the other hand, although Khrushchev certainly understood that neither of the two dramatic Soviet "firsts" meant that the USSR could yet consider itself to have pulled abreast of its major Western adversary in the substance of strategic power, he apparently pressed less consistently than he might have done to remedy the situation. Whatever the reasons, deployed Soviet ICBM forces did lag behind the rate required to match the United States in intercontinental strategic power.

Perhaps Khrushchev's awareness of this disparity accounted for his having turned increasingly in the 1957-62 period to missile rattling in what might best be called a stratagem of strategic bluff. To set this stratagem in perspective along with the strategic program decisions that emerged during the period, it may be useful to recall first some of the central considerations and problems that helped to shape Soviet strategic policy in the late 1950s and early 1960s.

Post-Korea Growth of U.S. Strategic Threat

One of the principal and more unpleasant strategic problems facing the Soviet leadership in the late 1950s was the rapid expansion of U.S. strategic bomber forces and their overseas base network, stimulated by the Korean War and the "bomber gap" of the mid-1950s. SAC's inventory of nuclear delivery planes (including reconnaissance) by mid-1957 consisted of some 1,500 B-47 medium bombers and more than 200 newer B-52 heavy bombers. These forces still depended heavily on use of forward bases for staging and recovery, but their strike-launching readiness was being steadily upgraded by improved alert procedures and other measures.*

The U.S. reaction to the Korean War also helped stimulate a building program for large modern attack carriers by the US Navy. By 1958, the introduction of such longer range carrier-borne aircraft as the A-3D had begun to bring wider areas of the Soviet Union under threat of sea-launched nuclear attack.[2]

Thus, by the late 1950s not only SAC's bombers but these naval forces as well no doubt represented in Soviet eyes a growing American capability for strategic attack against the Soviet Union. Ballistic missiles had not yet become part of the U.S. strategic arsenal; in 1957 U.S. plans called for deployment of no more than 150 first-generation ATLAS and TITAN ICBMs,** though by the end of 1962, as a result of the accelerated deployment of U.S. ICBM and SLBM forces,

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*See above, pp 189-90.

** Deployment of about 120 THOR and JUPITER IRBMs at European locations was also planned in 1957. See below, 576ff.

missiles would have begun to represent a major element of the strategic threat facing the Soviet Union.

What to do about a growing disparity between U.S. and Soviet intercontinental strategic strength doubtless presented a disturbing question for the Soviet leadership in coming to decisions on strategic policy in the late 1950s. And among many factors bearing upon these decisions, in turn, not the least important was the Soviet leadership's assessment of whether an imbalance of forces would increase the likelihood of war, and especially of a premeditated U.S. strategic attack upon the Soviet Union.

Despite the recurrent theme in Soviet military-political literature that the West was preparing for a "preventive" war and a surprise attack on the Soviet bloc, there seems to have been no significant correlation between the growth of the U.S. strategic threat and the Soviet leadership's weighing of the actual danger of war.

Although some of his colleagues may not have shared his views on the danger-of-war issue, Khrushchev in 1957 was already moving toward the belief, reflected doctrinally in his revision a year earlier of the Leninist thesis of inevitable war, that nuclear deterrence had begun to reduce the likelihood of a major war. As the 1950s wore on, Khrushchev often expressed confidence that Soviet military might gave assurance against a premeditated attack on the Soviet Union, while in May 1962 he observed that threats of war from both sides tended to cancel each other out, which, as he put it, "is why we consider the situation to be good."[3] This confidence in deterrence, which lasted at least up to the Cuban missile crisis in

October 1962,* probably was fortified by Khrushchev's growing private conviction, stemming partly from meetings with Eisenhower and Kennedy, that the United States was actually less warlike than Soviet propaganda often pictured it to be.

During the 1950s to be sure, some ambivalent "signals" from the U.S. side could be interpreted as secret American preparation for war. These included U.S. reconnaissance flights over northeastern Siberia in the early and mid-1950s, extensive peripheral reconnaissance activities to test Soviet air defense reaction and gather other information, and high-altitude U-2 penetrations over Moscow, Kiev, and other places in the Soviet interior from 1956 until the shooting down of Gary Powers in May 1960.**

Protests against the U-2 intrusions had been made on several occasions according to Khrushchev, but he chose not to raise the issue in public, perhaps because this would have demonstrated the inefficacy of Soviet air defenses and made the Soviet Union look "impotent." This, at any rate, was the reason for his silence suggested by Khrushchev in his memoirs.[4] The embarrassment and concern felt by Khrushchev over this point apparently was heightened by internal criticism from some of his peers, whose resistance to Khrushchev on various matters of policy--including defense policy--will be discussed below.

But despite his frustration over the U-2 flights, Khrushchev seems not to have regarded them in the most sinister light--as indicating an American intention to attack the Soviet Union. Rather,

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*For treatment of the Cuban missile crisis, see below, pp.477ff.

**For discussion of other U-2 aspects, see below, pp. 349-51.

he seems to have found them less demonstrative of U.S. intentions than obvious American reluctance to treat Hungary as a casus belli in 1956, or Eisenhower's reassurances to him at Camp David in 1959. So far as can be judged, therefore, Khrushchev himself had come to the conclusion that the United States under Eisenhower's leadership had no intention of initiating a nuclear attack out of the blue against the Soviet Union.

Certainly, the low state of alert of Soviet strategic bombers during the late 1950s seemed to bear out that responsible Soviet authorities felt no real concern about surprise attack. Even after ballistic missiles began to come increasingly into the U.S. strategic forces in the early 1960s, reducing the available warning time, Soviet alert practices remained much the same as before. As late as August 1963, almost a year after the Cuban episode, a Soviet military commentator wrote that in the event of other crises, it would become necessary to move nuclear warheads to missile launch sites and air bases,[5] which also suggested that the "normal" day-to-day state of Soviet readiness was hardly geared to an anticipated surprise U.S. strike.

What Strategic Posture Should be Sought?

In circumstances where the basic concern of Khrushchev and other Soviet leaders over a widening imbalance between their own and American strategic forces in the late 1950s was at least partly offset by the absence of any immediate fear of unprovoked attack, one of the broad issues calling for decision was whether the Soviet Union could still afford to live, as it had since the end of World War II, in a position of strategic nuclear inferiority to its major adversary.

Or, putting it another way, the Soviet leadership found itself obliged to weigh the relative merits of a deterrent strategic posture versus one that would attempt to ensure Soviet superiority in the event deterrence failed and it became necessary to fight a war.

On the face of it, the second posture was clearly preferable, for it answered both to the traditional thrust of Soviet military doctrine, with its emphasis on defeating an enemy's armed forces in battle, and to a long-standing Soviet ambition to attain military-technological superiority over the West. But the practical difficulties of achieving such a posture, at least in the near term, seemed formidable. And at a time when internal debate over the implications of nuclear-age weaponry for Soviet doctrine was just warming up.* an underlying doctrinal issue also bore significantly on what kind of strategic posture should be sought.[6] This was the question of whether nuclear weapons had made war politically obsolete--thus invalidating Clausewitz's dictum, adopted by Lenin, that war is a continuation of politics by other means. Or, the issue might be put as follows: If, on the other hand, it were deemed likely that a nuclear war could be won or lost in a meaningful sense, then it could be worth the effort to strive for a war-winning strategy and for forces commensurate to this task. Undesirable as a nuclear war might be, and despite the great pains which should be taken to avoid it, there would still be

*In 1958, according to Oleg Penkovsky, seminar discussions had begun in the Soviet General Staff on the implications of nuclear weapons and missiles for Soviet military doctrine, while in 1960 further debate on the subject by high-ranking officers began in the "Special Collection" of top secret articles published by the General Staff organ, Military Thought. The "Special Collection" articles furnished to the West by Penkovsky are what came to be known as the Ironbark documents.

a sense in which winning would be politically preferable to losing any war that might occur. But if, on the other hand, a nuclear war could be expected to produce neither victor nor vanquished, then the best choice might simply be to rely on a strategy of deterrence and to procure strategic forces sufficient to maintain credibility but not necessarily surpassing those of the adversary.

There is, of course, no sure way of knowing whether the Soviet leadership framed the issue in such terms. Generally, the idea of giving up pursuit of a war-winning and survival posture for a purely deterrent one apparently found little support from the Soviet military and orthodox Party opinion, even though ritual assertions from these quarters of a Soviet victory in the event of a nuclear war may not have been founded in the late 1950s on any real expectation of emerging from such a war substantially better off than the other side.

Khrushchev, on the other hand, while not explicitly renouncing the notions of strategic superiority and a war-winning posture, followed a basic course that lay in a different direction. Although he strengthened Soviet strategic forces, and commitment to a doctrine calling for Soviet military-technological superiority persisted throughout his tenure, the policies adopted by him amounted in effect to settling--at least temporarily and perhaps with some reluctance--for a second-best strategic posture. At the same time, however, Khrushchev sought in various ways to compensate for falling short of the doctrinal desideratum of Soviet strategic superiority.

One compensatory step was to support a vigorous program of military research and development, recognized in Khrushchev's day and

by those who came after him as indispensable to any effort to attain strategic superiority--or, for that matter, to compete on even terms with a strategic adversary like the United States. A second compensatory device was Khrushchev's effort to cultivate an image of Soviet strategic power that went beyond what the then-prevailing strategic balance would justify. Khrushchev also pursued a third and somewhat different avenue throughout the late 1950s--a series of diplomatic maneuvers and disarmament proposals ranging from the outlawing of nuclear weapons and liquidation of U.S. overseas bases to general and complete disarmament--schemes which, apart from their propaganda value, might, if some of them proved negotiable, serve to blunt the strategic advantages enjoyed by the United States.

A fourth possibility is that Khrushchev's strategic policies of the 1957-62 period may have deliberately focused on improving Soviet strategic capabilities around the Eurasian periphery rather than on acquiring large forces capable of threatening the continental United States--so that peripheral forces, in effect, were seen as compensation for not having more ample forces of intercontinental range. Whether Khrushchev actually favored a "peripheral" over an "intercontinental" strategy as a matter of choice rather than necessity is a complicated question to be discussed below.* However, there is little doubt that developments around the Eurasian periphery, not only in NATO Europe but also in China, had a considerable bearing on Soviet strategic decisions during this period.

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*See pp. 357-58.

Portent of Nuclear Developments in NATO and China

The Soviets viewed as especially unwelcome the conclusion of arrangements in December 1957 for incorporating American-owned and controlled tactical nuclear armaments in the NATO arsenal. This step threatened to reduce the value of Soviet conventional arms preponderance in Europe on which the USSR had relied to offset external U.S. strategic forces since the Stalin era. Even more disturbing was the prospect that West German armed forces would have access to nuclear weapons--anathema in Russian eyes.

Ironically, the Soviet Union's own Sputnik successes in the autumn of 1957 helped bring this prospect closer. Since 1954, NATO's agreed strategy had called for tactical nuclear weapons, but although some U.S. units had such weapons at their disposal, nuclear armaments still had not been furnished to NATO's European forces by the fall of 1957. Only after the Sputniks did the United States move to implement its earlier announced intention to make tactical nuclear weapons and their delivery systems available to certain allies. These included such short-range missiles as HONEST JOHN and CORPORAL, as well as nuclear artillery and air-delivered tactical nuclear bombs.

But in any event, once the possibility of West German possession of nuclear weapons appeared closer, Soviet policy became more preoccupied than ever with how best to head off this threat or to deal with it if it should become a reality. Indeed, many observers have felt that in opening the first phase of the Berlin crisis with his note of 27 November 1958 to the Western powers Khrushchev had as

one of his main objectives to extract from them an agreement that would bar West Germany from obtaining nuclear weapons.[7]

Khrushchev's regime appears to have had a difficult priorities problem in 1957-58 with military preparations to be taken to counter the nuclear arming of NATO. Soviet nuclear technology, still concentrating on the development of strategic weapons, lagged well behind the United States in development of smaller tactical weapons. To put Soviet theater forces straightway on a tactical atomic footing to match NATO's posture was, therefore, not yet feasible.

On the other hand, a fresh buildup of Soviet conventional forces in Europe as a counter to NATO's nuclear plans could hardly have appeared appropriate to Khrushchev, the more so since he was already trying to persuade his own military bureaucracy to go along gracefully with manpower reductions he had initiated in 1955. According to Khrushchev, his policy of manpower cutbacks had received the support of Marshal G.K. Zhukov during the latter's tenure as Defense Minister in 1955-57[8], although after Zhukov's dismissal in November 1957, objections to further troop reductions apparently arose within the Soviet military command. Marshals I.S. Konev and V.D. Sokolovsky were reportedly among those opposing Khrushchev's manpower policies.

Facing opposition to his manpower policies, and not wishing to reverse his plans for further reduction of the traditionally large Soviet theater force establishment to help meet the costs of modernizing the strategic delivery and defense forces, Khrushchev had to turn elsewhere in 1957-58 for an answer to the emergent NATO tactical nuclear threat.

Part of the answer, and one on which Khrushchev and most of the military command could apparently agree, called for going ahead with a substantial deployment of medium-range strategic missiles that were technically suitable for operational use and that could cover targets in Europe and around its periphery. These MRBM systems, already under way on a small scale, would augment the medium bombers of the Soviet strategic air arm already equipped for nuclear delivery operations in the same areas. The redundant targeting against Europe by Soviet "strategic" nuclear delivery systems which has persisted since the late 1950s thus had its inception, at least in part, in Khrushchev's need to find a counter to NATO's tactical nuclear arrangements and to provide a healthy margin of military insurance in the event that Soviet diplomacy should fail to obstruct those arrangements.

Khrushchev found it expedient to pursue two sorts of diplomatic maneuvers toward this end (in addition to the aforementioned pressure on the Western powers in Berlin). One approach sought to mollify by attempting through various arms control proposals (including the Rapacki Plan for a nuclear-free zone in Europe) to dissuade the European countries from going ahead with NATO's nuclear plans. Another line, by contrast, took a threatening tone. An example, foreshadowing Khrushchev's later brandishing of Soviet missiles, came in an April 1957 Soviet note warning Bonn against participation in NATO's tactical nuclear arrangements. The note ominously reminded Germany of her vulnerability to Soviet nuclear weapons: "One can easily see that Western Germany, whose territory would become the target of the most powerful and concentrated blows of these weapons, would become one big cemetery."[9]

At the time, the weapons to which the Soviet note alluded consisted mainly of "strategic" weapons, deliverable by long-range bombers and the first few MRBMs which the Soviets had begun to deploy in the Western regions of the U.S.S.R. Altogether, the inventory of these weapons available to the Soviet Union in 1957 probably came to no more than a few hundred. Although some portion of these weapons was doubtless reserved for intercontinental delivery, the number that could be targeted against Europe was certainly more than sufficient to give substance to Khrushchev's threat.

Neither Soviet disarmament tactics nor nuclear threats prevented the United States from furnishing tactical nuclear weapons to NATO Europe, leaving the future problem of dislodging these and other American nuclear forward-based systems (FBS) to Soviet SALT and Mutual and Balanced Force Reductions (MBFR) diplomacy under Khrushchev's successors. Meanwhile, during Khrushchev's incumbency, the Soviet Union came to a parting of the ways with Communist China--a split which involved, among other things, a Soviet attempt to prevent or delay China's acquisition of nuclear weapons.

Initially, Khrushchev had undertaken to help Peking achieve a nuclear capability, providing such basic production facilities as a gaseous-diffusion plant and a plutonium reactor. According to the Chinese, however, the Russians in June 1959 "unilaterally tore up" an agreement they had made in October 1957 to "provide China with a sample of an atomic bomb and technical data concerning its manufacture."[10]

Why the Soviets had second thoughts about extending nuclear assistance to China is a matter of speculation. Perhaps the most plausible theory is that the Soviets began to realize sometime in 1958, when Peking rebuffed what it later labeled a Russian attempt "to bring China under Soviet military control,"* [11] that China's emancipation from Soviet influence lay not far ahead, and therefore it would be best not to have her as a nuclear neighbor. As some analysts see it, Khrushchev in 1958-59 hoped to solve both the German and Chinese nuclear problems through a single "grand design," whereby he would deliver a pledge from Mao to abstain from nuclear weapons in the Far East in return for a similar constraint upon West Germany backed by the Western Powers.** [12] When neither the Western Powers nor Mao chose to cooperate, Khrushchev's scheme for killing two birds with one stone miscarried.

In the context of Soviet strategic policy, Khrushchev's failure to mend the widening breach between Moscow and Peking had at least two salient implications. It relieved the Soviet Union of the immediate risks of having to provide strategic nuclear "protection" to China, as during the Taiwan Straits crisis of 1958.***[13]

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*The Chinese reference apparently had to do with a 1958 Soviet proposal for a joint Sino-Soviet naval command in the Pacific.

**In this view, Khrushchev's proposal at the 21st Party Congress in January 1959 for a nuclear-free zone in the Far East was really aimed at China, rather than exclusively at keeping U.S. nuclear weapons out of the area, as generally supposed at the time.

***Khrushchev's warning to President Eisenhower on 18 September 1958 that the USSR would retaliate with nuclear weapons in the event of a U.S. nuclear attack on China was later dismissed by Peking as a mere "gesture" which came only after the danger of U.S. attack had passed.

But it also posed the longer term problem of having to deal with a potential nuclear threat from China itself. How high on the Soviet strategic agenda this threat may have stood in Khrushchev's time is another speculative question.

Visible military measures taken by the Soviets appeared to have less urgency in Asia than Europe. The few strategic bomber units of Soviet long-range aviation already based in the Far East before the Sino-Soviet rift were not increased in number, and their training exercises remained primarily associated with operations against Japanese and U.S. targets. The first MRBM launchers to be deployed in the Soviet Far East made their appearance around 1959, a year or two after deployment began in European Russia, but their numbers remained small--less than 10 percent of the total MRBM/IRBM deployment. Only in the mid-1960s, after Khrushchev had been deposed, did the Soviets begin a substantial buildup in Asia of their forces, including ground divisions and nuclear delivery systems, ostensibly meant to provide greater military leverage against China. Moreover, China's first nuclear test detonation and Khrushchev's political demise in October 1964 occurred virtually at the same time, so that the main impact of China's having joined the nuclear club probably was felt by Khrushchev's successors.

Internal Political and Economic Pressures on Khrushchev

Although Khrushchev's influence on Soviet domestic and foreign affairs reached its peak in the 1957-62 period, it is generally conceded that he had to contend with an internal opposition within the Soviet leadership that challenged him in varying degrees on such

matters as his de-Stalinization campaign; his economic reorganization moves and resource priorities; his tinkering with the Party apparatus; his detente dealings with Western leaders, especially Eisenhower; and his measures to reduce the size of the Soviet armed forces.[14] At times the opposition became overt, as with the old guard "anti-Party group" of Molotov, Malenkov, Kaganovich, and others whom Khrushchev managed to purge in July 1957, and at times resistance to Khrushchev was less visible, as with a faction supposedly headed by Frol Kozlov and Mikhail Suslov which began to challenge him increasingly after 1960, especially following the U-2 affair.* Critics of Khrushchev's leadership also existed in other Communist countries, most notably, China.

It is not feasible to try to trace here the ramifications of internal leadership politics as they may have affected Soviet strategic policy decisions during Khrushchev's tenure, but a few points germane to this study should be noted.

The opposition to Khrushchev seems to have taken up somewhat more orthodox and conservative positions than he on various issues under contention. Shrewd and tough at top-level infighting, Khrushchev generally kept his opponents on the defensive by the use he made of such devices as de-Stalinization, control of personnel assignments, and other initiatives open to him as titular head of the Communist Party and Chairman of the Council of Ministers. However, at certain junctures Khrushchev found himself politically exposed and in danger

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*Kozlov's growing rivalry with Khrushchev for leadership of the Party came to an end in April 1963, when Kozlov suffered a debilitating and eventually fatal stroke.

of losing the initiative. For instance, Khrushchev's opposition apparently seized on the U-2 affair as testimony to his poor judgment in having endorsed Eisenhower as a "sincere lover of peace" who wished to reduce international tension and improve relations with the Soviet Union.*[15]

On 4 May 1960, 3 days after the U-2 was brought down, a number of important personnel changes occurred at a Plenary Session of the Party's Central Committee. Kozlov, putatively Khrushchev's chief rival, was brought into the Party Secretariat, and two of Khrushchev's allies, A.I. Kirichenko and L.I. Brezhnev, were for the time being demoted, while A.I. Mikoyan, another close associate of Khrushchev, disappeared from the activities of the Party leadership for some months. V.N. Novikov and K.M. Gerasimov, deputies of D.F. Ustinov, then head of the armaments industry, received critical positions in the state planning apparatus as heads respectively of the USSR and RSFSR Gosplan. Whether these personnel shifts were directly attributable to a loss of initiative by Khrushchev may not be demonstrable, but they were followed by political consequences inimical to him. Kozlov, for example, from his strengthened position within the Party Secretariat, launched a more persistent challenge to Khrushchev's authority, while Gosplan managed to frustrate some of Khrushchev's

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*In the first few days of the U-2 crisis, Khrushchev toned down his comments and suggested that President Eisenhower could not have known of the flight. He did not make a strong statement on the issue until after both Dulles and Eisenhower had publicly stated their personal responsibility. Though conventional accounts attribute Khrushchev's early position to tactical maneuvering to trap the Americans into making dramatically refutable explanations, it is also possible that Khrushchev was offering a formula for quiet resolution or at least containment of the affair. If so, Eisenhower's public statement took that possibility away from him.

pet projects, such as his attempts to reallocate investment from heavy industry to agricultural machinery.

In addition to the U-2 incident, Khrushchev found himself especially vulnerable to internal criticism on such other occasions as his failure to dislodge the Western Powers from Berlin in 1958 and 1961 and the Cuban crisis in the fall of 1962. Pressure from opposition elements in the leadership at such times probably forced Khrushchev to readjust some of his preferred policies.

These readjustments affected both military and economic programs. The combined pressure of external events and internal leadership politics appears to have pushed Khrushchev toward improvisations of one kind or another in strategic programs, including strategic bluffing, after he had at least twice--in mid-1958 and in mid-1962--and with some temporary success, apparently managed to hold ICBM deployments below originally planned levels.*

The principal adjustments in economic programs in the 1957-62 period, apart from the extensive organizational and management changes instituted by Khrushchev,**[16] had to do with replacement of the incomplete sixth Five Year Plan (1956-60) by a new Seven Year Plan (1959-65). The conventional interpretation of the unusual decision to prepare a Seven Year Plan, first announced in September 1957, is that

*See below, pp. 375-76, 380-81.

**A regional decentralization of industrial management set in motion by Khrushchev in the spring of 1957 resulted in the creation of some 100 National Economic Councils (SOVNARKHOZY) to run industry on a regional basis. This decentralization did not extend to the defense industry sector of the Soviet economy, however, and five State Committees centralized along the same lines as the former functional ministries took over the main branches of defense industry.

the then current sixth Five Year Plan had been found to be over-ambitious--requiring too much investment in new industrial capacity.[17]

The new Seven Year Plan, details of which were worked out in 1958 and made known by Khrushchev at the 21st Party Congress in January 1959, also called for large investment in heavy industry and automation processes,[18] but it spread this out over a longer period and allowed for more agricultural investment as sought by Khrushchev to increase grain and livestock output. Another reason for the new Plan might have been to realign production plans and facilities for new weapon systems to be procured during the 1959-65 period, but which had not been far enough along in development to permit production planning when the sixth Five Year Plan was being formulated in 1955.

During the first years of the Seven Year Plan, when Khrushchev also enunciated his new military policy,* he seems to have been trying to hold down overall military expenditures by substantial reductions in conventional forces and manpower. One incentive for this apparently was to bring about some shift of defense resources to modern weapon systems; another--to free more resources for improvement of agricultural performance--to which he had made a strong domestic commitment. And, as recently revised U.S. estimates of past Soviet military budgets would suggest, if the costs of operating Soviet defense industry were twice what was previously supposed,** Khrushchev would have had a further

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*See below, pp. 354-56.

**The first major revision of U.S. estimates to indicate a substantially higher level of ruble expenditures--about twice the previous estimates of Soviet military spending--was published in 1976. It covered only the period 1970-75. (See Estimated Soviet Defense Spending in Rubles, 1970-1975, SR76-10121U, CIA, May 1976.) Subsequent estimated backtracking of Soviet military expenditures has extended on a partial (cont'd)

incentive to keep a ceiling on military spending.

However, incentives notwithstanding, Khrushchev found himself under recurrent pressure to let military expenditures rise as the Seven Year Plan period progressed. In the summer of 1961, for example, during the Berlin crisis, when Soviet troop reductions were suspended, a defense budget boost of 3.1 billion rubles was announced.[19] In the spring of 1962, another clash of priorities surfaced, with defense emerging ahead of one of Khrushchev's pet agricultural schemes. On 5 March 1962, Khrushchev opened a Special Plenary Session of the Central Committee with the announcement that an expanded program for agricultural machinery production was urgent, must be started immediately, and that the Presidium had agreed to provide the necessary increase in appropriations. Four days later, at the close of the session, Khrushchev sang an entirely different tune, declaring:

> The officials in charge of agriculture...must understand that the measures envisaged for strengthening agriculture do not mean that we shall immediately divert funds away from industry and the reinforcement of the country's defense.[20]

Some analysts have interpreted Khrushchev's curious reversal of position at the March 1962 Plenum as a retreat forced upon him by

(cont'd)

basis only to the year 1960. While the available revised data thus permit only limited reconstruction of past Soviet military budgets, it should be noted that the upward revision of overall Soviet military spending has not materially changed U.S. estimates of the forces actually procured and maintained by the Soviet Union, for such estimates derive primarily from observation. What has changed is how much those forces may have really cost the Soviets. Or--to put it another way--the Soviet military-industrial sector was only about half as efficient as previously estimated, thus doubling the real cost of a given amount of output.

opponents within the Presidium, perhaps allied with elements of the military likewise critical about the outcome of the Berlin crisis.* While there is no way of proving this, it appears that internal dissatisfaction with Khrushchev's military policy and its failure to provide adequate warranty for Soviet designs in Berlin was among the factors which led Khrushchev in the spring of 1962 to begin improvising the deployment of Soviet missiles to Cuba.** It is helpful to look briefly at the philosophy behind the new military policy through which Khrushchev sought to keep a lid on defense expenditures while introducing new technologies and strategic concepts into the Soviet armed forces.

Philosophy Behind Khrushchev's New Military Policy

Although Khrushchev's new military policy approach had taken shape gradually in the late 1950s, its formal unveiling awaited his celebrated speech to the Supreme Soviet on 14 January 1960, which coupled a "new look" military policy with disarmament proposals aimed at the then-pending Ten Nation Disarmament Conference in Geneva.[21] On this occasion, Khrushchev expounded a strategic philosophy based on the primacy of nuclear retaliatory power and, as he saw it, governing the process of revamping the Soviet armed forces and their doctrine to meet the requirements of Soviet security in the nuclear-missile age.

Nuclear weapons and missiles, Khrushchev said, had become the main elements in modern war, and many types of conventional forces--among which he singled out surface warships, bombers, and large

*One program decision inconsistent with this interpretation is the cutback in SS-8 missile deployment which became apparent in mid-1962. The implications are discussed below, pp. 379-82.

**See Chapter X below.

standing armies--were rapidly becoming obsolete. Claiming a Soviet lead in missiles, Khrushchev boasted that the Soviet Union not only possessed "formidable" weapons, but those "about to appear" would be "even more formidable."

The unprecedented destructiveness of nuclear weapons, Khrushchev said, meant that the initial phase of any future war would probably be decisive, and this might tempt an adversary to contemplate the idea of a surprise attack. However, such a policy would not be feasible, he declared, because a "sufficiently large country," even though attacked first, would always be able to survive and retaliate effectively if it took care to disperse and camouflage its own striking forces.

Expressing confidence that the "imperialist camp" was deterred by Soviet military might and the prospect of retaliation, Khrushchev capped this presentation of his basic strategic ideas by announcing that the Soviet armed forces would be reduced during the next few years from 3.6 million to 2.4 million men.* This reduction, he said, would mean no loss of combat capability, since nuclear firepower would more than make up for the manpower cut.

It might be said that in turning to a technological solution aimed at reducing reliance on traditional manpower-intensive forces by emphasizing nuclear firepower, Khrushchev had taken a leaf from the "New Look" military policy of the Eisenhower administration. However, the Soviet Union was not yet in a good position to translate technology

*This cut was in addition to the substantial manpower cut of the mid to late 1950s.

promptly into the requisite tactical and strategic nuclear forces.

The nuclearizing of Soviet theater forces, which had begun by 1960, still awaited the acquisition of an appropriate family of tactical weapons and adequate supplies of nuclear material before it could be completed. For strategic weapons, the conversion of technology into the requisite operational forces was further along. In particular, by 1960 medium-range Soviet strategic bomber and missile forces were targeting the zone of peripheral "encirclement" of the Soviet Union in Europe and the Mediterranean adequately, and even redundantly. However, the ICBM systems under development were not yet ready for large-scale deployment, and the reorganization which created the strategic rocket forces had just taken place--leaving the main burden of an intercontinental retaliatory threat still on the small force of heavy bombers in long range aviation, and on a few missile-launching submarines that began to enter service in the late 1950s. At the time he enunciated his new military policy, the essence of Khrushchev's strategic problem was that U.S. strategic power outside of Europe was committed to the defense of Europe by direct attack on the Soviet Union; how then could such American strategic forces best be uncoupled from Europe and kept neutralized?

So long as these forces had consisted of aircraft largely dependent on forward bases, a Soviet strategy of attacking them at their forward positions,* along with sturdy strategic defenses in the

*In addition to creating a capacity for attack against forward U.S. bases, the Soviets mounted an intensive diplomatic-propaganda campaign aimed at the political liquidation of these bases.

Soviet Union itself, may have seemed adequate to neutralize the threat. But the character of this threat began to change rapidly after 1960-61, as ICBMs and SLBMs began to enter the U.S. strategic forces in growing numbers.

This--according to one way of looking at Khrushchev's situation--meant that if the intercontinental U.S. threat were to be dealt with adequately henceforth, a thoroughly credible Soviet intercontinental threat against the United States itself would be required. In this view, Khrushchev's new military policy emphasizing Soviet nuclear retaliatory power built around strategic missile forces was intended to pose such a threat, but for various reasons the strategic programs necessary to back it up had lagged behind. And this, in turn, would largely account for Khrushchev's resort to missile bluffing and other strategic improvisations.

There are, however, other possible interpretations of Khrushchev's basic strategic approach, one of which,* is that he may have deliberately concentrated on acquiring forces for a "peripheral" rather than an "intercontinental" strategy, even after the character of the U.S. strategic threat began to change.** In this view, Khrushchev is assumed to have seen a more serious political-military threat from West Germany and China than from the more powerful but also more distant United States. Attainment of a dominant military position in Europe and the Far East would therefore have been his primary strategic

*See above, p. 342.

**There is some evidence that Soviet ICBM deployment program plans were similar in size to U.S. programs prior to the approval of the MINUTEMAN I program in 1960.

equirement, while at the same time restraint in building up Soviet intercontinental forces would be consistent with a desire to see the United States become gradually disengaged from Eurasian commitments.

In short, Khrushchev's preferred answer to the problem of decoupling U.S. strategic power from Europe would be not a Soviet intercontinental threat posed against the United States, but the absence of one. On the face of it, this proposition does not seem consistent with Khrushchev's assiduous striving to create the impression that such an intercontinental threat did exist. An explanation that can be advanced for Khrushchev's actual behavior, as contrasted with his presumed strategic preference under this hypothesis, is that he was driven to improvise and bluff in order to fend off criticism from those who wanted to adopt a stronger intercontinental posture against the United States.

Soviet Strategic Programs in 1957-62

A brief survey of the pattern of resource allocation to defensive and offensive strategic programs is helpful to an understanding of how such Soviet programs fared in the 1957-62 period.

Shift of Resources to Strategic Programs

Khrushchev's military policy evidently aimed at holding down overall Soviet military expenditures through manpower reductions, while also bringing about a gradual shift of resources to new strategic programs, particularly the missile forces.

How closely these aims were met during this period is difficult to establish, since no precise reconstruction of Soviet military budgets for these years is possible from the data given in recently revised U.S. estimates of Soviet military spending.* Assuming, however, that the internal pattern of Soviet military budgets was proportionately about the same as that previously estimated on the basis of observed forces, even though these forces may have cost the Soviets more than once thought, several observations on the allocation of resources under Khrushchev's military policy in the 1957-62 period seem warranted.

First, if Khrushchev had in fact sought to restrain the growth of overall military spending in this period by reducing manpower levels, he apparently achieved fewer economies than he had hoped. Despite several cutbacks in the Soviet armed forces from the post-Korea peak of 5.7 million men at which they stood in 1954, overall military expenditures appear to have changed little thereafter reaching in constant 1970 rubles, 28.4 billion in 1960 and 29.8 billion in 1961.[22] On the other hand, it would appear that Khrushchev was relatively successful in his effort to rechannel resources to new strategic programs from the categories that ranked lower in his scheme of priorities. Thus, the share of the total military budget allotted to strategic forces--both offensive and defensive combined--rose from an estimated 24 percent in 1957 to 30 percent in 1962, when the combined strategic outlays came, in constant 1970 rubles, to about 9.3 billion out of an overall military budget of 31.3 billion.[23]

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*See above, note, p. 352.

Strategic defense and attack forces received approximately the same share of total expenditures in 1957 -about 12.6 percent and 11.6 percent respectively. But while the former declined to about 10 percent by 1962, strategic attack expenditures by 1962 had risen almost twofold to more than 20 percent of the overall military budget. The R&D tilt toward strategic attack seemed especially pronounced in the late 1950s with research outlays for strategic attack programs, according to some estimates, amounting to about 65 percent of total military R&D expenditures, compared with about 17 percent for strategic defense.[24]

The shift of resources in favor of strategic attack forces was probably more an accident of timing than of any deliberate downgrading of strategic defense, for the Soviet strategic defense establishment had already gone through its major reorganizational phase in 1954-55 and had settled down to a relatively stable cyclical pattern of modernization programs and resource claims, permitting it to run largely on its own internal momentum. By contrast, the strategic attack apparatus in 1957 was just entering a period of transition in which its organizational restructuring and acquisition of major new weapon systems remained largely to be worked out. As this process proceeded during the next few years, the resource claims of the strategic attack establishment overtook those of strategic defense.

This trend, in turn, doubtless can be taken to indicate some shift toward a more offensive-oriented strategic posture on the part of Khrushchev and perhaps many Soviet military professionals as well. Still, the continued vigor of Soviet strategic defense programs would

hardly suggest that the Soviets had departed radically from their long-standing belief in the importance of attaining a balanced offense-defense posture.

Strategic Defense Allocations

Although the overall flow of resources to strategic defense remained fairly constant from 1957 until the decline in 1962, the pattern of allocation within this category changed considerably, reflecting primarily the phaseout of antiaircraft artillery as surface-to-air missiles came along, and a cyclical pause prior to the introduction of a new generation of interceptor aircraft. These changes in the pattern of allocation are shown below in terms of the percentage of the strategic defense budget estimated to have been received by the four main functional elements of PVO, the overall strategic defense establishment.*

PERCENTAGE DISTRIBUTION OF STRATEGIC DEFENSE BUDGET[25]

	1957	1958	1959	1960	1961	1962
Interceptors	56	53	40	36	34	37
AAA	17	15	13	4	--	--
Surface-to-air Missiles	9	15	29	42	46	42
Control and Warning	18	17	18	18	20	21
Total	100%	100%	100%	100%	100%	100%

Strategic Attack Allocations

Several significant changes in the pattern of resource allocation to strategic attack programs took place in the 1957-62 period,

*No estimates of the ruble costs of passive defenses, such as the Soviet civil defense program and related activity of such mass organizations as the paramilitary Volunteer Society for Cooperation with the Army, Aviation, and the Fleet (DOSAAF), are available for this period.

in addition to the overall increase for strategic attack forces.* The most notable shift, from strategic bombers to missiles, saw a shift from bombers receiving about 70 percent of the strategic attack budget at the start of the period to missiles receiving more than 71 percent at the end. Medium bombers received more than heavy bombers throughout the period, although the rate of decline in expenditures was about the same for both categories. Among missiles, the dominant share throughout went to M/IRBM forces, while expenditures for submarine-launched strategic missiles, surprisingly, exceeded those for ICBMs during all except the last 2 years of the period, when ICBM allocations began to rise rapidly.[26]

These changes in distribution of resources to the various elements of the strategic attack forces are illustrated in the estimated figures below, given in percentages of the strategic attack budget received by each element. For ICBMs, the amount allocated in 1957 is not separable from that for M/IRBM programs; hence, no figure is shown.

PERCENTAGE DISTRIBUTION OF STRATEGIC ATTACK BUDGET [27]

	1957	1958	1959	1960	1961	1962
Medium bomber	46	36	22	16	14	16
Heavy Bomber	24	16	16	13	10	7
M/IRBM	16	31	43	51	48	40
ICBM	--	2	4	7	17	29
Sub-Launched Strategic Missiles	7	8	11	10	6	2
Other (Joint Support, etc.)	7	7	4	3	5	6
Total	100%	100%	100%	100%	100%	100%

*These forces belonged to several different organizational entities, but for the purposes of this discussion they can best be treated in terms of the principal strategic delivery systems involved.

Interceptors

Soviet interceptor programs in the late 1950s represented a continuation of earlier efforts to improve the PVO's capabilities for coping with bomber attacks under high-altitude, all-weather conditions. Deployment of the MIG-19 (Farmer) and Yak-25 (Flashlight), which had begun in 1955, was largely completed by 1959. Although the Yak-25 gave the PVO its first true all-weather interceptor, it proved less than satisfactory in this role, and only about 400 were deployed. These aircraft, together with some models of the MIG-19 possessing a limited all-weather capability, constituted in 1960 about 15 percent of the PVO's fighter arm, far short of the all-weather force level sought by the PVO. It would be another decade before this level approached 90 percent.[28]

Introduction of a new generation of interceptors began in the early 1960s, particularly the SU-9/11 (Fishpot), a prototype of which had flown publicly in 1956. However, this more advanced supersonic fighter did not become operationally available in substantial numbers until the mid-1960s.[29] Earlier, the PVO command may have hoped that the new Sukhoi aircraft would be able to intercept U-2 overflights. After an April 1957 U-2 penetration to Voronezh, 400 miles north of the Black Sea, the Party Central Committee reportedly informed the Ministry of Defense that it was "very much disturbed at the inefficiency of PVO"[30]—which presumably spurred the PVO's interest in the Sukhoi program. However, the first downing of a U-2, in 1960, was not by an aircraft but by a surface-to-air missile.

Another PVO move regarded as related to periodic Western overflights of Soviet and Warsaw Pact territory in 1957-58 was the transfer of some 500 to 800 fighter aircraft from naval and frontal aviation units to PVO jurisdiction. The transfer raised PVO fighter strength from about 3,800 in 1957 to more than 4,500 in 1960, after which a gradual reduction in numbers began.[31] This decline paralleled a downward trend in the number of SAC bombers. However, it also coincided with the buildup of PVO's surface-to-air missile forces, suggesting that Soviet air defense planners saw no significant diminution of the SAC bomber threat in prospect.

Surface-to-Air Missiles

Given the shortcomings of the Soviet effort to develop all-weather fighter capabilities and the broadbased research program undertaken in the missile field, it is not surprising that Soviet planners turned to missile technology for answers to the problem of defense against strategic bomber attack under any weather conditions. The first Soviet surface-to-air missile program was the SA-1 system, deployed around Moscow in 1954-57. Despite the heavy investment in this system--production of some 14,000 missiles for
/56 "herring bone" sites containing more than 3,300 launchers--the SA-1 had basic deficiencies and was not duplicated elsewhere. Rather, a second-generation system, the SA-2, was selected for widespread deployment, beginning in 1958. By 1961, more than 2,200 SA-2 launchers had been deployed, with the figure reaching some 4,500 at 775 sites by the mid-1960s.[32]

Though well designed to counter high-altitude bomber attacks and progressively upgraded to improve its performance, the SA-2 system could not cope with the low-level penetration tactics adopted by SAC bomber forces at about the same time that SA-2 deployment began. To deal with this problem, the Soviets undertook a third program, the SA-3 system for low-altitude strategic defense. First tested in 1958 or 1959, the SA-3 became operational in 1961, but the scale of its deployment lagged far behind that of the SA-2, reaching only about 100 sites with a total of 400 launchers by 1964, after which the program came to a virtual standstill until resumed in 1968.[33]

Development of a fourth major Soviet SAM program, the SA-5, also later known as the Talinn system, began around 1960. The SA-5, whose characteristics seemed to make it suitable for engaging either bombers or bomber-launched air-to-surface missiles of the HOUND DOG -type at high altitude and long range (up to 100,000 feet at 105 miles), first began to be deployed at unfinished GRIFFON sites near Leningrad in 1963 but did not become operational until 1967. The SA-5 system eventually became one of the largest strategic defense programs in Soviet history. However, the intended purpose of the system became a matter of controversy in the West, with opinion split as to whether the SA-5 had been designed to counter an expected bomber threat such as the B-70, or whether it should be regarded as a transitional system with growth potential for becoming part of a nationwide ABM system.* [34]

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*For further discussion of the SA-5, see below, pp. 504-05.

An ABM research and development effort had begun in the early 1950s. Soviet activity in the 1957-62 period included the beginning of ABM test firings at Sary Shagan in 1957 and the abortive deployment of what may have been an unsuccessful first-generation ABM system, the GRIFFON, around Leningrad in 1960-61. The GRIFFON's place in the evolution of the Soviet ABM program has never been fully clarified. Although it was once supposed that Khrushchev had the GRIFFON in mind when he boasted in 1962 that the Soviet Union had developed a defensive missile that could "hit a fly in outer space," there is little likelihood that the GRIFFON was actually capable of intercepting an ICBM. The system might have been developed to defend against such IRBM targets as THOR and JUPITER missiles launched from Europe, or against high-performance bombers armed with air-to-surface missiles--the same role imputed to the SA-5.[35]

In any event, the GRIFFON project was cancelled at about the same time Khrushchev was claiming precedence for the Soviet Union in ABM development. Thereafter, the main focus of the Soviet ABM effort turned to the GALOSH system, elements of which had been under development at the Sary Shagan test center parallel with the GRIFFON project. Construction of electronics installations associated with the GALOSH program got underway in the Moscow area by 1962, but work on launch sites for what was to become the world's first operationally deployed ABM system began only 3 years later, after Khrushchev had left office.[36]

Strategic Attack Programs

Strategic Bombers

Despite Khrushchev's public assertions that bombers had become obsolete, the momentum of Soviet strategic bomber programs initiated earlier in the 1950s carried over into the 1957-62 period. At the same time, as with fighter aircraft, there was a decline in bomber production after 1959, suggesting that Khrushchev had managed to get across his preference for a military establishment more substantially oriented toward missile armaments. The decisions to reduce bomber production may have been made during the planning revisions that took place in 1958 in connection with drafting the Seven Year Plan, especially in view of the impending turnover of some aircraft industry facilities to the new missile industry. On this point, Khrushchev notes in his memoirs that aircraft plants were used to turn out missiles after the latter took priority over jet bombers and interceptors.[37]

Production of the TU-16 (Badger)medium bomber continued until 1959, bringing the total number built to about 1,500,* and making this the largest single strategic aircraft program in Soviet history. The number of TU-16s in long-range aviation increased from 850 in 1957 to a peak strength of 1,140 in 1959, after which a gradual phasing out began, with some Badgers being transferred to naval aviation.[38]

Production of the Mya-4 (Bison) heavy bomber ran until 1961, while the turboprop TU-95 (Bear)remained in production, partly to meet the

*Numbers vary, some sources estimating more than 1,700.

requirements of naval aviation, into the early 1970s. Operational deployment of the Bison rose from 50 in 1957 to 100 in 1961, with about half of these aircraft, whose performance as a long-range bomber compared unfavorably with that of the American B-52, being converted to tankers. The number of Bears in long-range aviation units went from 30 to 80 in the same period but did not reach a peak strength of 115 until 1965.[39]

Besides these programs, the Soviet strategic bomber effort of the period included development of two new aircraft. One of them, the Myasishchev M-50 Bounder, a delta-wing heavy bomber first observed in 1957, proved unsatisfactory in flight tests and never got beyond the prototype stage. The other, the TU-22 (Blinder), a medium bomber successor to the Badger, completed its development cycle in 1957 and went into production a few years later. It did not begin to enter operational service in long-range and naval aviation units until 1962.[40]

Organizationally, there occurred an interlude of uncertainty in the late 1950s as to future jurisdiction over the Soviet Union's growing strategic attack forces. For a time, it appeared that long range aviation might acquire responsibility for intercontinental missiles, but this mission eventually went in late 1959 to the newly created strategic rocket forces, which also took over control of MRBM and IRBM systems. Thereafter, long range aviation interests in delivery of strategic missiles remained confined to bomber-launched air-to-surface missiles, with which long range aviation bombers began to be equipped near the end of the period.

MRBM/IRBM Programs

The bulk of the Soviet effort in the strategic missile field in the 1957-62 period, as already suggested by resource allocation shares, went to deploying and training a substantial force of land-based missile units equipped with medium- and intermediate-range ballistic missiles. The SS-3, an MRBM of about 600-nautical-miles range was under development in the early 1950s and was the first of this family of missiles to be deployed, though in small numbers, late in 1956. In 1958 came deployment of another MRBM, the SS-4, with a range of more than 1,000 miles. By the middle of 1962, a force of about 500-600 MRBM launchers, mostly the SS-4 and all but a few of soft-site configuration, had been deployed in the western USSR, with fewer than 50 in the Far East.[41]

The first Soviet IRBM, the 2,200-mile SS-5, did not reach the deployment stage until late 1961, when 4 soft launchers became operational. When the SS-5 program reached a final strength of about 100 launchers in 1964, the total MRBM/IRBM deployment on Soviet territory amounted to a little more than 700, of which about 20 percent were of hard-site configuration.[42]

In the spring of 1962 the Soviets made a spectacular decision to deploy both SS-4 and SS-5 missiles to Cuba. A less widely known but peculiar SS-4 and SS-5 deployment also occurred at about the same time. Between June and December 1962 there was hurried construction in the USSR of nine pecial launch sites for these missiles, the location and orientation of which suggested that they might be meant to cover sea approaches from which POLARIS firings could be expected.

Curiously, though they were completed by the end of 1962, these sites were abandoned late the following year.*

At the time (prior to Cuba) that Soviet MRBM/IRBM systems were first being deployed to pose a new threat to targets in NATO Europe and peripheral areas, the pace and scope of this buildup failed to make as deep an impression abroad as did the more spectacular but less immediately threatening Soviet ICBM and space programs. In part, this may have been because information in the West on the deployment aspects of the Soviet programs was still fragmentary at best, and would only become clarified after improved intelligence became available.

Nevertheless, enough was known about the programs to underscore the seriousness with which the Soviets were moving to convert their missile technology into significant military forces. Thus, the Soviet MRBM and IRBM programs appear to have fed the sense of disquiet in the West which became part of the missile gap syndrome. These programs also doubtless gave Khrushchev some justification for believing that his claims of Soviet missile prowess would not be dismissed as mere idle boasting, for even though the programs made no direct contribution to Soviet intercontinental delivery capabilities, they did provide missile systems that the Soviets considered strategically significant.

Furthermore, if the proposition were to be accepted that Khrushchev was bent on pursuing a "peripheral" strategy and was deliberately eschewing a large investment in intercontinental-range systems, then of course a heavy commitment to MRBM-IRBM deployment--

*For further speculation on how these aborted SS-4 and SS-5 sites might have been related to Soviet strategic plans, see below, p. 486.

possibly firmed up during the 1958 preparation of the Seven Year Plan--would have been precisely what to expect.[43]

Submarine-Launched Strategic Missile Programs

It is generally overlooked in accounts of the U.S.-USSR strategic arms competition that the Soviet Union possessed a small force of ballistic-missile-launching submarines well before the first U.S. POLARIS submarine went on patrol in late 1960. The initial Soviet programs involved 3 classes of submarines: converted Z-class diesel submarines, of which 6 became operational between 1957 and 1959; the diesel-powered G-class, of which the first 3 units (out of 23 built) were commissioned in 1959; and the nuclear-powered H-class, 9 units of which were built, the first being launched also in 1959. All 3 of these classes originally carried the SS-N-4, a 300-nautical mile missile that was an outgrowth of Soviet land-based missile technology and that required surface launching. The Z-class carried 2 of these missiles, while the G- and H-class carried 3 each.[44]

Although these programs gave the Soviets the distinction of having developed submarine-launched ballistic missiles ahead of the United States, the U.S. POLARIS system was to prove far superior in virtually every respect, including the ability of each POLARIS submarine to launch many more missiles of much greater range from a submerged position. Not until 1963 did the Soviets acquire an operational submerged-launch capability, when the 700-nautical mile SS-N-5 missile began to come into use on converted G- and H-class submarines.[45]

During 1963 also, construction of facilities at Severodvinsk for building the new Y-class subs began. This class, design work on which may have been authorized as early as 1958--the year in which a number of other important strategic program decisions had been made--was the first Soviet Fleet Ballistic Missile Submarine (SSBN) that was at all comparable to early POLARIS submarines. It carried 16 tubes for underwater launch of the SS-N-6, a liquid-fueled ballistic missile of 1,300-nautical-mile range. However, until the first units of the Y-class began to enter service in the late 1960s, the Soviet sea-based strategic delivery capability remained relatively modest.

The early Soviet venture into SLBMs, and the apparent assignment to the Soviet navy around 1957 of a strategic strike role against land targets, raises the question whether Khrushchev had encouraged this move as a stopgap measure to enhance the Soviet intercontinental delivery potential until ICBM capabilities were further along. The answer is somewhat unclear, owing to strong circumstantial evidence that the land-target strategic mission was temporarily taken away from the navy in 1959, well before ICBM deployment on a meaningful scale had even begun. The explanation may lie in a combination of factors, including the following:

(1) The actual capabilities attained by the navy's original SLBM programs in 1957-59 may have been judged, perhaps by some of the naval leaders themselves, as inadequate to carry out an intercontinental assignment.

(2) The looming POLARIS threat and countering U.S. carrier task forces at sea may have assumed precedence in Soviet naval

[redacted]

planning over a land-target mission, a possibility further suggested by the emphasis given in the late 1950s to parallel development of a Soviet antinaval cruise missile capability.

(3) Or, the Soviet naval command may have simply come off second-best to land-based missile proponents in organizational maneuvering which attended the creation of the strategic rocket forces in late 1959, resulting in a lapse of navy claims to a slice of the strategic mission until better capabilities appeared in prospect with the advent of the Y-class construction program around 1963.[46]

ICBM Programs

Development of the first-generation Soviet ICBM--the SS-6--began in the early 1950s about the same time that the U.S.ATLAS program was started. Developed by a design team headed by S.P. Korolev,* the chief designer of the SS-3 MRBM, the SS-6 made history when it ostensibly became the world's first ICBM to be successfully flight-tested in August 1957--several weeks after the ATLAS had failed its first flight test.[47]

In retrospect, it appears that the SS-6 may have had a less auspicious debut than claimed at the time by the Russians. In his

*Korolev's main collaborator in working out a design solution for the clustered propulsion unit of the SS-6 was A. Isaev, [redacted] See Leonid Vladimirov, The Russian Space Bluff, New York, 1973, p 77.

[redacted]

memoirs, Khrushchev notes that several attempted launchings of the SS-6 (called by him the SEMYORKA, or No. 7) ended in explosions on the pad or during liftoff prior to the successful August test.[48] It also appears that the SS-6 launched at Tyuratam in August, as well as a second ICBM later said by Khrushchev to have been launched in September 1957,* [49] actually represented lashups of the space booster version of the SEMYORKA, and that the initial flight test of this vehicle in its military ICBM configuration did not take place until early January 1958.** Although the first successful ATLAS test flight occurred in December 1957, it was not in a military ICBM configuration.

Whether or not the Soviets were a bit premature in claiming the world's first ICBM launching, the widely publicized August debut of Korolev's creation was followed in quick succession in October and November 1957 by Sputniks I and II--also launched by the SS-6 booster. Psychologically, these achievements had a tremendous impact, buoying the spirits of the Soviet leadership, and leaving the West shaken by the implication that the USSR had managed to forge ahead of the United States in missile-space technology.

From another standpoint, however, the first-generation SS-6 program probably afforded the Soviet leadership less cause for elation, for the system was unsuitable in many ways for the kind of extensive operational deployment that would be needed to give the Soviet Union

*The test of a second Soviet ICBM on 17 September 1957, although unknown at the time to the West, was later "disclosed" to the French political leader, Daladier, by Khrushchev, who claimed he had personally witnessed the launching.

**Khrushchev boasted in a speech in Minsk on 22 January 1958 that the Soviet Union had now "tested and perfected" a missile which could carry a hydrogen warhead to any spot on the globe. He may have had this particular SS-6 test in mind.

a substantial advantage over the United States in ICBM capabilities. The system had serious shortcomings: Dependence on cryogenic, nonstorable propellants; initial range limitations which required northerly deployment in order to reach even a limited number of U.S. targets; relatively poor accuracy; large size and cumbersome nature of the launcher and its support facilities.* To be sure, the SS-6 also had its virtues--rugged construction, high reliability, adaptability to many space-booster configurations. In fact it became the workhorse of the Soviet space program for many years.

But for purposes of operational deployment as a weapon system, the SS-6 left much to be desired, which probably accounts for only 4 SS-6 launchers ever being operationally deployed, all at the Plesetsk complex in the northwestern USSR, construction of which had begun around mid-1957. The first pair of launchers at this complex reached completion in early 1960, some months after the first U.S. ATLAS site became operational in September 1959.

It is probable that Khrushchev and Soviet military planners had originally expected to deploy a larger force of first-generation SS-6s. Khrushchev's own enthusiasm in the first flush of Soviet successes in 1957 might have led him initially to contemplate a more ambitious SS-6 deployment program than actually ensued. Evidence points in this direction.

For example, preliminary work, later abandoned, had begun in 1957 on a second northerly complex similar to that at Plesetsk. Four other

*The large thrust was consistent with the large payload required by early thermonuclear designs of the early 1950s.

complexes (some were subsequently redesigned to accommodate second-generation ICBM systems) also had been started by mid-1958, and thus may have been originally intended for SS-6 deployment. At Plesetsk itself, the rail serving lines initially laid out along the escarpment where the four completed launch positions stood suggested that additional launchers may have been planned there too.

Altogether, if each of the 6 prospective SS-6 complexes had been intended to have 25 launchers,* the original force envisaged would have come to 150 SS-6s--about comparable to U.S. planning of the same period for ATLAS and TITAN deployment. Since production of SS-6 boosters following the first successful test launching in 1957 apparently exceeded the number expended in tests and deployed at Plesetsk, it is possible that some of the boosters that eventually found their way into the space program may have been earmarked originally for ICBM deployment.

But whatever the original plans for deployment of the SS-6, it is obvious that somewhere along the way, probably in the second half of 1958, a decision was made to limit deployment of the SS-6 to token numbers at Plesetsk In the first half of 1958 an intensive series of SS-6 tests brought the number flown near a dozen. Testing was then apparently suspended for some 9 months, a hiatus suggesting--in retrospect--that the SS-6 program had run into difficulties and was being reassessed, although at the time this was not clear to outsiders.

*This figure is hypothetical, but it may be compared with the pattern of 25 launchers per complex deployed later at a typical SS-7 complex.

This reassessment would have come at the same time as economic reprogramming for the Seven Year Plan .

In his reminiscences, Khrushchev did not reveal whether a decision to restrict the SS-6 to token deployment hinged on the outcome of the 1958 test series. However, he did indicate that the SS-6 had been found wanting as a deployable military system: "Properly speaking, the SEMYORKA was not a military rocket."[50] In a passage summing up some of the missile's deficiencies, including inadequate guidance, vulnerability, and the time required to prepare it for launching, Khrushchev noted:

> Therefore, the SEMYORKA was reliable neither as a defensive nor as an offensive weapon. Regardless of its range, it represented only a symbolic counterthreat to the United States. That left us only France, West Germany, and other European countries in striking distance of our medium-range missiles.[51]

Precisely for symbolic reasons, as well as for operational and training reasons, it doubtless made some sense to deploy Korolev's SS-6 on a limited basis, despite its military shortcomings, until more suitable second-generation ICBM systems became available. Development of second-generation ICBMs--SS-7 and SS-8--began in the mid-1950s.

In keeping with the frequent Soviet practice of parallel competitive development of prototypes by different design teams, the SS-7 program went to M.K. Yangel's design bureau at Dnepropetrovsk (where the SS-4, the SS-5, and later the SS-9 originated), while the SS-8 came under Korolev's design bureau associated with the NII-88 research institute near Moscow. Yangel's SS-7 ICBM, a scaled-up

version of his SS-5 IRBM, was to employ storable liquid propellant and an all-inertial guidance system, while Korolev's SS-8, like his SS-6 design, utilized cryogenic fuel and radio-inertial guidance.[52]

The development history of the two new systems was marked by noteworthy events. Although the SS-8 program got started about the same time as the SS-7, construction of its first test launch pad began at Tyuratam in October 1959, 5 months sooner than the first test pad for the SS-7. In October 1960, an attempted launch of the SS-7 ended in an explosion which killed the recently appointed commander of the strategic rocket forces, Chief Marshal of Artillery M.I. Nedelin,* probably delaying the program by at least 6 months for launcher redesign. Despite this mishap, the SS-7 came out slightly ahead of its rival system in entering the flight test phase, when both underwent their first launches a few days apart in February and March 1961.

While the SS-7 and the SS-8 may have been competing designs, the latter involved fewer departures from prior Soviet ICBM technology, and hence may have been regarded as a backup for the SS-7 in the event Yangel's first ICBM venture should not succeed.[53] There is also some possibility, based on the layout of rail handling equipment at the original SS-8 test site, that the SS-8 may have been intended first as a rail mobile system, but was converted to a fixed-site configuration as backup for the SS-7 after the latter's October 1960 explosion at Tyuratam.

*In his memoirs, Khrushchev notes that Yangel barely escaped death in the accident that killed Nedelin. See Khrushchev Remembers: The Last Testament, p. 51.

Both of these second-generation ICBM systems represented more promising candidates for operational deployment than the SS-6. For example, while both the SS-7 (325,000 pounds) and the SS-8 (165,000 pounds) were smaller than the first-generation SS-6 (550,000 pounds), improvements in Soviet propulsion and warhead technology promised to give the new missiles greater range than the SS-6 and thus permit their deployment in a less northerly and more hospitable environment than that required for the SS-6. Other design features, especially in the SS-7, also were calculated to reduce many of the transportation, basing, and ground-handling problems associated with the SS-6.

In the prototype competition between the SS-7 and the SS-8, the former evidently won out as the principal second-generation candidate for deployment, although the SS-8 was not dropped entirely from the deployment picture--owing perhaps to the Soviet preference for maintaining a broad and diversified military research and production establishment.

The deployment programs for the two systems experienced some rather curious stops and starts that have never been fully understood. In mid-1960, construction of the first SS-7 field launch sites began at 3 complexes, followed by other starts in late 1960 and early 1961 that brought the total number of complexes under construction to 13 by the end of 1961. Meanwhile, possible launch site construction for the SS-8 had begun in late 1961 or early 1962 at 4 complexes.

By mid-1961, 6 SS-7 launchers had become operational, with the number increasing to about 30 by mid-1962. At that point, which

happened to coincide with preparations for covert shipment of MRBM/IRBM launchers to Cuba, there was a halt in launch-site construction at more than half of the SS-7 and SS-8 complexes. When construction activity resumed in September 1962, it apparently reflected some new planning decisions. A decision to limit the SS-8 program to 23 launchers (14 soft, 9 hard) evidently had been made, for only these would be carried to completion;* 1 of 4 SS-8 complexes was converted to SS-7 launch site construction in September 1962. In addition to this conversion, SS-7 construction began in September 1962 on 12 new soft sites of a different design from previous SS-7 launch sites,** closely followed in October and November by R&D testing of new SS-7 reentry vehicles (Mods 2 and 3) with lower ballistic coefficients but greater warhead yields than the Mod 1 warhead.*** The ultimate deployment of completed launchers in the program, 128 soft and 69 hard,**** came to only a few more than those already under construction at the end of 1962. A few launchers under construction in October 1963 were abandoned in November, which implies a larger program up to that time.

Thus, neither of these two Soviet second-generation ICBM systems, the SS-7 and the SS-8, went into deployment on the scale and at the tempo anticipated by the West: such deployment seemed to be a logical

*The first of these SS-8s became operational in 1963, and the deployment was completed in mid-1964.

**Previous launch-site starts had included both soft and hard SS-7 launchers, the first of the latter having begun about March 1961.

***For discussion of the potential significance of these design changes, see below, p. 382-84.

****The SS-7 deployment program was largely completed in 1964, with only about 25 of the hard launchers remaining to be put into operational service the following year.

necessity for Khrushchev if his missile boasting of the late 1950s and early 1960s of a shift in the strategic balance were to carry weight. Several third-generation ICBM systems--the SS-9, the SS-10, the SS-11--had been conceived and were in various stages of development by mid-1962, but none would yield a deployable system until the mid-1960s.*

Why the deployment programs for the first two generations of Soviet ICBMs were not speeded up more vigorously under Khrushchev is a complex question. The technical problems attending the introduction of major new weapon systems, such as those which evidently beset the SS-6, doubtless played a pertinent role. So, too, must have the institutional and personnel problems associated with the creation of the strategic rocket forces, the new branch of the armed forces set up to man the strategic missile systems. Formal establishment of the strategic rocket forces came in December 1959 with a decree by the Supreme Soviet, but Khrushchev did not mention the new command the following month in his military policy speech, as might have been expected. This suggests that some jurisdictional issues may have still remained unsettled. The first public notice concerning the creation of the new force came in May 1960, when Marshal Nedelin was named commander. His untimely death in October in an accident involving the test of an SS-7 ICBM may have complicated the organization's early growing pains.[54]

Another set of factors affecting the pace and scale of ICBM deployment under Khrushchev had to do with changes introduced into various

*See below, pp. 495-502.

programs along the way, such as the introduction of hard-site configuration in the early stages of the SS-7 and SS-8 deployment programs. The first hard-site construction began in early 1961, about 8 months after soft-site field deployment started, but the first SS-7 sites to be converted to silos reached completion only in 1963, and the first hard-site SS-8s a year later. In his memoirs, Khrushchev claimed credit for having suggested the idea of putting Soviet missiles in underground silos, and said he had been "upset" because his idea had not been adopted for a "year or more" until news accounts indicated that U.S. missiles were being successfully emplaced in silos.[55] Khrushchev's complaint that "we wouldn't have lost all this time" had his suggestion been more promptly heeded might be taken to mean that hard-site conversion did result in some unanticipated delay in the second-generation ICBM deployment programs.

A slowing down and even curtailment of second-generation ICBM deployment may have been connected in some way with the unexplained adjustments in SS-7 and SS-8 construction starts in 1962.* One hypothesis links these 1962 adjustments--along with other developments such as deployment of shorter range missiles to Cuba and Soviet knowledge of electromagnetic pulse (EMP) effects derived from the 1961 nuclear test series--to a possible shift in Soviet strategy that emphasized targeting the U.S. strategic command and control system as the most economical and readily available way to negate the larger U.S. strategic delivery capability of the period.**

*See above, pp. 379-80.

**For fuller discussion of the context in which such a strategy of attacking U.S. strategic C^3 might have emerged, see below, pp. 684-86.

Another set of considerations affecting the scope of Soviet ICBM deployments under Khrushchev may have been the economic squeeze of the new programs, or at least, the problems of rechanneling resources for their support from competing military and civilian claimants. As noted earlier, Khrushchev had been trying to hold down military spending, though the "economizing trend" he mentioned in his memoirs applied mainly to cutting back the size of the traditional army and not to new technology. Recalling the time when he had "final authority over our military allocations," Khrushchev made it a point to say in his memoirs that he was "proud that the honor of supervising the transition to the most up-to-date weaponry fell on me"[56]--suggesting that he may have been less inclined to stint on new weaponry like missiles than on conventional forces. However, if military programs actually cost the Soviet economy about double what was once thought, as indicated by recently revised U.S. estimates of Soviet military expenditures,* then this too could have been a factor influencing Khrushchev's judgment as to how large a deployment of early-generation ICBMs was expedient.

Finally, although neither the SS-7 nor SS-8 programs ever became a major part of the Soviet post-Cuba strategic buildup, there is some basis for supposing--as with the first-generation SS-6--that the original planning for these two second-generation ICBMs may have called for somewhat larger scale deployment than actually took place. This supposition rests primarily on two circumstances: First, that some SS-8 and SS-7 launch-site construction was abandoned in mid-1962 and late 1963 respectively without ever being completed; and second, that far fewer

*See above, p. 352.

SS-7and SS-8 launch sites were built at the various complexes originally associated with these missiles than might have been expected at a fully completed complex. Had the 25 launchers per complex built at the first and largest SS-7 complex (at Yurya) been repeated elsewhere, then the potential deployment total would have come to at least 550 second-generation launchers.* Were the previously posited 150 SS-6 ICBMs** also to be considered part of an original Soviet deployment plan, then the total of first- and second-generation launchers contemplated before reductions were made could have come to 700 or more. This figure is not incompatible with the "several hundred" ICBMs which Penkovsky mentioned in 1961 as the original deployment goal for the early-generation Soviet ICBM systems. The figure of 700 planned ICBMs seems to have been reached by the end of the period and is considerably higher than contemporary U.S. estimates. If correct, it implies a higher Soviet priority on ICBMs during this period than previously thought.

But if the above considerations help to explain why the Soviet Union failed to translate its early ICBM programs into an operational force large enough to give substance to its inflated claims of strategic power, there still remains the question of why the Soviet leadership, particularly Khrushchev, nevertheless chose to advance such extravagant claims.

*Fourteen SS-7 complexes times 25 launchers = 350; 8 SS-8 complexes times 25 launchers = 200.

**See above, p. 376.

Soviet Strategic Claims and Their Policy Import

There are at least two schools of thought on how the exaggerated Soviet strategic claims of the late 1950s came about. One school holds that on the heels of the initial ICBM and Sputnik launchings in 1957, Khrushchev embarked on a calculated game of strategic bluffing and deception; the other, that he simply succumbed gradually to the temptation to exploit an image of growing Soviet strategic power which the West itself helped him to propagate by its much-publicized concern about a missile gap. But whether by design or accident, the Soviet leadership certainly sought to persuade the rest of the world that the Soviet Union had tipped the strategic balance in its favor by scoring a major breakthrough in missiles and space. The effort to convey this message to audiences abroad was abetted by visible and "authentic" evidence of Soviet technological accomplishments and by Soviet secrecy practices which made it difficult to verify the operational implications of Soviet claims.

The Pattern of Soviet Claims

The general pattern of Soviet claims is worth noting.[57] From the autumn of 1957 to the beginning of 1959, the Soviets confined their declarations largely to claims of having solved the problem of creating ICBMs and placing them in series production. Khrushchev himself in this period rarely asserted specifically that the Soviet Union had already acquired operational ICBMs, although in 1958, during the Lebanon crisis, he did make the point in a communication to Macmillan

and Eisenhower that the Soviet Union had "'ballistic missiles of all kinds including intercontinental ones.'"[58] Khrushchev also sought frequently during this period to imply that Soviet space exploits were directly translatable into ICBM capabilities. At the same time, but with considerably more justification, he alluded on various occasions during this period to the vulnerability of West European countries and U.S. overseas bases to Soviet missiles, presumably MRBMs. At least once, in November 1957, Khrushchev included missile-launching submarines in the category of "modern military techniques" that could bring "America's vital centers under fire."

During 1959 and early 1960, the period in which Soviet strategic claims reached their peak, the pattern shifted from emphasis on missile production to operational capabilities, including ICBMs. The public emphasis in this direction appears to have come first not from Khrushchev, but from several military leaders, including Marshals Malinovsky and Grechko, who announced in February 1959 that the armed forces had been equipped with a series of ballistic missiles, including "intercontinental" types.[59] Khrushchev laid claims to having very substantial ICBM operational capabilities in November 1959, when he declared: "We now have stockpiled so many rockets. . . that . . . we could wipe from the face of the earth all of our probable opponents."[60] He uttered a similar threat in his military policy speech of January 1960, and Marshals Malinovsky and Grechko repeated it with minor variations in the early months of 1960.

This brandishing of ICBMs, both by Khrushchev and Soviet military leaders, clearly amounted to bluffing, since in early 1960 the Soviet

Union possessed at best only 2 to 4 operational SS-6 launchers. However, the first cracks in the edifice of Soviet strategic claims appeared shortly thereafter, when the U-2 incident of May 1960 not only raised questions about the efficacy of Soviet defenses, which had failed to prevent previous flights, but also suggested that the Soviet Union would not have suffered such flights in silence had its strategic posture been as formidable as pictured.*

Although Soviet use of strategic threats, such as warning of retaliatory strikes against U.S. allies providing bases for overflights, continued after the U-2 episode, the general tenor of Khrushchev's missile boasting and especially his claims of having gained the upper hand in global military power, tended to become perceptibly more restrained during the next year and a half. By the fall of 1961, the missile gap had been deflated, thanks largely to improved American intelligence-gathering techniques, and as for Khrushchev's missile rattling, it had failed the major test of helping to dislodge the Western allies from Berlin. Though Khrushchev was to have one more fling at missile diplomacy a year later in Cuba, it too would end unhappily for the Soviet leader.

Policy Motivations Behind Khrushchev's Missile Rattling

Both strategic and political motivations appear to have lain behind Khrushchev's deceptive claims concerning the Soviet strategic posture in the 1956-62 period and his excessive rattling of intercontinental missile capabilities.

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*See above, pp. 338-39.

deterrence philosophy called for smaller strategic forces than the war-fighting posture traditionally preferred by the military, and that he thought he could get by on the cheap by concentrating on the image rather than the substance of powerful ICBM capabilities. There is considerable evidence that Soviet military leaders entertained misgivings about such an approach, not only because of what appeared to be its "one-sided" emphasis on the deterrent effect of missiles in the first place, but because it might leave the Soviet Union in a precarious position if deterrence should for one reason or another break down.[61] Nevertheless, the military leadership seems to have gone along with Khrushchev's game of strategic bluff, at least up to a point, perhaps to cover up what they felt was a weakness in the Soviet strategic posture. But what if Khrushchev should carry things too far by trying to bluff a superior opponent in an open confrontation? There is no clearcut answer as to the attitude of the military, but some indication has come from Penkovsky. According to him, when Khrushchev invoked the threat of Soviet missiles and other military action in connection with the Berlin crisis of 1958 and again in 1961, higher military circles felt that Khrushchev was courting risks that might involve the Soviet Union in a major war for which it was not ready.[62]

The political considerations that may have prompted Khrushchev to try his hand for several years at missile deception and diplomacy are not easily separable from the strategic motivations. Perhaps as one of the first political aims, Khrushchev had in mind--after early Soviet missile-space exploits in 1957 provided a favorable climate for

claiming that strategic preeminence had shifted to the Soviet Union--to deprive the United States of the political leverage it enjoyed from its far superior strategic power. By playing upon uncertainty in the West as to what was happening to the strategic balance, Khrushchev could hope to serve such useful purposes as weakening the confidence of America's European allies in U.S. pledges to protect them and curbing any U.S. inclination to employ strategic threats against the Soviets.

At some point in these efforts, perhaps after the initial worried response from the West indicated that he was getting results, Khrushchev appears to have grown more determined to wring political concessions from the West, as in his attempt to dictate a solution of the long-stalemated Berlin situation and his eager endeavors to bring the leaders of the West to a summit gathering which would confirm his status as the head of a great power strong enough to shape the settlement of major international issues. His impatience to convince the West that the time had come to make concessions on disputed political issues thus may have prompted Khrushchev to advance premature claims that Soviet missile capabilities had altered the global power balance.

Eventually, after the missile gap became a major controversy in the United States in the late 1950s,* Khrushchev himself may have fallen victim to the psychology of the missile gap, coming to believe that the confidence of the Western world was so shaken that a bold missile diplomacy might precipitate a general political retreat by its leaders.

*See below, Ch. VIII.

It is probable that some defensive political considerations also lay behind Khrushchev's missile diplomacy. For example, mindful of Chinese criticism of a lack of militancy by the Soviet Union, Khrushchev and other Soviet leaders may have felt obliged to pursue a rocket-rattling foreign policy to ward off charges of having become "revisionist."[63]

Internal leadership politics and Khrushchev's style of parrying challenges to his rule from within the Soviet governing elite--as noted earlier* --likewise may have accounted in some measure for his rocket-rattling. To secure his flanks against those taking a generally harder and more orthodox stance than he on various issues, Khrushchev may have decided that an active and successful missile diplomacy would deflect internal criticism without necessarily entailing increased external risks.

But whatever the combination of considerations that may have contributed to Khrushchev's attempts to derive political advantage from his strategic claims of the 1957-62 period, the key factor undoubtedly lay in his estimate of the danger of war. As previously noted, Khrushchev seems to have thought it unlikely that the United States would start a war unless gravely provoked. Despite the reported concern in Soviet military circles that Khrushchev might be treading too close to the borderline of serious provocation, he was apparently confident that he could control the level of provocation, and hence, the risk of war. As Khrushchev himself once put it: "We always seek to

*See above, pp. 348-53.

direct the development of events so as. . . not to provide the imperalist provocateurs with an opportunity to unleash a world war."[64]

Occasions on which the Soviets brandished their missiles, such as the Turkish-Syrian tension in October 1957 and the Taiwan Straits crisis in August-September 1958, passed without eliciting unacceptably dangerous reactions from Western leaders, probably serving to reassure Khrushchev that he was keeping within safe limits.

Although Khrushchev was right in believing that there was little chance of his bluff being called, he erred conspicuously in thinking that he could readily wrest major concessions from the West through the use of missile diplomacy. He found that the Western "threshold of concession" was too high to be overcome without creating situations in which the risk of war might indeed get beyond control. Moreover, from Khrushchev's viewpoint, his exercise in missile bluffing had the unwelcome effect of stimulating the United States to take up the challenge and devote more of its technological and production resources to the missile competition.

Chapter VIII

THE SPUTNIKS AND THE MISSILE GAP CONTROVERSY: 1957-61

By the mid-1950s, the foundations of American strategy and force posture were coming under increasing pressure from the march of military technology and world politics. First, the technology for strategic-range ballistic missiles and compatible thermonuclear warheads held far-reaching military implications, including a potential for achieving a decisive strategic offensive capability. Second, the apparent technical difficulty and the economic infeasibility of defense against ballistic missiles were tending to undermine the logical development of a strategic defensive strategy. Third, the political impracticality of preparing a credible conventional defense of Western Europe had weakened this once dominant element of policy and force structure and diminished traditional reliance on theater forces and theater commanders.

These circumstances had helped to create at least some of the necessary preconditions for a break with customary U.S. defense arrangements and for a surge in the deployment of ballistic missiles, although any marked shift toward missiles was slowed by such factors as the primary commitment of both the Air Force and the Navy to manned aircraft, the internal organizational balance within the Services, and the conservative fiscal policies of the Eisenhower administration.

Some quickening of the U.S. missile effort did occur in the mid-1950s, perhaps partly in response to the perceived bomber gap of the 1954-56 period. It also reflected emerging concern about the possibility that the Soviet Union might gain a strategic

advantage by successfully coupling nuclear weapons with missiles ahead of the United States. However, there was little direct reaction by U.S. programs in the missile field to a specific Soviet missile threat, if only because the latter still remained quite vaguely defined. Indeed, the U.S. missile effort in the 1955-57 period seems to have been driven as much by technology and interservice rivalry as by perception of an imminent Soviet threat.

What brought the Soviet missile threat to the forefront and imparted a strong new momentum to the American ballistic missile effort was the launching of the first Soviet Sputniks in the autumn of 1957 and the ensuing missile gap controversy. Combined with Khrushchev's misleading claims of Soviet missile preeminence,* the American reaction to the Sputnik satellites set off sharply accelerated programs for deployment of the new POLARIS and MINUTEMAN solid-propellant missile systems, as well as increases and rapid model changes in the prior ATLAS and TITAN ICBM programs.

Not only did the U.S. perception of a Soviet missile threat serve to trigger deployment of American ICBM and SLBM forces at an accelerated pace and on a scale well beyond any previous strategic rationale, but in the 4 years from the autumn of 1957 to late 1961 the controversy over a presumed missile gap and its implications for the U.S.-Soviet strategic balance became a prime political issue in the United States. This chapter will examine various factors which contributed to the missile gap controversy as well as the process by which it was dispelled; the following chapter will treat the upsurge of U.S. strategic programs between 1957 and 1962 and the organizational, planning, and policy issues that emerged during those same years.

*See above, pp. 385-92.

Factors Contributing to the Missile Gap Syndrome

The Sputniks

Although the so-called missile gap did not become a sharp public issue in the United States until around the end of 1958, it clearly grew out of the climate created by Soviet ICBM and Sputnik "firsts" in the latter months of 1957. Sputniks I and II, launched a month apart on 4 October and 3 November 1957, had an especially pronounced impact on public and official attitudes in the United States. Not only were the Sputnik flights spectacular space exploits which the United States could not hope to match for months or years, but they served in a sense to "validate" Soviet ICBM progress at a juncture when some analysts were still skeptical as to whether the Soviets had in fact test-launched the world's first intercontinental ballistic missile, per their announcement of 26 August 1957.*

The weight of the objects boosted into orbit by the Soviets--184 pounds by the October Sputnik, 1,120 pounds a month later -- came as a particular shock to the U.S. intelligence community.** Although there had been some speculative prediction earlier in 1957 that the Soviet Union might at any time put into space a small satellite comparable to the then as yet unlaunched U.S. VANGUARD, the probable payload was estimated at 10-20 pounds, with 40 pounds the outside limit. The Soviet capability for boosting far heavier payloads into orbit than

*For previous discussion of the initial Soviet ICBM, see above, pp. 373-74.

**In addition to the 1,120 pounds of the second Sputnik, the Soviets on this occasion also orbited the entire second stage of the booster, bringing the total package in orbit to 4,000 pounds.

U.S. technical analysts had expected, came as a jolting technological surprise and implied that the Soviet Union might have seized the lead in missile technology.[1]

Coming at about the same time the Gaither Report was submitted to the NSC in November 1957,* the Sputnik launchings seemed to reinforce the warning sounded by the Gaither panel that the USSR had "probably already surpassed" the United States in ICBM development and that the SAC bomber force was threatened by the prospect of an early Russian ICBM capability. The Sputniks also brought about a significant shift in the relative credibility of the various U.S. intelligence agencies and of the methods and logic which they employed-- in the face of many intelligence uncertainties-- to produce their analyses of Soviet missile programs.

Intelligence Uncertainties

American intelligence on Soviet missile activity in 1957 derived from a substantial body of information of varying worth which left much to be desired. The first NIE on the subject appeared in 1954, after which CIA organized an interagency task force on guided missiles to follow the matter on a regular basis.[2] The available information came from a variety of sources.

German rocket scientists and technicians who had been drafted to work on missile-associated projects in the Soviet Union furnished considerable information when they returned home, presumably after their usefulness to the Soviet missile effort had ended. Since the Soviets had carefully isolated the German scientists from Soviet design bureaus, however, the details reported by the Germans about

* For more on the Gaither committee see below, pp. 411-13.

their own work provided only indirect and incomplete evidence regarding major Soviet programs. [redacted]

Through such disparate sources, the existence of serious R&D activity was known, but fine-grained analysis of where the Soviet missile effort stood was not possible. There was no direct evidence on Soviet missile design or R&D scheduling, let alone on program plans for production and deployment. Nor did the Soviet budget process yield any useful insight in the mid-1950s as to the possible magnitude of the missile effort.

At the same time, American missile programs had not yet generated enough basic knowledge to permit sophisticated technical interpretation of raw intelligence data [redacted] There was, moreover, some mismatch between the questions

being asked and the activity being conducted by the Soviets. American analysts were particularly concerned about long-range missiles capable of reaching the continental United States, whereas the Soviet program as it was actually developing in the mid-1950s gave major emphasis to medium-range systems.[5]

Until the launching of the first Sputnik, on 4 October 1957, the prevailing NIE estimates had placed the initial operational capability of an unspecified Soviet ICBM in mid-1963 or thereafter, and offered neither quantitative projections of launcher numbers nor descriptions of individual missile systems. The Sputniks had a swift and powerful impact on official estimates.[6]

On 23 October 1957, a JCS compilation of intelligence on Soviet missile and space programs contained a forecast for the first time that the Soviets could have an operational ICBM by late 1959.[7] The next NIE, which appeared about 3 weeks later, also changed the probable date of an initial Soviet operational ICBM to 1959 [redacted]

Still another shift in the official estimates came in early December 1957, when a special NIE placed the estimated IOC of the first 10 Soviet ICBMs between mid-1958 and mid-1959. This estimate also credited the Soviets with being able to deploy up to 100 ICBMs within a year after IOC, and 500 in 2 or 3 years after the initial operational deployment--that is, by sometime between mid-1960 and mid-1962.[9]

A projected Soviet missile buildup of approximately the above dimensions appeared in three NIEs published during 1958. The last of these, in December 1958, attributed to the Soviets the intention of acquiring a sizable ICBM force at the earliest date, possibly 500 by 1962. This NIE also estimated that the USSR might attain a limited ABM capability sometime in the 1963-66 period. There was no essential revision of these several post-Sputnik national estimates of a growing Soviet missile threat during the next 2 years, although NIE 11-5-59 published in September 1959 did for the first time note that signs of a crash program for deployment of Soviet ICBMs had not been observed.[10]

Prevailing Logic Reflected in Official US Estimates

The alarming assessments of the Soviet missile threat that appeared in official US estimates during the years 1957-60, and which helped to sustain the notion of a missile gap, were not unanimously subscribed to within the US intelligence community. Indeed, the missile gap controversy itself might be regarded in part, at least, as the product of uncertainty and disagreement concerning Soviet deployment activities and intentions that spilled over from the intelligence community into the public arena.[11] An examination of the internal alignments and estimating logic within the US intelligence establishment out of which the new post-Sputnik missile estimates emerged is important to an understanding of the issues.

The Sputniks tended to affect the relative credibility of the methods and logic of the various estimating schools. The Air Force gained

at least a marginal credibility advantage because its analysts offered the clearest and most assertive conception of the Soviet strategic program. They began with the thesis that the Soviet Union, as an aggressive expansionist power, must be expected to develop strategic missile forces at a rate approximating the maximum that the Soviet economic and technical base would allow. The fundamental logic of this position was that a large and intense Soviet ICBM program was to be assumed, unless it could be specifically disproved. The burden of proof, in short, resided with those who might posit slow to moderate Soviet deployment programs.[12]

This approach rested chiefly on estimated Soviet production capacity, combined with the then tentative planning factors applicable to prospective US IRBM and ICBM deployments. Using the amount of industrial floor space allocable to Soviet missile production at known missile plants as a primary point of departure, Air Force analysts calculated commensurate production rates for Soviet ICBMs, much as had been done earlier in the 1950s in estimating Soviet strategic bomber production rates from the relationship between such factors as floor space, learning curves, and airframe weight. While this methodology had yielded fairly accurate forecasts of overall Soviet strategic bomber production, it had also resulted in substantial overestimates of the number of intercontinential heavy bomber types that would be included in the strategic bomber mix,*

*It is a popular misconception that Soviet bomber production across the board was vastly overestimated in the mid-fifties. Actually, in terms of airframe weight and numbers, Soviet production of strategic bombers came close to the estimates. What missed the mark was the estimate (made in 1956) that by mid-1959 the Soviets would have 600-700 heavy bombers (Bison and Bear), whereas only about 150 were built up to that time. On the other hand, by 1959 the Soviets had produced 1,700 medium jet bombers (Badger), somewhat more than had been expected.

thus contributing to the bomber-gap alarm of the mid-1950s.[13]

A repetition of this earlier methodological error was now in the making--with long-range missiles substituted for intercontinental bombers--but at the time, the failure of the bomber gap to materialize served only to reinforce the belief of Air Force analysts that the Soviets were in the process of shifting resources into a major ICBM program. In many other quarters as well, it was felt that perhaps the best explanation for Soviet failure to acquire a large force of true intercontinental bombers was that the Soviets intended to "leap-frog" the United States in the strategic arms competition by following up their vigorous missile R&D effort with early deployment of a large ICBM force.[14]

If Air Force analysts in general came out on the high side in projecting Soviet ICBM deployments, the Army, and to a lesser extent the Navy, offered appraisals at the other end of the spectrum. CIA analysts tended to occupy the middle ground, but were initially closer to the Air Force in anticipating early deployment of a substantial Soviet ICBM force. The position of the Army's intelligence analysts that available data indicated only a modest Soviet ICBM program turned on the assumption that large-scale deployment of a Soviet ICBM force would not only involve conspicuous construction activity, but that the likely characteristics of a first-generation Soviet ICBM would also make necessary massive logistical support at sites served by rail lines. All of this should produce many observable objects and activities; hence, in the absence of such observations, a massive Soviet ICBM deployment was to be doubted.[15]

While this argument may look compelling in retrospect, it was not at the time. The Army itself did not control the large data-gathering resources required to assemble pertinent evidence, and its credibility was diminished by the obvious convenience of the argument for Army institutional interests. The Air Force resisted the main thrust of the argument by advancing the proposition that the Soviets, taking advantage of the inherently greater secrecy of their society, might undertake a concealed deployment program. Further, Air Force analysts questioned whether logistic support activities for Soviet ICBM sites would be as obvious as the Army contended. Since the technical characteristics of the first-generation SS-6 ICBM and its handling equipment were not well enough known in the late 1950s to permit unequivocal estimates of the size and complexity of the support structure required, the logistic support issue as framed by Army analysts was not sufficiently persuasive within the US intelligence community in this period to rule out large-scale missile deployment by the Soviets.[16]

Much of the American U-2 effort in the late 1950s, indeed, was designed to clarify the logistic support issue one way or the other. Because of the presumed large size of the first-generation Soviet ICBM, the SS-6, it was supposed that any major deployment would have to be supported by rail; hence, U-2 flights were scheduled to photograph selected portions of the Soviet rail network for signs of missile-related activity. Although the flights produced little direct indication that an operational deployment program had begun, the coverage was not extensive enough to be conclusive.[17] A U-2 mission which would have given a positive clue to the actual support

layout for an SS-6 site happened to be the ill-fated Gary Powers flight in May 1960. Powers was enroute to the suspected location of a missile complex at Plesetsk when his aircraft was shot down near Sverdlovsk. As a consequence, the U-2 program was suspended, and the first photographic coverage of Plesetsk did not become available until near the end of 1960, after the satellite reconnaissance program had gotten underway.[18]

In addition to the failure to resolve the logistic support issue, several other intelligence factors seem to have contributed significantly in the late 1950s to the US.intelligence community's perceptions of and collective judgment about Soviet ICBM deployment. In the absence of compelling evidence to the contrary, these factors led to estimates of a much larger early buildup than actually took place They included the following:

(1) Although the U-2 program as it developed in the late 1950s provided an important intelligence collection tool, it was largely limited to reconnoitering suspected targets at specific locations and lacked the capability of subsequent satellite reconnaissance for widespread search coverage of the Soviet Union. This meant that the scattered spot coverage of the U-2 program up to the time Gary Powers was shot down in May 1960 had been inconclusive with respect to possible ICBM deployment sites in the field.[19]

(2) Early U-2 photography of Tyuratam obtained in 1957-58 had disclosed a much larger and more elaborate ICBM test range than previously suspected from other kinds of information. This, together with the fact that the initial SS-6 test series up to about mid-1958 /

enjoyed a higher rate of success than the early US ATLAS tests,* helped to persuade many analysts in the intelligence community to go along with the Air Force thesis that a major Soviet SS-6 deployment program would likely follow.[20]

(3) The compilation over the years of a great deal of information on the Soviet industrial base made it possible to obtain general acceptance within the intelligence community of estimates of Soviet missile production capacity at Dnepropetrovsk and other known plants. This capacity, estimated in the late 1950s on the order of at least 250 missiles per year, seemed to be generally compatible with production claims being publicly advanced by Khrushchev. At the same time, Khrushchev's claims were fuzzy in distinguishing between ICBMs and other ballistic missiles, leaving it unclear how much of Soviet production capacity might be earmarked for ICBMs. As previously noted, it turned out that actual Soviet missile production during this period was devoted largely to land- and sea-based missiles of medium range rather than to ICBMs.**[21]

(4) Prior to the first Soviet flight tests of the SS-7 and SS-8 in February and March 1961, the United States had no good evidence that these second-generation ICBMs were in fact nearing the test stage. Within the intelligence community, this lack of information about specific follow-on systems tended to fortify the view of those who felt that the Soviets would try to capitalize on their first-generation SS-6 by going ahead with a major deployment program for this system.[22]

*See below, pp. 433-37.
**See above, pp. 367-71, 385-87.

The combined effect of these factors was that the U.S. intelligence community, reflecting the technical concern and political excitement which followed the launching of the first Sputniks, arrived at collective judgments about Soviet ICBM deployment that helped sustain the notion of an impending missile gap. During the height of the missile gap controversy, from 1958 through 1960, the issue centered less on an immediate Soviet ICBM threat than on how rapidly the Soviet Union might outdistance the United States in deployed ICBM forces in the critical period up to about 1963-64, after which U.S. programs were expected to begin to close the gap.[23]

Forecasts in the public domain tended to be more alarmist than the official intelligence estimates,* ranging from 500 versus 70 ICBMs in Soviet favor by 1961 to 1500 versus 130 in 1963.[24] As previously noted, the series of NIEs prepared during the 1957-60 period did not credit the Soviets with a prospective buildup of this magnitude.** Nevertheless, the intelligence estimates gave a disturbing picture for U.S. policymakers to ponder--a picture that gained significant support, moreover, from the US research and development community.

The US R&D Community

The perception of the Soviet ICBM threat which dominated official US estimates in the first years of the post-Sputnik period could not be dismissed as an obviously self-serving, alarmist view put forward by Air Force analysts. Articulate, independently based support for the Air Force interpretation of the Soviet program, though not

*Some of the higher figures which found their way into the public domain through columnists like Joseph Alsop had been appended to draft versions of NIEs, but were dropped in the final version.

**See above, pp. 398-99.

necessarily for the same numerical estimates favored by the Air Force, came from members of the R&D and scientific advisory community who were following technical developments.

For example, the Hyland* Panel of technical experts which had been called upon by the intelligence community to help assay Soviet progress in missile technology played an influential role in buttressing the view that the Soviets were making formidable strides in the missile field. The Gaither Committee's technical experts did likewise. One of them, Jerome Wiesner, had become convinced during the committee's study that the Soviets had an intensive missile program underway. Reflecting the mood of the Gaither group as a whole, he was vehemently impatient with what appeared to be lagging government response to a threat which he believed required immediate action.[25]

Another whose views lent weight to the idea that the Soviets had embarked upon a vigorous ICBM program was George Kistiakowsky, science advisor to President Eisenhower from 1959 to 1961. Kistiakowsky even contributed what he felt was specific intelligence when he brought back from a negotiating session in Geneva in 1958 a report on his private conversation with a tipsy Soviet general who had boasted that the Soviet Union was indeed engaged in building up a large missile force in accordance with Khrushchev's claims. Kistiakowsky is said to have taken this "revelation" quite seriously, and to have pressed his warnings in high places within the U.S. government.[26]

At CIA itself, the official responsible for making assessments of Soviet technological capabilities, Herbert Scoville, found it plausible on the basis of the space and missile technology demonstrated by the Soviets to assume that a large and rapidly paced Soviet ICBM program

*Lawrence A. Hyland, engineer and industrialist.

was underway. Wiesner, Kistiakowsky, and Scoville later all became outspoken arms control advocates and sharp critics of American weapon programs. This suggests that their alarm in the late 1950s about an impending Soviet ICBM lead might have emerged more or less apart from the Air Force constellation of strategic conceptions and institutional interests.[27]

In retrospect, it appears that the resonance which the research and development community provided for the alarmist view of the Soviet missile threat derived from the particular state of technology at the time. Enough was known about the critical elements of ballistic missiles--warhead design, guidance, and propulsion--to establish that a Soviet program of the sort being projected was technically credible. The requirements of range, CEP, and yield for an intercontinental ballistic missile system were all on the horizon of technical feasibility in the American programs, and thus fundamental physical principles could not be held to bar the way to Soviet success.[28]

At the same time there existed large uncertainties of detail as the early US missile programs struggled with various design problems, some of which appeared quite formidable until they were later solved. The THOR, ATLAS, TITAN, and POLARIS programs all experienced a series of spectacular and demoralizing test failures from 1957 to 1959 as the debate over Soviet progress grew warmer. The first ATLAS test firing in June 1957, for example, failed as did four of the next seven ATLAS A launches up to early June 1958.* During the same

*For further discussion of the test record of early US ballistic missile programs, see below, pp. 433-37.

period, by contrast, most of an intensive Soviet series of about a dozen SS-6 firings appeared to have been successful.

Besides the contrasting failure rates of the early test firings, other technical factors also served to heighten the sense of being behind the Russians. The first Sputnik satellites and ensuing Soviet initiatives involving space flights with live payloads* demonstrated that the Russians had progressed beyond American designs in payload capability and in gross booster thrust. Therefore, it seemed also possible that the Soviets had achieved advantages in other ICBM design areas as well. Since it was then difficult to predict how rapidly American design problems could be solved, the attribution of a not implausible technical lead to the Soviets served to strengthen the case of those who felt the USSR would move out ahead of the United States in deployed ICBM capabilities in the early 1960s. Moreover, since the general fear of this possibility elicited large resources for the US technical development effort, those best informed on American technical development programs -- the leaders of missile development programs -- had little incentive to revise downward the probability of a period of US disadvantage as the various design problems were solved. In effect, the fears out of which the missile gap syndrome emerged in 1957-58 did not subside at the same rate as the technical uncertainties which helped to create them.

Political Response to the Sputniks

Political reaction to the Sputniks in the United States and abroad doubtless had as much to do with the birth of controversy over a missile

*Sputnik II carried a dog into orbit, and several satellite flights during 1960 had dogs, guinea pigs, and other organisms aboard, as well as a dummy astronaut, prior to the first manned flight by Yuri Gagarin in April 1961.

gap as the technical and strategic uncertainties discussed above. Political leaders throughout the world saw in the Sputniks a stark challenge to what they widely perceived to be the core element of American strength--technological superiority. The popular impression gained ground that for several years at least the United States would find itself lagging dangerously behind the Soviet Union in the new elements of strategic power embodied in ballistic missiles and space technology.

Domestic Pressures on the Eisenhower Administration

Within the United States, Sputnik tended to become the symbol of an American failure rather than a Soviet achievement. Political reaction saddled the incumbent Administration with the presumptive blame, the more so because it happened to be Republican while the Congress was Democratic. Given both the role of Congress and the political interest of the Democratic majority, calls for investigation and some form of legislated remedy could be expected.

Strong, well-positioned men in the Congress looked forward to the task. Senator Stuart Symington, former Secretary of the Air Force and member of the Senate Armed Services Committee, had conducted hearings on airpower in 1956 and published a report which had warned that the Soviets might achieve a strategic advantage by leap-frogging the United States in the development of ballistic missiles. Symington took Sputnik as confirmation and became the first to speak publicly of a "missile gap" looming ahead in the early 1960s.[29]

Four separate congressional hearings on missile and space programs were inspired by Sputnik. In the House, hearings dealing with expenditures for missiles, the use of scientists and engineers, and the effects of science on the missile program were held respectively by subcommittees on defense appropriations, on Civil Service manpower utilization, and on government operations. Lyndon Johnson, approaching the apogee of his power as Senate majority leader, organized one of the most important hearings. As Chairman of the Senate Armed Services Preparedness Investigating Subcommittee, which included Symington, Johnson presided over well-publicized hearings in late 1957 and early 1958. After taking thousands of pages of testimony from Government officials and expert witnesses, the subcommittee concluded among other things that the Soviet Union led the United States in the development of ballistic missiles, in the construction of submarines, in organization of R&D, and in the output of scientists and engineers.

The subcommittee recommended a long list of remedial measures, including acceleration of all U.S. ballistic missile programs, steps to reduce the vulnerability of SAC bombers, and the reorganization of various aspects of US defense and scientific activity. Whatever their intrinsic merit, the recommendations also in a sense represented a list of political demands on the Eisenhower administration to repair shortcomings in the U.S. posture which Sputnik had seemingly illuminated, and for which the Administration was being held accountable.[30]

Pressure on the Eisenhower administration was heightened by presidential politics pointing toward the next election in 1960. Although the

eventual Democratic nominee, Senator John F. Kennedy, did not cut as prominent a figure in the missile-space hearings as did such other top contenders as Senators Johnson and Symington, he understood well the broad political appeal of the missile gap issue. In a major foreign policy speech to the Senate in August 1958, Kennedy unambiguously asserted that a period of Soviet strategic superiority sufficient to make the United States the "underdog" in world politics lay not far ahead. Kennedy invoked the "missile gap" in connection with the political theme which was to prove so effective in his campaign for the presidency: The country must be awakened from its slumbers; it must get moving again.[31] This refrain found wide support in the press, and as later proved, within the electorate as well.

In addition to partisan pressures from outside the Administration that tended to make the missile gap a prime political issue, a ready mechanism within the Administration --the Gaither* Committee-- also helped to fuel the issue. In early 1957, reacting to a proposal for massive expenditures on civil defense, Eisenhower had appointed the Gaither Committee to review "the relative value of various active and passive measures to protect the civil population in case of nuclear attack." The President apparently intended to pose a fairly specific question--whether the $40 billion proposed for civil defense could be better spent on active defense--but his appointees, prominent people of high professional standing, interpreted their charter liberally to cover the full range of strategic issues, including the potential vulnerability of the offensive retaliatory forces and the importance of a

*H. Rowan Gaither, Jr., the committee chairman, was a prominent lawyer and president of the Ford Foundation.

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second-strike retaliatory capability as a criterion of force size and design.

With an aggressiveness that only a group independent of the established bureaucracy could muster, the committee conducted an intensive review of the Soviet-American strategic balance, and it sided with the more alarmist interpretation of the Soviet program. In the end, the committee recommended overriding priority for an accelerated deployment of hardened and dispersed missiles. Its report, heralding the dangers of the Soviet threat and the necessity of a vigorous buildup of US offensive forces, was nearing completion when Sputnik I was launched.[32]

Though the Gaither report was a major irritant and embarrassment to the White House, it was far too prominently sponsored and too pertinent in the aftermath of Sputnik to be ignored. The President had created the committee himself through the formal NSC apparatus and he could hardly take refuge in an argument that the committee had gotten out of hand. Nor could he readily upstage the Gaither report with a review less threatening to the record of his Administration and more in accord with his own more moderate estimate of the Soviet missile threat.

Instead, Eisenhower tried to smother the report with internal procedures and tight security. The President met with selected members of the Gaither Committee personally and held a long session of the NSC to consider the report's substance and how to deal with it. He also instituted unusually elaborate procedures within the Pentagon for monitoring progress toward the major recommendations of the committee. Nonetheless, details of the Gaither report soon appeared in the press. This further

stimulated the political pressure emanating from Congress, and also in effect nullified efforts to confine the influence of the Gaither findings within the main channels of executive policy formulation.[33]

Adverse Reaction From Abroad

If at home the political reverberations of the Sputniks proved discomfiting to the Eisenhower administration, much the same could be said with regard to the effects abroad, especially in Western Europe. One of the initial effects of the Sputniks had been to intensify European requests for access to nuclear weapons.* These pressures had already grown stronger in the wake of the Suez crisis a year earlier, and they were in turn closely linked with the matter of American defense guarantees, the credibility of which had begun to be questioned--by France in particular--even before the first Sputnik. The regular meeting of the NATO Council scheduled for December 1957, therefore, promised to be a difficult one in which ruffled alliance relationships might be further exacerbated by the notion that the Sputniks heralded a change in the strategic balance favorable to the Soviet Union.

Hoping to reestablish calm in the alliance, Eisenhower decided to attend the NATO December session, thus making it in effect a summit conference of Western heads of state. Prestigious as he was, however, Eisenhower could not expect to rally the Europeans with rhetoric alone; hence, at the December summit he joined in an alliance decision to es-

*Although tactical nuclear weapons had been called for by NATO's agreed strategy since 1954, they still had not actually been made available to European forces by the fall of 1957. In April 1957, the United States had announced its intention to furnish tactical missiles to certain allies, but US readiness to implement this undertaking promptly became more manifest after the Sputniks.

tablish a stockpile of US nuclear weapons in Europe to supply NATO forces under a dual-control system. In a related decision, the NATO Council also laid down an official requirement that the NATO commander (SACEUR) have medium-range ballistic missiles at his disposal, a requirement which subsequently facilitated the stationing of THOR and JUPITER IRBMs in Europe and Turkey.* Both decisions were publicly justified as reactions to Soviet missile programs.[34]

Despite moves by the United States to implement these decisions, NATO and European public opinion generally reacted adversely as controversy over the magnitude of the Soviet ICBM threat and its potential effects on the strategic balance sharpened publicly in the United States. After coming to power in France in 1958, DeGaulle made no secret of his doubts concerning the reliability of US guarantees under changing conditions in the Soviet-US power balance, while Konrad Adenauer of Germany let it be known privately that the implications of a missile gap for US alliance commitments were worrisome. Surveys of public opinion in several West European countries indicated that by 1960 Soviet boasts of missile superiority, combined with American admissions of a temporary missile gap, had seemingly led to a general belief that the United States had not only currently fallen behind the Soviet Union militarily, but would continue to trail for the next decade or so.[35]

Unsuccessful Efforts to Allay Concern About a Missile Gap

Finding itself on the defensive against adverse political reaction at home and abroad, the Eisenhower administration throughout the late

*This requirement also served as the basis for later Multilateral Force (MLF) proposals.

1950s sought to allay public concern about a missile imbalance. On the one hand, central figures in the Administration suggested that the Soviets did not necessarily have a lead over the United States in the ICBM field. Secretary of Defense Neil H. McElroy told a press conference on 22 January 1959 that there was "no positive evidence" that the Soviets were actually ahead in long-range missiles, and that he felt estimates of a large forthcoming gap were exaggerated.[36]

On the other hand, the Eisenhower administration also averred that even if the Soviets had gained an ICBM lead there loomed no prospective "gap" in deterrence, and that in any event budget increases for strategic programs would serve to speed up the US missile effort and reduce the vulnerability of SAC's bombers to a surprise missile attack. The budgetary shifts to support these programs began with supplemental appropriations for the FY 1958 and FY 1959 budgets.* Nevertheless, neither the Eisenhower administration's assurances that there was no cause for alarm, nor the strategic programs which it began to accelerate after the Sputniks, carried sufficient conviction at the time to erase the widespread impression that the United States was about to fall behind in the strategic competition. Though the extent to which this perception may have influenced the American electorate cannot be documented, it seems a reasonable judgment that its major political beneficiary was John F. Kennedy, who was elected to the Presidency in November 1960.

Ironically, by that time new intelligence findings which were to deflate the missile gap controversy and help to reverse the image of a

*See below, pp. 423-24.

power balance tending in Soviet favor were just around the corner. Though these findings stemmed from an intelligence collection effort set in motion during the Eisenhower incumbency, it was only after the change of administrations in 1961 that the missile gap controversy would be laid to rest.

Deflation of the Missile Gap

When the Kennedy administration assumed office in January 1961, it still was not possible to determine beyond reasonable dispute the character and pace of Soviet strategic missile deployments, although the proposition that the Soviets were embarked on an SS-6 deployment program large enough to give them a substantial ICBM lead over the United States had already begun to look increasingly doubtful to some members of the new administration.

One of the doubters, Robert S. McNamara, the new Secretary of Defense, had visited SAC headquarters shortly after taking office and had been unimpressed by the evidence shown him of possible large-scale Soviet ICBM deployment. He also had informed himself on studies of the missile situation then underway in Washington. Following these investigations, McNamara told an off-the-record meeting with the press on 6 February 1961 that current studies indicated there was no missile gap. Two days later President Kennedy stated that it would be "premature" to say whether there was a "gap or not/a gap," and that judgment should be reserved until a review of the problem was completed.[37] As it turned out, this judgment came only some 8 months later, by which time the intelligence picture had clarified sufficiently to resolve the arguments

that had persisted among the various agencies since 1957.

Perhaps the earliest intimation that the Soviet Union might not deploy the first-generation SS-6 on a large scale came after the initial intensive Soviet test series in 1958 was followed by a halt of some months before testing resumed at reduced tempo.* In retrospect, this might be seen as the point at which a Soviet decision had been made to limit SS-6 deployment in favor of waiting for second-generation SS-7s and SS-8s. At the time, however, there was still no corroborating evidence that such a decision had been made, and as previously noted, the slowdown of SS-6 testing was reflected in an NIE of September 1959 (NIE 11-5-59) only to the extent that the estimate noted that no crash deployment program was yet discernible in the Soviet Union.

Fresh evidence that would gradually resolve uncertainties about the actual status of SS-6 deployment began to accumulate in 1960 when satellite reconnaissance, the new intelligence collection tool which more than any other was to be instrumental in deflating the missile gap, first came into use. The initial KH-4 satellite photography of August 1960 produced no positive signs of a large deployment program, but the coverage was geographically limited and of poor quality, hence still inconclusive. In December 1960, however, an improved US satellite (known as Discoverer 18), incorporating a new stabilization technology, flew the most successful satellite reconnaissance mission up to that time.[38]

It returned pictures of the suspected Soviet missile site at Plesetsk, which Gary Powers had failed to reach 7 months earlier.

*For previous discussion of this aspect of the SS-6 program, see above, pp. 374-75.

The pictures showed four massive concrete launch pads for the SS-6, constructed in the same pattern as the test pads previously observed at the Tyuratam test range, and that information constituted a breakthrough. It supplied direct evidence against the theory that operational SS-6 sites might be less elaborate than those at the test range or that they might be deliberately concealed. Pictures of the extensive ground support facilities required to service the SS-6 also bolstered the argument that the logistics of Soviet missile deployment would be complicated and observable. [39]

Thus, though still providing no answer to the question of how many sites might be found elsewhere, the initial Plesetsk coverage gave greatly increased confidence that such installations would be detectable if large-scale SS-6 deployment were under way. As subsequent satellite search missions in early 1961 turned up no new construction of SS-6 type installations, gradually reducing the areas of potential deployment of this missile, the case against an impending missile gap became commensurately more convincing.

Two other factors contributed significantly in 1961 to revision of earlier estimates of a large SS-6 buildup. One was a growing body of information on the second-generation SS-7 and SS-8 systems, flight testing of which began in February and March 1961. This activity enabled intelligence analysts to determine that the new systems would be less cumbersome and operationally more practical than the SS-6, hence, more likely to be the basis for Soviet ICBM deployments.[40]

As testing of the SS-7 and SS-8 proceeded, and as some evidence turned up that field sites that might originally have been intended for the SS-6 were being constructed to accommodate the SS-7, the conviction grew that Soviet planners probably had suspended whatever original deployment plans they may have had for the SS-6.* Although shelving of the SS-6 in favor of second-generation systems did not necessarily suggest that the Soviets would no longer strive for a large ICBM force, it did strongly indicate that since the SS-7 and SS-8 were just entering the test phase, deployment of such a force would have to be at least a couple of years later than previously estimated. Since the United States had already deployed 3 operational ATLAS squadrons (24 missiles) by the spring of 1961 and was about to begin deployment of TITAN later in the year,** it seemed obvious that Soviet ICBM deployment would lag well behind that of the United States, rather than the other way around.

Perhaps the clinching factor in deflating the missile gap in 1961 was covert information furnished by Soviet Colonel Oleg Penkovsky, most specifically in a "Chickadee" report dated 16 May 1961. In this report, Penkovsky asserted that Khrushchev was bluffing, that the Soviets had encountered numerous difficulties in the testing and initial site construction phases of their ICBM program, and that claims of large numbers deployed were not true. Further, Penkovsky said that while the Soviet Union was hoping to deploy "several hundred" ICBMs, Khrushchev's boasts thus far had been meant to create the impression in the

*For previous discussion of the possibility that larger deployment programs for the SS-6, as well as for the SS-7 and SS-8, may have been originally contemplated by the Soviets, see above, pp. 375-76.

**For more on these US programs, see below, pp.433-35.

West that the Soviet strategic posture was stronger than was actually the case.[41]

The Penkovsky disclosures, which fitted in with other accumulating evidence that the SS-6 program had indeed run into a snag,* persuaded most of the U. S. intelligence community--with the notable exception of the SAC intelligence staff--that the then-existing projections of Soviet ICBM deployment ought to be revised downward.[42] Redrafting of an as yet unpublished NIE that had been prepared earlier in the year produced in September 1961 a revised estimate (NIE 11-8-61), which credited the Soviets with less than 10 operational ICBMs and substantially downgraded future Soviet ICBM deployment prospects. A month after the September NIE, in a speech on 21 October, Deputy Defense Secretary Roswell Gilpatric let it be known publicly that improved intelligence made it clear that there was and had been no missile gap favoring the Soviet Union.[43]

*This evidence, in retrospect, was probably related to the SS-7 and SS-8 programs.

Chapter IX

THE SURGE IN U.S. STRATEGIC PROGRAMS: 1957-62

It seems reasonable to suppose that if the missile gap had been deflated sooner, U.S. strategic programs would have acquired much less momentum than they did. A precedent can be found in the bomber-gap experience of 1954-55, when accelerated B-52 production intended to close the supposed gap was cut back in the spring of 1957 after improved intelligence indicated that the Soviet heavy bomber program was much more modest than originally believed.

Even under the pressure of the missile gap atmosphere of the late 1950s, top officials of the Eisenhower administration were reluctant to be stampeded into a hasty effort to match the Soviets missile for missile. Thus, they resisted the temptation to embark on a large-scale crash deployment of the first-generation ATLAS in answer to the Soviet SS-6, an example of restraint often overlooked in accounts of the strategic arms competition. At an NSC meeting in October 1958, President Eisenhower had voiced his own preference that the United States should not try to balance exactly each Soviet capability but should aim for a posture which could with confidence deter the Soviet Union and still be financed indefinitely without weakening the national economy.[1]

During the late 1950s, the Eisenhower administration carried on a dialogue with the Soviets on arms control, nuclear test suspension, and measures to avert surprise attack, all of which could be seen as attempts to impose some constraints on the growing strategic competition. Such inclinations toward moderating the strategic competition, however,

were more than offset by the uncertainties associated with the missile gap and Khrushchev's strategic boasting. These provided the impetus which led the United States to throw large resources into reversing what was perceived to be a deteriorating strategic situation.

Under the stimulus of an overestimated and uncertain threat, these resources flowed chiefly into vigorous, well-funded offensive missile research and development programs with clearly defined paths for qualitative improvements. This R&D process was organizationally and politically tied to the major procurement programs, a combination which would confer significant capacity to maintain the market for strategic weapons. In fact, the main strategic programs--ICBMs, SLBMs, and bombers--became established as major budget categories with funding streams that flowed on after the authorized deployments had been completed and remained for sometime more or less independent of the pace of the Soviet threat.

In political discourse at home and abroad during the missile gap period, missile deployments came to be regarded as an important symbol of political will, and the missile balance became a primary measure of relative international strength. Within the American national security community, a nascent coalition favoring a minimum-deterrence strategic doctrine and relatively small, loosely integrated strategic forces lost out to those with much more expansive conceptions of the strategic mission. The elements for centralized control of deployed strategic forces also evolved in the late 1950s and early 1960s, and the operational planning that accompanied this process tended to be dominated by conceptions favored by Air Force advocates of large strategic offensive forces.

This chapter will cover the programs which promoted the rapid growth of U.S. strategic forces and the organizational and planning issues that arose in the course of the U.S. strategic buildup from 1957 until the Cuban missile crisis of October 1962.

Rise in U.S. Strategic Expenditures

Immediately after the 1957 Sputnik flights, the Eisenhower administration accepted the necessity of budget increases for strategic programs, even though it had previously been trying to cut back expenditures on strategic as well as conventional forces. Cost considerations, for example, had been among factors leading to some slowing down of the U.S. ballistic missile effort by early August 1957, when the NSC reduced the priority of the TITAN program and Secretary of Defense Charles E. Wilson ordered a cutback in planned production rates for ATLAS and THOR missiles.[2]

When the Sputniks caused an almost overnight shift from a policy of reducing the defense budget in the service of fiscal goals to one of expanding it in response to strategic challenge, the FY 1958 budget was in effect and preparations for the FY 1959 budget were well advanced. Since it was too late to change the underlying assumptions for either budget, supplemental appropriations became the chief mechanism for responding to the new sense of urgency.

In January 1958, shortly after Eisenhower's submission of the FY 1959 budget to Congress, the Administration requested $1.37 billion in supplemental appropriations for the FY 1958 strategic programs. This contained provisions for increased dispersion and alert of SAC, as well as accelerated development and deployment of the ATLAS, THOR, JUPITER, and POLARIS missile systems.[3] In April 1958, the Administration asked for an increase of $1.5 billion in FY 1959 new obligational authority chiefly for missiles, including funds to step up the POLARIS program. Although these marginal increases amounted to only 5 percent of the total defense budget for the two fiscal

years in question, they initiated a rise in strategic expenditures.[4]

Still under political pressures generated by Sputnik, during the remainder of Eisenhower's term the Administration, though preaching moderation, conceded budgetary increases to support a very large missile buildup. By January 1961, Eisenhower had programmed 1,100 strategic missiles, a number about two-thirds that of the force possessed by the United States 15 years later.[5]

The advent of President Kennedy brought further increases in the strategic budget to support White House initiatives announced by the new President in January and March 1961. These initiatives included incremental increases in the rate of procurement and ultimate size of strategic missile programs already underway, rather than new programs, bringing the authorized size of the programmed strategic missile force of ICBMs and SLMBs to 1,300--more than three-fourths of the eventual strength reached in the mid-1960s.[6]

A second special message in May 1961 included Kennedy's request for a budgetary boost for the U.S. space program and set forth his famous and ultimately fulfilled objective of landing a man on the moon by the end of the decade.[7] Although budgetary increases for the space program were part of the reaction to the Sputniks, they are not included in the figures on U.S. strategic expenditures discussed below.

Strategic budget figures for the period from 1957 through 1962 represent mainly a growth momentum established during the Eisenhower administration and the first months of Kennedy's tenure. They do not therefore reflect a trend which began in the fall of 1961 as Secretary of Defense McNamara began to

apply pressure through the budget planning process to set ceilings on the future growth of U.S. strategic forces. The restrictions on force growth sought by McNamara did not affect the large baseline force already programmed by the fall of 1961 and consequently would not have an impact on U.S. force levels until after 1965*.

In the period 1957-62, total obligational authority (TOA) for U.S. strategic forces reached the highest sustained level of the entire postwar period. From a total of $7.0 billion in 1955**, the annual figure climbed to $12.1 billion in current dollars in 1961--an all-time historical high for U.S. strategic forces. In that year, TOA directly attributable to strategic forces amounted to approximately 26 percent of the overall U.S. defense budget. The 1962 figure for strategic forces was lower at $10.9 billion, and, thereafter, as the stimulus of the missile gap period declined and Secretary McNamara's efforts to establish ceilings on strategic force levels succeeded, U.S. strategic budgets began a downward trend that lasted almost until the end of the decade. The figures below show the annual TOA for strategic forces in both current and constant dollars and as a percentage of the total defense TOA for the period 1957-62.

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* Details of McNamara's strategic policies and their evolution during his tenure as Secretary of Defense will be taken up in Chapter XI below.

** U.S. strategic budgets had begun to rise in the mid- 1950s from $4.9 billion in 1954 to $9.6 billion in 1956, but, as noted above, the Eisenhower administration had been trying to check a further rise until the Sputnik reaction in 1957 brought a policy shift.

U.S. STRATEGIC BUDGETS 1957-62[8]
TOTAL OBLIGATIONAL AUTHORITY

Fiscal Year	Current Dollars (billions)	% of Total Defense Budget	Constant FY 1976 Dollars (billions)	% of Total* Defense Budget
1957	11.2	26.8	27.7	25.1
1958	11.0	25.5	26.6	24.5
1959	11.9	27.2	28.1	26.4
1960	10.3	24.8	24.1	24.0
1961	12.1	26.1	27.7	25.4
1962	10.9	21.7	25.1	21.3

In terms of expenditures rather than TOA, data compiled by the Air Force provide a basis for comparison between the United States and the Soviet Union. During the period under discussion, expenditures for U.S. strategic forces as a percentage of total military expenditures were roughly equivalent to the Soviet strategic outlays. In 1957, for example, the U.S. figure was 23.5 percent, compared with 24.2 percent for the Soviet Union, while in 1961 the figures were 29.1 and 31.1 percent, respectively. Of the relative share of overall military expenditures going to strategic offensive and defensive forces, the available data indicate that the proportion for offensive forces was approximately the same, but strategic defense got a larger share in the Soviet Union. In 1957, the U.S. devoted 15.1 percent of its total military outlays to strategic offense and 8.4 percent to strategic defense. The Soviet figures for the same year were about 12 percent each for offense and defense. By 1961, the U.S. offense share had risen to 23.5 percent

*The difference in percentages between current and constant FY 1976 dollars is accounted for by the application of different inflation and discount rates in the computation of the latter percentages.

while defense had dropped to 5.7 percent. The Soviet offense share rose to almost 20 percent in 1961, but strategic defense declined only to 11.6 percent.*[9]

The pattern of U.S. allocation (TOA rather than expenditures) among the strategic offense forces, which reflected a gradual shift of emphasis from strategic bomber forces to missiles in the 1957-62 period, is shown in the table below. As the figures indicate, allocations for strategic bomber forces exceeded those for missiles by more than threefold at the start of the period. By 1960, when both ICBM and SLBM programs had gained substantial momentum, the allocation for missiles drew close to that for bombers, while by the end of the period missile allocations had risen to almost three times those for the then-declining outlay on strategic bombers. Within the missile category, the bulk of the U.S. effort went to ICBM and SLBM programs, and neither strategic cruise missiles (SNARK and NAVAHO) nor IRBMs (THOR and JUPITER), ever established a large claim on resources.

STRATEGIC OFFENSE TOA ALLOCATION PATTERN, 1957-62[10]**
(Billions of Current Dollars)

	1957	1958	1959	1960	1961	1962
Bomber[a]	3.5	3.2	3.3	3.2	3.0	2.1
Strategic Cruise Missile	0.2	0.1	0.06	0.01	0.01	---
IRBM	0.2	0.2	0.3	0.2	0.03	---
ICBM	0.5	0.7	1.0	1.9	3.1	3.3
SLBM	0.1	0.5	1.4	0.8	2.0	2.1
Other[b]	0.6	0.5	0.5	0.5	0.9	1.1
TOTAL	5.1	5.2	6.5	6.6	9.0	8.6

[a]Includes bomber-launched ASM and tankers.
[b]Includes strategic-related command, control, and communications; intelligence; central supply and administrative overhead; and some R&D not directly associated with the strategic systems shown.

*The Soviet figures are for calendar years rather than fiscal years as with the U.S. figures.
**The totals listed in the table do not include all programs within some categories and therefore add up to less than the overall figure for strategic offense TOA.

Strategic Offense Systems

The first steps marking the acceleration of U.S. strategic missile programs came quickly on the heels of the Sputnik 1 launching on 4 October 1957. On 8 October, OSD advised the Air Force that it would entertain a request to lift overtime restrictions on ICBM production. The restrictions were removed on 22 November. In November also the Air Force proposed an increase in the previously planned number of ICBM squadrons from 8 to 17 (9 ATLAS and 8 TITAN) and earlier IOC dates. OSD approved the ATLAS portion of this proposal in December for planning purposes.[11]

Along with accelerated deployment planning, organizational changes that would affect the missile effort also took place in late 1957 and early 1958, including establishment in November 1957 of a Director of Guided Missiles* reporting directly to the Secretary of Defense, and the transfer of supervision over ballistic missile IOC from Air Research and Development Command (ARDC) to SAC in January 1958.[12] In August 1958 the Defense Reorganization Act became law; it implemented many of the organizational recommendations growing out of the post-Sputnik hearings of Senator Lyndon Johnson's Preparedness Subcommittee,** particularly the establishment of the Director of Defense Research and Engineering in OSD to oversee the R&D process. The act strengthened the authority of the Secretary of Defense.

IRBM Programs

Although emphasis after Sputnik focused primarily on speeding up ICBM and SLBM programs, the acceleration of IRBM programs also became a matter of some urgency, if only because the Air Force's THOR and the Army's

*Previously a special assistant to the Secretary of Defense with responsibility only for ballistic missiles. The new position included responsibility for all guided missiles.

**For previous discussion of these hearings, see above, p. 410.

JUPITER IRBMs appeared to be deployable before either ICBMs or SLBMs.

By late 1957, both the THOR and JUPITER programs were already well into the flight test phase, and the interservice issue of responsibility for operational deployment of these competing land-based IRBM systems had been settled in favor of the Air Force. In December 1957, the Air Force was directed to proceed with deployment of both systems, beginning in December 1958, several months earlier than the previous IOC date. The approved programs called for an initial deployment of 4 squadrons of each IRBM, totaling 120 launchers, on the territory of NATO allies. Beyond that the Air Force contemplated accelerated production rates for THOR to permit expansion, if authorized, of the IRBM force level to 16 squadrons, including 1 squadron in Alaska, by early 1960.[13]

Neither the IOC date nor the projected force level was met. The first THOR squadron, in Great Britain, did not become operational until June 1959* and the total deployment level attained came to only 7 squadrons--4 (THOR) in England, [redacted][14]

A variety of reasons seems to have accounted for curtailment of the THOR and JUPITER deployment programs, among them inherent deficiencies in their liguid-fueled systems, such as slow reaction time and high vulnerability. Moreover, other longer range missile systems became available sooner than originally expected. Soviet threats of nuclear retribution against countries welcoming U.S. IRBMs also may have been a factor contributing to European reluctance to go along with an extensive

*This and 3 other THOR squadrons subsequently deployed in the United Kingdom were transferred to the RAF. The JUPITER squadrons deployed [redacted] also were transferred to the host countries under similar arrangements, with control over the warheads retained by the United States.

buildup of these vulnerable IRBM systems. But the overseas deployment of THOR and JUPITER proved short-lived, and within a year of the 1962 Cuban crisis,* the last of these squadrons had been deactivated.[15]

For some of the same reasons that IRBM programs proved to be temporary, another parallel project for a mobile, land-based missile system also intended for stopgap deployment around the Soviet periphery fell wholly by the wayside. Known as the Mobile Mid-Range Ballistic Missile (MMRBM) and initiated in 1960, it was never funded beyond the initial R&D stage before being terminated 4 years later.[16]

Although in terms of deployed forces the U.S. IRBM effort was in no way comparable to the large Soviet deployment of the I/MRBM forces in the late 1950s, the THOR and JUPITER programs made important technological contributions to the U.S. ballistic missile effort. The early U.S. space response to the Sputniks was also a beneficiary, for the first U.S. Explorer satellite was boosted into orbit on 31 January 1958, by a modified Redstone missile.

Strategic Cruise Missile Programs

A minor part of the U.S. strategic missile effort in the late 1950s consisted of several cruise missile programs initiated a decade earlier. Two of these, the land-based NAVAHO and SNARK, were intercontinental cruise missiles developed by the Air Force, while a third was the Navy's REGULUS, a submarine-launched subsonic cruise missile also intended for use against strategic targets.

*Although planning within the Department of Defense leading to early phase-out of foreign-based IRBMs was already under way before the Cuban crisis, it has been argued that a quid pro quo understanding reached between Attorney General Robert Kennedy and Soviet Ambassador A.F. Dobrynin during the crisis resulted in speeding up withdrawal of the 15 JUPITERs from Turkey.

The NAVAHO program never attained operational status and was cancelled in July 1957. Its technology, however, especially its rocket engine and inertial guidance system, did contribute to other U.S. missiles, including MINUTEMAN and POLARIS. The SNARK program, despite recommendations in 1957 and 1959 from SAC and ARDC that it be terminated on grounds of poor penetration capability and other shortcomings, reached the deployment stage in January 1959, when the 702nd Strategic Missile Wing, to be equipped with SNARK, was activated at Presque Isle AFB, Maine. The operational life of the 702nd proved short, however, and in 1961 its 30 SNARK launchers were dropped from the U.S. strategic missile inventory.[17]

As for the Navy's REGULUS I, 5 submarines converted to carry 2, 4, or 5 each of these 575-nautical-mile, surface-launched missiles came into operational service between May 1954 and January 1960. The deployment in 1954 of the Tunny, the first U.S. submarine equipped with REGULUS I, antedated by about 3 years the Soviet Union's modification of a W-class submarine to carry the SS-N-3 (SHADDOCK), a cruise missile roughly similar to REGULUS I.

The deployment of REGULUS I came to an end in 1964, however, and R&D for a REGULUS II with a range of 1,200 nautical miles was terminated in December 1958. Both REGULUS missiles, though predecessors of subsequent cruise missile projects that came to the fore again in the mid-1970s, went into eclipse when supplanted by the POLARIS.[18]

ICBM Programs

ATLAS and TITAN

Initial U.S. prospects in the ICBM competition with the Soviet Union in the late 1950s rested on 2 liquid-fuel systems--the ATLAS, which had gone into intensive development by the Air Force in 1954 after earlier

false starts, and the TITAN, begun in 1955, primarily to provide a backup ICBM in the event that ATLAS should fail.[19]

Operational concept studies made during development envisaged these two first-generation systems serving as a supplement to the manned bomber force, useful initially only against soft targets. ATLAS was originally designed for launching from above-ground sites, while TITAN was to be emplaced in hard underground silos. The expanded deployment plan approved in 1958 made provision to begin some hardening and dispersion of ATLAS. Neither system would meet the full range of requirements for prelaunch survivability, minimum launch time, accuracy, reliability, low maintenance cost, and other attributes deemed ultimately desirable in a land-based missile force, but of the two, TITAN had the better potential. On the other hand, ATLAS promised to be ready for deployment sooner--a virtue that took on added significance after Sputnik.[20]

Although the President approved deployment levels for ATLAS in January 1958 when 4 additional squadrons of 9 launchers each were projected--there was no disposition to overdo deployment of the first-generation system. Limits on the growth potential of ATLAS such as its use of cryogenic fuel and the difficulty of maintaining it on an alert status, together with rapid advance in development of solid-propellant systems, kept the ATLAS program from exceeding the 13 squadrons approved by the President in January 1960 and subsequently built.

Even so, substantial effort went into the program, which yielded 6 successive versions of the ATLAS missile, the first 3 (ATLAS A,B,C,)

R&D test vehicles, and the remaining 3 (ATLAS D,E,F) operational vehicles. A major test milestone in the program came on 17 December 1957, when, after an abortive first attempt 6 months earlier, an ATLAS A was successfully flight tested at Cape Canaveral. The remainder of the ATLAS A test series through June 1958 had four failures and only two successes. Thereafter, however, the program did better. Up to December 1963, when the last of 95 ATLAS R&D test firings occurred, the score was 57 successes and 38 failures. In addition to the test firings of ATLAS A through F, some 50 operational capability firings of ATLAS D, E,and F had a success-to-failure ratio of about 3 to 2.[22]

The deployment history of the ATLAS began at Vandenberg AFB in California, where, less than 2 years after the first successful flight test, an ATLAS D complex of three launchers became operational in early September 1959. As of March 1961, 2 squadrons of ATLAS D installed at Warren AFB in Wyoming and 1 at Offutt AFB, Nebraska, brought the operational ICBM force to 24 missiles on launchers. During the next 21 months, as modified ATLAS E and F sites became operational,* the entire ATLAS deployment program of 13 squadrons was completed,** with the number of ATLAS launchers reaching 123 by the end

*The principal ATLAS E modifications were all-inertial guidance, dispersal of launchers, and emplacement in horizontal concrete "coffins" which slightly improved missile survivability. ATLAS F incorporated the first two modifications, and in addition was placed in a vertical silo which increased its hardness to about 150-200 psi. However, the ATLAS F had to be raised to the surface by elevators for launch, which in turn left it soft in the launch mode.

**The number of launchers per squadron for the last 6 ATLAS F squadrons to be deployed was increased from 9 to 12 in 1960.

of 1962. From the peak, as other systems entered the force, ATLAS gradually phased out, until it disappeared entirely from the operational inventory in 1965.[23]

The parallel TITAN program involving a large, liquid-fueled, first-generation ICBM (TITAN I), and a later and more sophisticated second-generation system (TITAN II), never reached the deployment level attained by the ATLAS family. First flight tested on 6 February 1959, TITAN I compiled a much better overall test record than the ATLAS, achieving 39 complete successes and 14 partial successes out of 57 R&D test flights during the next 3½ years. Despite this auspicious test performance, however, TITAN I deployment, which began late in 1961, fell short of the level projected earlier. The projected TITAN force of 8 squadrons envisaged in deployment planning in 1957-58 had been increased to 14 squadrons by President Eisenhower in January 1960, but in March 1961 President Kennedy ordered the program reduced to 12 squadrons, evenly divided between TITAN I and TITAN II. Thus, the TITAN I program came to a total of 6 squadrons with 54 missiles on launchers by the time it completed its deployment in September 1962.[24]

Several factors, in addition to its dependence on nonstorable liquid fuel, appear to have accounted for the relatively modest deployment of TITAN I. Although originally intended to be a harder and more versatile system than the ATLAS, tradeoffs made during development of TITAN I, had the effect of making TITAN I no more attractive as a candidate for long-term deployment than ATLAS F. This, together with earlier-than-

anticipated breakthroughs in solid-propellant technology in connection with the MINUTEMAN and POLARIS programs, resulted in the TITAN I's being phased out of the U.S. ICBM inventory by mid-1965, along with ATLAS.[25]

TITAN II, on the other hand, though also reaching a peak deployment of only 6 squadrons totaling 54 missiles, enjoyed much greater longevity than TITAN I. This missile, first successfully flight-tested on 16 March 1962. achieved 27 successes out of 33 R&D test flights ending in April 1964. Its total deployment took place in 1963. The improvements in this second-generation ICBM included in-silo launch capability, unitary dispersal, storable liquid propellant, all-inertial guidance, [redacted] of previous liquid-fueled missiles. The large payload of the TITAN II, greatly surpassing that of the smaller and far more numerous solid-propellant missiles, has assured it a place in the operational ICBM inventory of the United States through the 1970s.[26]

MINUTEMAN

The most significant U.S. ICBM program--the MINUTEMAN--began in April 1957 when the Air Force assigned responsibility for developing a solid-propellant ICBM to the Western Development Division of ARDC, under Maj. Gen. Bernard A. Schriever.* First known as Weapon System "Q", the MINUTEMAN program secured the backing of Secretary of Defense Neil H. McElroy in February 1958, but production and deployment planning awaited evaluation of solid-propellant technology in both the MINUTEMAN and POLARIS projects.

* Research on solid propellants not directly tied to a specific ICBM program had begun at the Western Development Division (WDD) in late 1955. (The WDD was renamed the Ballistic Missile Division (BMD) in June 1957.)

In May 1959, the potential appeared promising enough to warrant McElroy's approval of an Air Force proposal for accelerated MINUTEMAN R&D, and in the early months of 1960, following the first successful silo launch of a tethered MINUTEMAN in September 1959, OSD authorized production commitments for an initial force of 150 missiles by mid-1963. Finally, on 6 April 1960, the President approved an initial MINUTEMAN force goal of 150 missiles by mid-1963.[27]

Although the early MINUTEMAN program had its troubles as indicated by the need to relax some of the original specifications for the first 150 missiles, in general it made good progress. Growing confidence in the program influenced Air Force planning decisions in the fall of 1960, even before the first actual flight test, calling for an IOC date in July 1962 and for a deployed force of 600 MINUTEMAN missiles by mid-1965. This force level of 600 missiles was about 200 less than Headquarters USAF had projected for planning purposes in 1959. Subsequently, however, force level goals rose again. Strategic targeting studies* undertaken in connection with intense debate in 1959 over planning and control of U.S. missile forces indicated that a strategic missile force of about 2,600 might be needed, the bulk of which presumably would be MINUTEMAN missiles.[28]

The first flight test in the MINUTEMAN program occurred on 1 February 1961, when a MINUTEMAN I (LGM-30A) was fired 4,600 miles down the Atlantic missile range, the most successful first-test flight in the history of U.S. missile development. The following month, construction of the first MINUTEMAN operational site began at Malmstrom AFB in Montana.[29]

*See below, pp. 465-66.

Thereafter, the MINUTEMAN R&D program proceeded more or less parallel with expansion of production facilities and previously programmed deployment activity, although as early as August 1961 Secretary McNamara had begun to resist additional suggested increases in MINUTEMAN production rates on the grounds that production was already running too far ahead of the final development phase. In October 1962, the first MINUTEMAN I missiles at Malmstrom became operational, and by the end of 1963 deployment of the MINUTEMAN I force had reached about 370 missiles and was moving at a tempo that would more than double this figure 2 years later. At the end of 1963 the total U.S. operational ICBM force numbered about 600, almost equaling the number of SAC bombers then on ground alert.*[30]

Although the final decisions establishing the ultimate size of the MINUTEMAN force at 1,000 missiles still lay ahead,** the rapid surge of initial MINUTEMAN deployment during the 12 months from December 1962 to December 1963--from 20 to 370--conclusively wiped out the specter of a Soviet missile lead in the early 1960s and established a land-based ICBM force as a major element of U.S. strategic power, rather than a mere supplement to bomber forces.[31]

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*At the end of 1963, SAC had about 1,300 bombers, of which half were on 15-minute ground alert at 53 bases. [redacted]

**The decisions to level off the MINUTEMAN force at 6 operational wings with 20 squadrons and a total of 1,000 missiles were to be made in November and December 1964. Prior Air Force planning between the start of the MINUTEMAN program and these leveling-off decisions by Secretary McNamara had envisaged several possible ceilings from 1,200 to 3,000. For further discussion of McNamara's decisions affecting force sizing, see below, pp.515-16 581-84.

Although the MINUTEMAN buildup of the early 1960's involved only the MINUTEMAN I program, other MINUTEMAN-related projects also received attention at this time, among them the MINUTEMAN II, a more advanced system which would begin to replace MINUTEMAN I in the mid-1960s. Improvements in the MINUTEMAN II design over MINUTEMAN I included greater range, 6,600-7,500 compared with 5,500 nautical miles; more payload, permitting a larger yield [redacted] or a tradeoff for penetration aids; greater accuracy; and allowance for multiple target selection.[32]

Another MINUTEMAN project -- a proposed rail-mobile version calling for initial development of 3 squadrons totaling 90 launchers -- became an approved program in late 1960 after operational feasibility testing by the Air Force, In one of its early strategic program decisions, the Kennedy administration suspended the project. A subsequent Air Force proposal advanced in connection with Secretary McNamara's first round of 5-year force projections under the PPB system (planning-programming-budgeting) raised the proposed number of mobile MINUTEMAN launchers to around 300 to be deployed by 1967, but OSD canceled the program in December 1961.

Various factors operated to make the fixed-site MINUTEMAN system a far more attractive choice as the mainstay of the U.S. ICBM effort than the liquid-fuel systems that preceded it. The solid-propellant MINUTEMAN allowed smaller and

simpler missiles better suited for mass production and deployment, with lower costs and reduced manpower requirements. Survivability and operational effectiveness--two crucial criteria for a missile force--were served by such features as unitary dispersal in hardened, underground silos, in-silo launch, relatively accurate all-inertial guidance, and maintainability in a high state of readiness. Force survival and flexibility also benefited from changes in the original MINUTEMAN site design, such as internetting of launch control facilities with launchers to permit each [redacted] Launch Control Facilities (LCF) in a squadron to fire any of the squadron's 50 launchers, and hardening of LCFs beyond the [redacted] level of individual launchers to keep LCFs from becoming preferred targets.[34]

Since MINUTEMAN's size and characteristics turned out to be just about right for deploying a survivable ICBM force on the most economical basis, it is tempting to assume that the system's designers had planned it this way from the beginning. But there is disagreement on this point among those associated with the program's origins. Some say that the MINUTEMAN system turned out just as originally conceived, that the missile's size was deliberately chosen to minimize cost, and that initial force level planning anticipated an expected survival rate of about 50 percent. Others assert that a certain chance element played a part in the system's evolution and that compatibility with then-feasible launcher-erector facilities determined the original size of the force. According to this view, the rationale which made MINUTEMAN an optimum choice to buy survivability most cheaply--by deploying a small, hardened missile in sufficient numbers to create more aiming points than an attacking Soviet force could be expected to handle--probably came after the missile had already been conceived.[35]

SLBM Programs

Like the concurrent MINUTEMAN program, the POLARIS SLBM was made possible by breakthroughs in solid-propellant technology. But unlike the MINUTEMAN, in its early stages POLARIS did not enjoy smooth sledding either technologically or institutionally.

The idea of committing the U.S. Navy to a major strategic submarine-launched ballistic missile program had made little headway within the Navy until Adm. Arleigh Burke became CNO in August 1955. Prior to then, although the Navy had some SLBM advocates, most of the top naval leadership -- including Burke's predecessor, Adm. Robert B. Carney, and, surprisingly, Adm. Hyman Rickover -- had been reluctant to divert resources to SLBM development from other high priority Navy programs. A shift of attitude came only after Admiral Burke had established a Special Projects Office in the fall of 1955 under Adm. William F. Raborn to explore ways of getting on with a fleet ballistic missile program.

A temporary joint Army-Navy project set up at the behest of Secretary of Defense Wilson to develop a shipboard version of the liquid-fuel JUPITER IRBM, lasted less than a year when the Navy, with Wilson's approval, withdrew from the project and turned to a new program of its own. This program entailed development of a solid-propellant ballistic missile system, the POLARIS, and of an appropriately configured nuclear-powered submarine (SSBN) as its launching platform. From the start, even though its anticipated cost exceeded that of land-based solid-propellant missiles, the major selling point of the POLARIS program was the high degree of survivability which subsurface deployment and launching were expected to

give this new strategic delivery system.[36]

Under an acceleration of the program authorized in December 1957, after Sputnik, development of the POLARIS missile and modification of several Skipjack-class attack submarines to provide the first George Washington-class SSBNs went forward in parallel, aiming for an IOC date of December 1960, and an initial force of 3 submarines armed with 16 POLARIS A-1 missiles each by mid-1962. The first POLARIS missile test at Cape Canaveral in September 1958 proved a partial success, but the next four R&D shots in 1958 and early 1959 were failures. According to Adm. Levering Smith, failures during the initial sub-launched test phase came close to halting the program altogether. However, the technical problems were ironed out, and following the successful submerged firing of 2 POLARIS A-1 missiles from the George Washington in mid-1960, this lead SSBN departed on its first operational patrol in November 1960.[37]

The advent of the Kennedy administration 2 months later brought a substantial boost in the POLARIS construction rate and force level set by the outgoing Administration, which had held its funding requests to 3 submarines per year, with a projected force level of 19 SSBNs. Successive steps by the new Administration in January and March 1961 authorized an accelerated schedule of 5 Polaris submarines for 1961 and raised the authorized force level to 29. In April 1961 Secretary McNamara resisted attempts by Carl Vinson, Chairman of the House Armed

Services Committee, to increase the POLARIS program beyond this number, but by September 1961 McNamara relaxed his earlier position to allow 41 of the 45 POLARIS submarines proposed by the Navy in its 5-year force projection.

These 1961 decisions provided for commissioning an additional 22 submarines with 352 missiles by the end of 1966. These additions accounted for slightly more than half of the eventual SLBM force of 41 submarines and 656 missiles which was to remain the seaborne element of the U.S. strategic missile arsenal from the mid-1960s on.*[38]

The 1961 decisions on the POLARIS program also authorized a speedup in the development of the A-2 and A-3 missiles as follow-ons to the original A-1 SLBM. The POLARIS A-2, with a range of 1,500 nautical miles compared with 1,200 for the A-1, had its first test launch in November 1960 and became operational on the lead ship of the Ethan Allen-class in June 1962. The A-3, a 2,500 nautical-mile missile which was eventually to give the United States its first MRV with three warheads, had its first test launch in August 1962. It became operational on Lafayette-CLASS SSBNs in 1964 and was subsequently refitted to earlier SSBNs.[39]

Strategic Bomber Programs

At the end of June 1957, the United States possessed an active operational force of about 1,500 strategic bombers, consisting of mostly B-47 medium bombers, and including more than 100 B-52 heavy bombers and 100 or so holdover B-36s which were in the process

*During the late 1950s and early 1960s there had also been interest within and outside the Navy in proposals to place POLARIS missiles, or alternatively, MINUTEMAN, on surface warships and merchant ships(Multilateral Force--MLF)but none of them came to fruition.

of being phased out. This force was supported by almost 300 heavy and medium reconnaissance aircraft and a fleet of some 750 tanker planes. During the next 3 years, the size of the force changed little, but its composition changed considerably as the phasing out of B-47s began in 1960, and the B-52 program approached its planned level of about 600 aircraft. The shift in composition of SAC's bomber force to B-52s also was accompanied by a substantial change in its tanker fleet from the piston-engine KC-97 to KC-135 jets, although the former still predominated.

In 1962 the B-52 program reached its planned level, and the last version of the model, the B-52H, went out of production. As for the B-47, from 1960 on, apart from a brief interruption during the Berlin crisis of 1961, it was retired at a somewhat faster rate than ICBMs entered the strategic inventory, with the last B-47 wings being phased out by December 1965.[40]

Besides B-47 retirement and leveling off of the B-52 program, previously directed by the Eisenhower administration, the strategic bomber force level also was affected by decisions taken early in the Kennedy administration, most notably by McNamara's actions in 1961 providing for no new bomber procurement in the 5-year defense planning cycle and restricting the Air Force's proposal for 150 to 200 B-70 aircraft to airframe development only.

The above factors resulted in a steady drop in overall strategic bomber force levels in the early and mid-1960s. From some 1,500 ready

strategic bombers at the end of June 1960, the figure dropped to about 1,300 in 1963, and to about 600 three years later. The downward numerical trend was not offset to any significant extent by several manned bomber programs which involved aircraft of a later generation than either the B-47 or the B-52.[41]

One of these aircraft, the B-58 supersonic medium bomber, established numerous performance records, including winning the SAC Combat Competition in 1960, and set several world speed records in 1961-62. Despite these achievements, the range limitations of the B-58 and other impediments kept the aircraft from becoming a substantial part of SAC's bomber force. Developed during the mid-1950s and first deployed operationally in August 1960, the B-58 reached a peak deployment of only about 80 aircraft in the mid-1960s and was to be gradually phased out by the end of the decade. General LeMay, despite his well-known advocacy of the manned bomber, questioned putting more resources into the B-58 program and was probably most responsible for cutting back by more than half the production plan for 290 B-58s.

In early 1955, as CINCSAC, LeMay had asserted that SAC did not want the B-58, but in August of the same year the Air Force went ahead with the original program after Senator Lyndon B. Johnson had asked why the Air Force was so "dilatory" in purchasing the B-58. Later, as Vice Chief of Staff of the Air Force in 1959, LeMay succeeded in blocking a proposal for procuring an improved version of this Texas-built aircraft, the B-58D.[42]

Another bomber program -- the B-70 -- fared even more poorly than the B-58, though not for want of strong advocacy by LeMay and other Air Force leaders. This supersonic heavy bomber, originally conceived in 1953 as the ultimate replacement for the B-52 and given top priority in Air Force planning after Sputnik, had a checkered development history. It underwent 6 major design changes and two program halts in the period from 1958 to 1962. Besides technical and cost considerations which impeded the B-70 program, controversy also arose over the aircraft's intended operational role and its utility compared with strategic missiles. Under a concept advanced by the Air Force in October 1961, the original B-70 was redesignated the RS-70, with a combined reconnaissance-strike role, but this change of mission failed to satisfy critics of the program, among them Secretary of Defense McNamara.*

Only two prototype XB-70 aircraft were built. After loss of the second prototype in a mid-air collision in June 1966, the B-70 project was finally terminated and transferred in 1967 to NASA for further research in support of the supersonic transport program. Some of the R&D effort invested in the B-70 and its subsystems, however, proved applicable to studies for a future advanced manned bomber (AMSA), which by the end of the 1960s was to evolve into the B-1 concept.[43]

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*For a more detailed treatment of the B-70 program during McNamara's tenure, as well as the SKYBOLT missile program, upon which the Air Force had set considerable store as a weapon to improve the capabilities of the B-52 force, see below, pp. 528-42.

A third bomber program that contributed about the same number of operational aircraft to the U.S. strategic bomber inventory as the B-58 program grew out of a directive to the Air Force by Secretary McNamara in June 1961 to develop the F-111. During the F-111 development program, Air Force planners perceived that a medium-range bomber version of this supersonic, swing-wing aircraft might serve as an interim replacement for early-model B-52s; they proposed a program for the FB-111 which was approved in November 1965.

Air Force planners had hoped in the early 1960s that the AMSA program would come along in time to replace early B-52s, whose remaining structural life seemed to dictate their retirement within a few years. However, when delays in the AMSA program occurred, partly as a result of Secretary McNamara's lack of interest in it, the Air Force chose a "minimum modification" of the F-111 as the best available option to provide an interim manned bomber. The original Air Force plan called for producing 263 FB-111s, but this figure would later be cut back to 76 aircraft.[44]

While the Soviet missile and space accomplishments failed to stimulate any major buildup in the size of the U.S. strategic bomber force, they did exert an appreciable influence on SAC's operational posture and planning. The advent of an impending Soviet ICBM threat meant that the warning time available to SAC would be greatly shortened. This, in turn, dictated further evolution and refinement of measures already in effect since 1954 to enhance the quick-strike capability of the bomber force

and reduce its exposure at overseas bases to the growing threat from Soviet peripheral jet bomber and MRBM forces.

The first of a number of new measures placed one-third of the bomber force on 15-minute ground alert in October 1957, later (in July 1961) raised to 50 percent of the force. Another step, initiated in early 1958, involved the rotational deployment of "reflex" forces of B-47 bombers and KC-97 tankers to oversea bases for 21-day periods rather than the previous 90 days. Additional steps taken during the next 2 or 3 years included dispersal of bombers and tankers on satellite bases in the United States and the working out of airborne alert and "Fail Safe" or "positive control" procedures. Concurrently, means were also sought to preserve control of SAC forces in a reduced-warning environment through hardening of fixed command posts and institution of an airborne command post. After a 6-month trial period, the airborne command post began continuous operation in February 1961.

Meanwhile, plans had evolved by 1960 to withdraw all SAC bomber forces to the continental United States whenever overseas bases should become operationally untenable -- a period then reckoned to arrive around 1962. In actuality, the deployment overseas of B-47s in the reflex mode was to continue on a declining basis until 1965, by which time U.S.-based B-52s and a substantial force of ICBMs and SLBMs had taken over the mission of maintaining strategic deterrence.[45]

Strategic Defense Programs

Although the primacy of offensive forces, especially offensive missiles, in U.S. strategy and force posture emerged clearly in the post-Sputnik strategic programs of the United States in the late 1950s and early 1960s, the relative balance between strategic offense and defense had not been precisely defined and was at least open to adjustment on the margin between the two. Many of the questions concerning strategic defense preparations in this period concerned both existing air defense programs and proposed programs for meeting the new and more complex problems of defense against ballistic missiles.

Air Defense

By 1957-58, thanks largely to measures stimulated by concern over the bomber gap of the mid-1950s, a more effective defense against potential bomber attacks from the Soviet Union appeared to be in the making than at any time previous.

Besides the establishment in September 1957 of NORAD, a joint U.S.-Canadian command to operate the air defense of the continent, other measures which began to reach fruition in 1957-58 included the Distant Early Warning (DEW) Line radar net in Canada, which became operational in late 1957, and the Semi-Automatic Ground Environment (SAGE) control system, the first sector of which went into operation in June 1958. In 1956, new aircraft in the Century series (F-101, F-102) began to replace earlier-generation aircraft in ADC's interceptor force, while the NIKE-HERCULES, an improved second-generation surface-to-air antiaircraft

system, began to replace NIKE-AJAX batteries in 1958.[46]

Although such programs as these represented impressive advances in the technologies of air defense, and although the Eisenhower administration early in 1958 had given to the strengthening of U.S. strategic defenses a priority second only to the buildup of U.S. offensive retaliatory forces, it became apparent during the next few years that Soviet missile and space accomplishments were actually having a dampening effect on the U.S. air defense effort--calling into question the advisability of further major investment in most of the antibomber programs on the grounds that they were too costly and would not be able to cope with the Soviet ICBM threat.

A pattern of gradual retrenchment in the U.S. air defense effort manifested itself in the dropping of air defense to third priority behind strategic retaliatory forces and general purpose forces in early 1959, and in the fate of various specific programs in the air defense field. In 1959-60, for example, scheduled

improvements in DEW Line radar were cancelled, and in 1960 portions of this early warning net, which had been extended seaward in an arc of 12,000 miles, came under study for discontinuance, including Navy radar picket ships which began to be withdrawn from the Atlantic and Pacific. The SAGE control system, though making a pioneering contribution to U.S. computer technology, ran into increasing cost and organization difficulties after its first sector attained token readiness in 1958. Completion of the system in its soft configuration was authorized in 1960, but an ambitious program for hardening the system was killed the same year.[47]

The F-108 program for an advanced, long-range interceptor, heavily dependent on the control environment to be provided by SAGE, met its demise in 1959. When hardening of SAGE Super Combat Centers (SCC) was turned down, the resultant vulnerability of the system's ground installation became an effective argument against the F-108 program. Although other Century-series aircraft joined the interceptor force between 1957 and 1960, the overall number of operationally ready aircraft in the force declined by a third during the same period from a peak of more than 1,200 in 1957.[48]

In surface-to-air missile development, where interservice competition existed between the Army's NIKE-HERCULES and HAWK systems and the Air Force's BOMARC, some of the originally contemplated programs also underwent revision after 1959. The NIKE-HERCULES program for new sites and replacement of NIKE-AJAX fared best, in the United States reaching 114 batteries in

1961, while no deployment of HAWK at fixed sites in the United States was authorized. BOMARC deployment, beginning in 1959, attained a level of 10 squadrons in 1963.[49]

Missile Defense

In contrast with the post-Sputnik retrenchment of air defense programs in the United States, a pronounced upsurge of interest occurred in strategic defense against a Soviet ICBM threat. This interest took two separate, though not unrelated, directions.

First came new emphasis on the development of missile warning and detection systems. Although ultimately such systems would be a necessary part of any active nationwide system of defense against missiles, they were seen for the time being primarily as a means of increasing the chances for survival of U.S. offensive forces and serving as a signal for retaliatory strikes by these forces. A new strategic defense policy set forth in NSC-5802/1, 19 February 1958, emphasized the protection of the U.S. retaliatory capability rather than the creation of an active nationwide defense against missile attack.[50]

The second line of interest centered on the longer term and still more complex problem of developing an active ABM system capable of coping with missile attacks. Indications that the Soviet Union itself might be off to a headstart in ballistic missile defense systems provided an additional stimulus to U.S. ABM development efforts. However, though

the need for a vigorous R&D program received wide recognition,* much controversy arose over the advisability of moving into the production and deployment of an ABM system while the state of the art still left doubt whether defensive measures against missiles could keep up with advances in strategic offensive technologies.

Warning and Detection Programs

Responsibility for the first of several programs aimed at providing a missile warning and detection capability--the Ballistic Missile Early Warning System (BMEWS)--had been assigned to the Air Force in April 1957, but the program took on higher priority in January 1958, when Secretary of Defense McElroy gave approval for actual construction of the system, with the initial site at Thule, Greenland, to be operational in 1959. Despite funding and other difficulties which delayed completion, Thule met a revised target date of September 1960.

By February 1964, the 2 remaining BMEWS installations, in Alaska and the United Kingdom, had become operational, providing a significant early warning capability against what were considered the most likely incoming ICBM trajectories.[51]

Programs for the development of other sensor systems that would contribute to warning and detection of strategic missile attacks also went forward at this time. These included the Bomb Alarm System (BAS)

*Among organizational steps recognizing this need was the establishment in February 1958 of The Advanced Research Projects Agency(ARPA), which was to be responsible, among other things, for unified direction of antiballistic missile R&D programs.

for determining the location and pattern of warhead detonations, which began operation in March 1960; the SAMOS satellite system for collection of photographic and Elint data that could be used for strategic warning purposes; and two systems intended to provide earlier tactical warning of a missile attack than BMEWS.*

One of the latter, MIDAS, a satellite system equipped with sensors to detect infrared emanations from missiles shortly after their launching, had its first test in February 1960. It never achieved operational status, although a follow-on system employing the same infrared principle was to become operational more than a decade later.** The second system developed at the same time as MIDAS for early launch detection -- 440L, a ground-based system utilizing over-the-horizon radar-- attained a limited operational capability by late 1965, and after system revisions attained fully operational status in 1968.[52]

Parallel with the development of new sensor systems, a related problem began to receive much attention in the 1958-62 period--providing a "real time" command and control system to alert and direct U.S. strategic retaliatory forces in the event of a missile attack. One of the more ambitious projects along this line, the 465L system, as originally conceived, failed to meet the stringent requirements for survivability in a missile environment. In July 1961, it was revised to provide for separate systems of

*BMEWS could provide about 15 minutes warning of missile trajectories from a northerly direction. The objective was to increase warning time to about 30 minutes for missiles launched in any direction.

**The follow-on system, designated DSP for Defense Support Program, reached its first operational phase in May 1971.

prestrike and poststrike command and control.[53]

Essentially, the improvements achieved came in the military command and control machinery necessary to ensure the execution of a strategic retaliatory strike.* Measures taken in the early 1960s did not basically resolve the broader problem of ensuring effective political control of strike initiation and other decisions in a nuclear attack environment where physical survival of the top political-military leadership might be in question. In connection with the leadership survival problem, the influential WSEG-50 study of September 1960 concluded that 35 ICBMs of the kind expected to be available to the Soviet Union in the 1964-69 period would have a high probability of destroying 90 percent of the top U.S. political-military leadership.[54]

ABM Programs

ABM development activity, speeded up after the fall of 1957, had its antecedents in earlier projects on which both the Army and the Air Force had been working. The Army's NIKE-ZEUS,[55] an outgrowth of the NIKE family of antiaircraft systems,** appeared to be the leading candidate for an ABM role, but was challenged by the WIZARD, a system with an antimissile potential under study by the Air Force. Urging by the Army in

*For developments concerning command and control of U.S. strategic forces, see below, pp. 462ff.
**The NIKE-ZEUS, originally termed the NIKE II, grew out of a 1956 feasibility study which concluded that an operational anti-ICBM defense could be obtained by late 1962.

September 1957 that a Manhattan-type project be instituted for NIKE-ZEUS met resistance from both the Air Force and the Navy, who argued on this and subsequent occasions against an accelerated NIKE-ZEUS program. The Army, in turn, argued among other things that an imbalance of U.S. military strength was being created by duplication of strategic delivery capabilities by the Air Force and Navy, and that even if NIKE-ZEUS was less than perfect, an accelerated program was justified to bring U.S. active defense capabilities into better balance with offensive capabilities.

Secretary McElroy resolved interservice rivalry over ABM development in January 1958, ruling out WIZARD in favor of NIKE-ZEUS but at the same time giving the Air Force responsibility for developing the radar warning, tracking, and communications elements of an ABM system employing the NIKE-ZEUS missile. Stimulated by Sputnik, Defense programmed more than $300 million in development funds for NIKE-ZEUS for the years 1958 and 1959, compared with only $12.2 million in the preceding 3-year period.

Even though NIKE-ZEUS research and development enjoyed high priority, Army attempts to gain approval for a production and deployment program failed to prosper. In 1960, Secretary of Defense Thomas S. Gates, Jr., denied an Army request for funds to start producing NIKE-ZEUS at the rate of 200 missiles a year, essentially on the grounds that the high cost of the system, its technical defects, and its limited capability against saturation attacks would make its deployment premature.

When the Kennedy administration came to office in 1961, the Army sought again to win approval for NIKE-ZEUS deployment, proposing a 70-battery system with nearly 7,000 missiles to protect 27 major American cities

at a 5-year cost of $7.8 billion. For various reasons, including the possibility that an ABM system of only modest effectiveness might help to protect the country's vulnerable command and control apparatus, Secretary McNamara and his advisors appeared briefly sympathetic to the Army's case. In the September 1961 Draft Presidential Memorandum (DPM) McNamara included provision for a limited NIKE-ZEUS deployment of 1,200 missiles that would give coverage to 6 cities presumably most vital to the country's commumications and control system. Within a month, however, McNamara abandoned this position, supporting only some further development items in the NIKE-ZEUS program and coming out against deployment in view of imminent technical advances such as phased-array radar and high acceleration interceptor missiles.

Although NIKE-ZEUS performed successfully in 10 of 14 intercept attempts against single ICBM warheads in a 1962 test program, this too did not suffice to sell the system. Early the following year, McNamara stated emphatically that there would be no deployment, current or future, of NIKE-ZEUS. At the same time, he directed the Army to reorient its ABM development effort toward a radically revised version of the NIKE-ZEUS system, the NIKE-X, employing the new phased-array radar and a pair of missiles--the long-range SPARTAN for initial intercept and the short-range SPRINT for terminal intercept of incoming missiles. Inasmuch as development of the new NIKE-X would require further time, McNamara's 1963 directive had the effect of putting off until later in the decade the

issue of whether to go ahead with deployment of an ABM system.*

Civil Defense

Customarily, civil defense in the United States[56] has received even less support than military programs for active strategic defense. However, at the beginning of the 1957-62 period, under Eisenhower, and then in the first year or two of the Kennedy administration, there occurred brief surges of official and public interest which had an appreciable effect on the handling of civil defense preparations.

In the first instance, responding to several studies whose recommendations for civil defense improvements took on a new edge after the Soviet ICBM and Sputnik launchings in 1957,** President Eisenhower secured approval from Congress in August 1958 for a major reorganization intended to eliminate inefficiencies and divided responsibilities in the existing civil defense structure. This transferred central responsibility to a new Office of Civil and Defense Mobilization (OCDM) in the Executive Office of the President and gave its director a seat on the National Security Council.

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*In its further evolution, the NIKE-X system would become the SENTINEL of 1967, and the SAFEGUARD in 1969. For a more detailed discussion of the ABM issue during McNamara's tenure as Secretary of Defense, see below, pp. 543-70.

**The Soviet demonstrations of missile/space technology tended not only to underscore the anachronistic nature of such previous civil defense planning premises as having enough warning time to evacuate cities, but also helped to focus attention on other problems such as providing fallout shelters and improving coordination among various agencies dealing with civil defense from the national to the local level.

Although OCDM proposed emergency preparedness plans and a shelter policy, its efforts failed to generate much national enthusiasm, especially for the "do-it-yourself" shelter building program which Eisenhower preferred in lieu of the large government-funded $22 billion construction program for fallout shelters recommended by the Gaither Committee.* The U.S. military establishment had a mixed outlook on civil defense, ranging from the view that civil defense was a necessary concomitant of a strategic nuclear posture to the opinion that it would encourage a "Maginot Line mentality" and detract from more useful military appropriations.

With the advent of President Kennedy, a new shift in civil defense policy and organization took place. Partly impelled by campaign criticism of the outgoing administration, and partly by tensions with the Soviet Union during the Berlin crisis, Kennedy strongly supported shelter construction and requested in November 1961 congressional approval of a 5-year program to cost $4.2 billion. In 1961 he also made organizational changes, which included assigning responsibility for civil defense to the Secretary of Defense, under whom an assistant secretary took charge of a new Office of Civil Defense. OCDM was converted into a small staff agency called Office of Emergency Preparedness (OEP). As one of its first tasks, the new Office of Civil Defense undertook to identify and stock shelter spaces in buildings throughout the country.

*In addition to the Gaither Committee's report, studies on civil defense available to the President came from McKinsey and Company, a Rockefeller Brothers Fund panel, and the Rand Corporation.

Despite the Cuban crisis in 1962, which for a time sharpened public awareness of civil defense preparededness and helped boost the approved civil defense budget to an all-time high of $257.1 million the following year, political and fiscal support for a vigorous civil defense effort soon began to wane once more, leaving the Kennedy shelter bill stranded in Congress, where the question of shelters was to be linked with the issue of ABM deployment by Secretary McNamara.*

Strategic Principles

When the rapid growth of U.S. strategic forces began to take place in the post-Sputnik period, U.S. strategy and force posture already accorded primacy to strategic offensive capability, even though the balance between offense and defense was still open at the margin. At the same time, however, the size and mix of forces needed for an appropriate offensive capability, and the criteria of performance by which to measure such a capability , remained essentially unresolved questions in 1958, as did various issues having to do with operational planning and control of the more diversified strategic delivery forces coming into being.

During the next few years, as the U.S. offensive buildup proceeded, a consensus emerged in American strategic thought around a set of standards

*For examination of McNamara's position and possible motives in holding that ABM deployment without a fallout shelter program would not make sense,see below, pp. 551-56.

or principles for judging the adequacy of strategic forces.[57] These principles did not in any direct way determine force procurement and organizational decisions, but they did bring to national strategic policy an explicit intellectual structure of practical significance.

Before discussing the consensus which won the dominant place in American strategic thought of the period, attention should be paid to an alternative possibility, namely, that had there been no Sputnik crisis and missile-gap stimulus, the United States might have adopted a considerably more restricted view of its requirements for offensive ballistic missiles than it actually did. Institutional sponsorship for such a position existed in both the Navy and the Army, and potential political support came from fiscal conservatives and liberal advocates of arms control.

The Navy had the strongest institutional stake in what came to be known as a limited or minimum deterrence strategy. With the advent of the POLARIS program, the Navy reversed the strategic doctrine it had promoted since the interservice feuds of the late 1940s. At that time, Navy strategists had stressed the importance of attacking military targets and conducting war against the armed forces of the enemy, rather than his civilian society. An important underlying issue, however, had been the institutional survival of the Navy, whose leading officers had felt threatened by the implications of the Air Force doctrine of strategic bombardment in an era of nuclear weapons and severely restricted defense budgets.

By 1958, the institutional health of the Navy cut the other way on strategic doctrine. The POLARIS system, highly survivable but limited in the accuracy/yield properties of its missiles, was an ideal weapon for threatening urban-industrial retaliation, and naval strategists now proclaimed its virtues in those terms. At the same time, it seemed important for the Navy as a whole that the POLARIS deployment be kept limited, since its potentially great cost -- not only in capital outlay but also in annual operating expenses -- was seen as a serious competitor to the surface fleet. Hence, in 1958 the Navy inclined strongly toward a limited deterrence strategy.

The basic argument of this position held that in a few hours or days a modest force of POLARIS submarines could deliver the relatively small number of nuclear weapons required to threaten greater destruction than all the losses the Soviets had experienced in World War II. If primary deterrence could be achieved at all by threat of retaliation, it could be achieved by this force. For limited threats and partial failures of deterrence, theater forces with both conventional arms and specialized nuclear weapons could provide the appropriate means of response on the spot. The Navy saw

no need to provide strategic-range land-based missile systems for these purposes, particularly if their basing added attractive targets on the U.S. mainland.

The Army, with the smallest stake in nuclear systems in general, joined in the Navy argument and offered support in discussions within the JCS. Though not directly involved with strategic delivery systems, the Army, too, had gone over to advocacy of targeting cities after earlier condemnation of this type of warfare -- its motives being, as some saw it, to undermine Air Force claims for large strategic forces to attack military targets, and thus to free more funds for strategic defense programs like NIKE-ZEUS.

The Navy and the Army, however, did not pursue their homework with the thoroughness of the Air Force, so that when the surge in missile deployment began, the limited deterrence position had not been prepared in analytic depth and was quickly overtaken by events.

The line of strategic thought which gained dominant influence had been developed largely under Air Force sponsorship, much of it at the Rand Corporation. The key proposition of this approach maintained that the credibility and stability of deterrence depended on the detailed character of the dynamic balance between U.S. and Soviet strategic forces, and that an effective deterrence posture could not be derived from a simple relationship between urban-industrial targets and warhead numbers, as suggested by advocates of limited deterrence.

The analysts elaborated on this central argument in a number of ways. They emphasized the distinction between first and second strike and the

importance of second-strike capability for crisis stability. They explored in detail the more demanding requirements which second-strike capability imposed -- protection, redundancy, flexibility, integrity of command and control. They probed the essential irrationality of urban-industrial retaliation and suggested the importance of counterforce options under conditions of preemption or rapid second-strike response -- as means of reducing damage to the United States if deterrence failed.

Other main points included the vulnerability of theater nuclear forces to preemption and the problems of penetration which a limited strategic force might encounter against a missile defense system. Analysts at Rand also pioneered modeling of strategic exchanges and introduced both simple hand calculators and elaborate computer models for tracing force interactions within a quantitative structure. Although this body of strategic analysis did not generate precise numbers for the appropriate size of U.S. strategic forces, even for a given threat, it did suggest larger forces with a greater variety of capabilities than those the Navy, for example, had in mind.

The main ideas embodied in the Rand line of analysis had been developed well before Sputnik and rather widely propagated among those seriously interested in strategic questions. The body of analysis also had sufficient quality to achieve a status independent of the Air Force, which subscribed to much but by no means all of it.

Although the line of strategic thought developed at Rand had not been fully assimilated within the Air Force by 1958, it did help the Air Force to furnish a better articulated rationale than the other Services for structuring the new strategic forces that were coming into being. Perhaps

even more significantly, it provided the most thorough analytical basis for developing a coherent national policy to guide the new force structure that was emerging. Debate on major questions of doctrine and force structure would continue, but largely within a framework of assumptions deriving from Rand's contribution to strategic principles.

Force Structure Issues

One of the first, and certainly the most sharply contested of the force structure issues that arose concerned the place of POLARIS in the U.S. strategic arsenal: How many should be built and deployed; who should control them; what proportion of the U.S. strategic missile forces should ultimately consist of SLBMs? This issue will be discussed below.

A second issue with major implications for force structure concerned the extent to which the new strategic forces coming into the inventory should emphasize a capability to attack military (i.e., counterforce) targets rather than urban-industrial targets. As previously noted, counterforce attacks, especially against hard targets, required considerably larger numbers and higher performance of delivery systems than those needed for attacking cities. Furthermore, emphasis on counterforce implied that the war-fighting attributes of strategic forces took precedence over their capacity to deter a Soviet attack. For both of these reasons, a counterforce doctrine met with disfavor from those of the minimum deterrence school who believed that a retaliatory threat against Soviet cities with a relatively modest strategic strike force could maintain deterrence.

Although the minimum deterrence position lost out, this did not resolve the question of whether strategic forces should be structured primarily for counterforce or urban-industrial attacks, for even within the Air Force itself, ambivalence persisted. Though some Air Force planners apparently leaned toward counterforce, the ICBM systems actually becoming available in 1960 were either unsuited or only marginally useful for this role; hence there was hesitation about renouncing urban-industrial in favor of counterforce attack criteria for structuring the missile forces. After targeting and control issues had been fought out between the Air Force and Navy in 1959-61,* however, the Air Force moved gingerly in the direction of a counterforce doctrine, calling for a set of priorities that would allow it to concentrate first on military targets, but also to maintain a capability for attacking urban-industrial targets.[58]

A third issue concerned whether strategic forces should actually absorb attack before proceeding with retaliation or whether they should preempt on receiving warning of an impending attack. This related to the counterforce question for the obvious reason that counterforce attacks would be much more effective if undertaken before enemy forces could strike. Planning within SAC was heavily, almost exclusively, committed to preemption, and that fact was revealed to Navy and Army planners in the spring of 1957 when details of the war plan were discussed among the three Services. Navy and Army analysts resisted the strong focus on preemption and planning factors which they felt led to an excessive use of force. Over the summer of 1957 they promoted an adjustment to JCS guidance mandating SAC to construct a second attack plan on the assumption that preemption would not or

*See below, pp. 462ff.

could not occur. That plan was to focus on targets which would be most useful to attack under those circumstances. To the many analysts, an alternative attack plan of this sort was much more consistent with their conception of the appropriate strategic posture.[59]

A fourth major force structure issue that arose as the operational ICBM force began to grow in the last years of the Eisenhower administration involved the extent to which bombers should be replaced by land- or sea-based strategic missiles. Given the programs for both bombers and missiles, little immediate change in programmed forces could be expected, so that debate on this subject largely concerned the future. The issue came down to whether the manned bomber should be written off as a strategic vehicle for the future, thus leading ultimately to an all missile-force, or whether strategic planning should continue to provide for a mixed force of both bombers and missiles.

Proponents of the first view argued that bombers were not only highly vulnerable on their bases to Soviet missile attack, but that those which escaped would have difficulty penetrating Soviet air defenses, and in any event would only reach target after missiles had already done the job. Against time-sensitive targets, in particular, missiles were held to be much more useful than bombers. Advocates of the second view, on the other hand, argued that ground and airborne alert measures would greatly reduce the on-base vulnerability of the bomber force, that bombers were particularly suited to attack hard targets or to seek out targets whose location was not known in advance, and that retention of bombers in a mixed strategic force would complicate Soviet defense problems. Further, bombers could be recalled if necessary; missiles, once launched, could not be recalled.

In addition to such arguments concerning the relative strategic utility of bombers and missiles, a diverse interplay of other factors also bore upon the force composition debate. Advocates of a greater ABM effort, for example, tended to see in an all-missile force, especially one limited in size, a possible way of altering the preponderant flow of resources to strategic offensive forces. Proponents of a minimum deterrence posture, along with many arms control supporters, tended likewise to prefer a small and secure missile force to one embracing both bombers and missiles. As might be expected, the Air Force emerged as the principal champion of the mixed-force concept. Even so, ambivalence persisted within the Air Force as to whether the mix should be slanted toward bombers or missiles, a decision further complicated by the need to fend off Navy criticism that land-based missiles

with a "fixed address" were a poorer investment than mobile sea-based strategic systems.

Precisely how the force composition debate may have shaped actual decisions is difficult to determine. Although the debate had undoubtedly helped to propagate considerable uncerainty about the long-term future of bombers, and may have influenced the phasing out of B-47s while ICBMs were entering the inventory up to the mid-1960s, it did not lead to adoption of an all-missile force. Indeed, along with ICBMs and SLBMs, bombers remained one of the three mainline strategic programs that were to be perpetuated into the next decade under a mixed-force concept later known as the Triad.[60]

Targeting and Control of Nuclear Strike Forces[61]

Problems of establishing satisfactory arrangements for coordinated targeting and the control of nuclear strike execution had existed for a number of years before the acceleration of the POLARIS program and the entrance of the Navy into a strategic role brought these problems to a new stage which dictated attention from the highest policy levels.

The overseas deployment of tactical nuclear weapons from around 1953 on had placed increasing numbers of such weapons under the control of major theater commanders, and raised problems of coordinating their use not only among theater commanders, but also with strategic bombing operations by SAC. The measures taken to deal with the nuclear coordination problem included annual World-wide Coordination Conferences (WWCC) from

1956 to 1958, but these meetings tended mainly to document the need for coordination without in fact accomplishing it. For example, many targets were receiving double or triple coverage from separate commanders without adequate provision for coordinating target selection or the timing of attacks.

In SAC itself during the same period, operational planning for strategic bombing missions had grown increasingly complicated with the introduction first of the "Fullhouse" concept to conduct at least the initial wave of strategic strikes from U.S. bases, and of subsequent steps for more frequent rotation of reflex forces, for ground alert, and for dispersal of bomber and tanker forces. The extensive air refueling operations involved (by the late 1950s a SAC refueling occurred on the average of once every 7 minutes), as well as a vastly increased communications load (information was arriving at command centers up to 6 hours late during major operational exercises), added to the complexity of SAC operations and suggested the need for detailed advance planning of strategic strikes.

The POLARIS program had a catalytic effect on problems of nuclear force coordination and operational control, primarily because it precipitated a heated dispute between the Air Force and the Navy as to who would control this new strategic system when deployed. The issue, actively boiling at staff levels of the Services in mid-1958, was too consequential and too sharply defined to go unresolved. This major jurisdictional dispute forced action at the highest policy levels.

At an NSC meeting on 20 November 1958, President Eisenhower personally requested an evaluation of counterforce targeting. The request was issued as National Security Action 2009. In December, Secretary of Defense McElroy, formally charged with implementing Action 2009, asked the JCS to furnish

a plan for command and deployment of the new POLARIS force. These actions established a forum for tackling the POLARIS issue and made it necessary for the Air Force and the Navy to defend their interests within the scope of overall defense policy. For the first half of 1959 they struggled to do so.

The SAC commander, Gen. Thomas S. Power, successor to Curtis LeMay, saw both POLARIS and the Navy argument for a minimum deterrent strategy as a threat to the future of his organization. In seeking control over deployed POLARIS missiles he doubtless hoped to contain that threat. More positively, Power recommended the creation of a unified strategic command to exercise planning and operational control over all strategic forces, suggesting that CINCSAC be mandated to develop the required organization. He emphasized that the purpose of the unified command would be to facilitate coherent planning and eliminate duplicate targeting, and, if it should come to that, to coordinate execution of actual strategic strikes so as to keep the various attack forces from mutual interference with each other. The Air Force supported Power's recommendation within the JCS.

Adm. Arleigh Burke, the CNO, vehemently resisted the suggestion of a unified strategic command, for Burke was acutely aware that one of its major effects would be to reverse the compromise arrangement set up in 1948-49 when the JCS defined SAC as a specified command rather than a unified command. The Navy had fought for such an arrangement precisely to prevent the exercise of SAC operational command authority over naval forces, such as aircraft carriers with strategic missions. Without denying the logic for coordinated planning, Burke insisted, in what was probably his most compelling argument, that POLARIS submarines had to be integrated into the fleet, and thus come

under normal naval command, because their protection would depend in significant part on fleet operations. As for avoiding duplicate targeting, the Navy argued that since POLARIS was to be used against a stable target system (the adversary's industrial base and control structure), this would lend itself to cooperative planning under existing arrangements, and hence there would be no target coordination problems.

Within the JCS, the impasse on POLARIS during the first half of 1959 brought planning to a virtual halt on a number of matters related to coordinated strategic effort, such as determination of a target list, atomic guidance to theater commanders, and composition of the weapons stockpile. It fell to the JCS chairman, Gen. Nathan F. Twining of the Air Force, to attempt a compromise.

In August 1959, Twining issued a memorandum which distinguished three separate elements of the problem: (1) targeting policy; (2) development of an integrated operational plan; and (3) the day-to-day operational control of the strike forces. In recommending preparation of an integrated operational plan -- a function he proposed to assign to SAC -- Twining suggested that this would ease the requirements for centralized control of strike forces, allowing POLARIS deployment under naval command. Thus, Twining sought to respond to the central element in each of the opposing arguments. As a further move toward compromise, Twining laid out some 18 questions concerning targeting and operational coordination, which the Joint Chiefs were to debate for a full year.

Meanwhile, a team headed by Lt. Gen. Thomas F. Hickey and staffed by the Net Evaluation Subcommittee of the NSC undertook to perform the study required by NSC Action 2009. When the JCS could not agree on terms of reference for Hickey's group, Twining, on his own authority as Chairman, provided the instructions, which were drafted to reflect JCS consensus and avoid matters under contention between the Services. The instructions directed the Hickey team to define a minimum number of targets which the United States must destroy or neutralize "in order to prevail in general war."

Working with two target lists prepared by SAC -- one for military targets -- and one for urban-industrial targets -- the study group drew up a third or combined list by blending the other two. In its evaluation of attacks on each target list, the study concluded that if military targets alone were attacked the Soviets could recover and regenerate their forces; if the urban-industrial structure alone were hit, Soviet forces could deliver heavier blows than U.S. society could withstand; and that only strikes against the combined target list -- dubbed the "optimum mix" -- would enable the United States to prevail. The forces required to attack the combined list under the least demanding of several sets of damage criteria considered* came to 2,600 strategic missiles.[62]

The findings of the Hickey study became available in late 1959, about the time Secretary of Defense McElroy left office, passing on the unresolved

*The least demanding criteria were 90 percent probability of severe damage to each target, under conditions of surprise attack.

problem of the place of POLARIS in the strategic command structure to his successor, Thomas S. Gates, Jr. By a process of intense debate -- including 11 separate meetings in the summer of 1960 between the Joint Chiefs and Gates, as well as a conclusive White House meeting between President Eisenhower and Admiral Burke* -- a compromise was finally cemented.

Following the outline of the August 1959 Twining memorandum, Gates directed in August 1960 that the SAC commander assume responsibility for coordinated operational planning as the agent of the JCS. To execute this mandate, CINCSAC assumed a separate function as Director of Strategic Target Planning (DSTP), with a Joint Strategic Target Planning Staff (JSTPS) to assist him. Vice Adm. Edward N. Parker became the deputy, with the understanding that this would always be a Navy assignment.

The JSTPS, a multi-Service staff numbering some 260, established itself at SAC headquarters in Omaha, Nebraska. It had two divisions -- one to prepare the National Strategic Target List (NSTL), the other to prepare a Single Integrated Operations Plan (SIOP). In a separate decision, operational control of POLARIS submarines went to CINCLANT and CINCPAC. The Hickey study was translated into a National Strategic Attack Policy (NSTAP), drafted by the Joint Chiefs and issued to General

*Burke, with Gates's permission, took his case in the summer of 1960 to President Eisenhower, who, after hearing out those present, ruled in favor of the Twining-Gates compromise. In addition to the President, Gates, Burke and Twining, Deputy Secretary of Defense James H. Douglas was present.

Power as guidance for the preparation of the NSTL and the SIOP.

The spirit of the Twining-Gates compromise gave SAC preeminent influence over the JSTPS, and this became apparent as the first SIOP (SIOP-62) was prepared in the fall of 1960. Mandated by the NSTAP first to destroy or neutralize Sino-Soviet bloc strike forces and major control centers, and second to attack major urban-industrial centers to the extent necessary to paralyze their economies, the JSTPS prepared a large attack in the first SIOP, giving full thrust to SAC concepts of strategic bombardment. The plan, for example, specified 1,043 locations in the Soviet Union as aiming points, or DGZs, for nuclear weapons.* Of these, 480 were to be attacked by 874 delivery vehicles in the alert forces, delivering 1,447 weapons. Follow-on forces consisting of 1,464 aircraft and 1,976 weapons had responsibility for the remainder of the target system.

The only options specified in the plan pertained to varying levels of the alert force; no provisions existed for discriminating the attack either by country or by target category. Basically, the plan was intended

*The target list evolved by stages from an all-inclusive list of potential targets, to a shorter list of targets whose character had been determined and whose geographic coordinates had been adequately defined, to a yet shorter NSTL containing those targets approved for attack. Aiming points, or DGZs, were then developed by applying a weighting scheme specifying the value of each NSTL entry and then optimizing the allocation of available weapons to maximize expected damage. The critical part of the procedure was the judgments made in assigning numerical values to targets, a process which was essentially subjective. Since some DGZs were set to produce damage to more than one target, the number of targets to be attacked was significantly higher than the figures for DGZs.

to deliver the largest strike that available U.S. forces could marshal at the time of attack.

The large scale of the attack was influenced by a number of conservative planning assumptions and operational rules. The criterion of damage applied to each target, for example, was set at a demanding probability of .97, and only blast effects were used in calculating damage. The plan included redundant targeting to hedge against poor visibility and extra forces to cover an assumed bomb dud rate, an unknown attrition rate, and other factors which might degrade performance. Also, to compensate for the absence of command authority over all the forces required to execute the SIOP, JSTPS planners established operational rules that gave overriding priority to SIOP execution and precluded attack on NSTL targets by theater commanders. Since this in turn made it necessary to include in the NSTL those targets of prime concern to theater commanders, the target list was expanded beyond what might be considered strictly a strategic target system.

CINCPAC, CINCLANT, the President's Science Advisor, and the Navy representatives on the JSTPS all questioned this planning approach and its expansive effect on the scale of SIOP attack, but General Power as Director affirmed the approach in the draft of SIOP-62 submitted to the JCS for approval in early December 1960, a month after the first POLARIS submarine had gone on patrol. After summary review, the JCS in December approved the plan for the first SIOP as drafted. It went into effect in April 1961, after the change of administrations had brought new

officials into office. Although targeting policy and strategic doctrine were to undergo various changes during McNamara's tenure as Secretary of Defense,* the precedent set by the first SIOP--and the resolution of contested strategic planning issues which it reflected--would prove to be rather durable. Indeed, once set on the track laid down by the Twining-Gates compromise, the process and mechanism for planning strategic operations changed only incrementally in the ensuing years.

The 5 years from Sputnik to the Cuban missile crisis witnessed an impressive demonstration of U.S. will and capacity in the creation and deployment of powerful strategic offensive forces. The spur for this vigorous surge came chiefly from Sputnik and its aftermath--the missile gap. The rapid growth of increasingly complex strategic forces intensified and brought to a climax diverse and divisive issues pertaining to strategic thought and plans, force structure, targeting, and command and control arrangements. Although these issues were by no means completely resolved, the Services achieved a modus vivendi that permitted effective development, deployment, and control of the strategic forces.

*For treatment of these matters during McNamara's tenure, see below, pp. 587-604.

Chapter X

THE CUBAN CRISIS AND SOVIET STRATEGIC POLICY IN THE LAST YEARS OF KHRUSHCHEV, 1962-64

The full scope and depth of the impact of the Cuban missile crisis on Soviet strategic policy during the final years of Khrushchev's tenure[1] cannot be fully measured, but its effect on the strategic competition with the United States cannot be doubted. To help gauge the extent of the impact it is necessary to recall the context in which Soviet strategic policy evolved after Sputnik up to the time when the Soviet leadership appears to have decided to undertake the covert deployment of MRBMs and IRBMs to Cuba.

The initial political success of the Sputnik launchings and the great uncertainty in the United States about Soviet force deployments, together with economic and technical problems that apparently made heavy investment in early-generation Soviet ICBM deployment programs unattractive, led Khrushchev by the late 1950s to attempt to deliver major political gains through a strategic policy that involved a vigorous R&D effort but not substantial ICBM force levels. In support of this policy, either deliberately or through gradual improvisation, Khrushchev had resorted to missile bluffing and deception. Despite these efforts, the Soviet Union began to find itself losing ground steadily to the United States by early 1962. Deflation of the missile gap and failure to force the Western allies out of Berlin in 1961 had not only taken much of the wind out of Khrushchev's missile diplomacy, but the buildup of U.S. strategic forces was now gathering a momentum that could only add to Soviet discomfiture.

Presumably hoping to salvage a deteriorating Soviet position, Khrushchev then embarked on the Cuban missile venture. What he hoped to accomplish from this emplacement of a closeup strategic nuclear threat at the exposed southern doorstep of the United States still remains a matter of no little contention. However, few would disagree with a well-placed Soviet commentator who wrote that the Cuban missile crisis of October 1962 was "the most dangerous crisis since the end of World War II."[2] Nor is it generally questioned that, whatever its origins, the Cuban crisis marked a significant turning point in the history of U.S.-Soviet strategic competition.

This account focuses on those aspects of the Cuban crisis which appear to have some bearing on the evolution of Soviet strategic policy, beginning with the strategic situation as the Soviets may have perceived it on the eve of the episode.

Soviet Strategic Situation On the Eve of the Cuban Crisis

As Soviet planners contemplated the strategic situation in the months prior to the Cuban confrontation, it seems likely that they would have considered the balance of intercontinental strategic forces to be distinctly unfavorable to the Soviet Union. In both numbers and quality, a comparison of the strategic forces of the two sides would hardly warrant any other reading of the situation, even though the USSR had by then deployed peripheral-range forces of substantial size.

The Quantitative Disparity

By 1 October 1962, the Soviet Union had fewer than 50 operational

ICBM launchers (4 SS-6 and about 40 SS-7),* all in soft sites. The United States had spotted the locations of these launchers, and the Soviets, in turn, knew this.** In addition to these ICBMs, the Soviets had about 100 SLBMs, mostly SS-N-4s of 300-nautical-mile range, on diesel and nuclear-powered submarines. Together with some 30 submarine-launched cruise missiles, the SLBMs represented a potential for strategic attack from the sea against the United States, but their range limited them to U.S. targets near the coasts. Finally, the Soviet Union had more than 150 heavy bombers with marginal intercontinental capabilities (TU-95 and Mya-4),deployed on a small number of known bases, and more than 1,300 TU-16 medium bombers. The latter were suitable mainly for operations around the Eurasian periphery, but at least some of them could be used against the continental United States on one-way missions.[3]

The intercontinental strategic delivery forces of the United States at the beginning of October 1962 included about 160 operational ICBM launchers (107 ATLAS , 54 TITAN), of which 111 were on primary alert, and the first deployed set of 10 MINUTEMAN launchers was less than 3 months away from operational status. Seven POLARIS submarines, with a total of 112 SLBM launchers, were operational. The missile threat to the Soviet Union also included about 100 IRBMs (THOR and JUPITER), capable of attacking targets in Soviet territory from their bases in Europe [redacted]

*In addition, there were about a half-dozen test launchers at the Tyuratam test range. According to some accounts, the Soviets had deployed 75 ICBMs by October 1962, but this apparently overstates the number of those operational.

**As noted below, p. 486, there is one school of opinion which holds that the Soviets actually may have thought that most of their missile site locations were not precisely known to the United States, even though they were aware of the U.S. satellite reconnaissance program.

Finally, the U.S. strategic bomber force in October 1962 came to almost 1,300 ready aircraft, including more than 500 B-52s, 740 B-47s and EB-47s, and 30 B-58s. Supported by a fleet of more than 900 ready tankers and an overseas base structure, the bomber force still remained the backbone of the U.S. offensive capability against the USSR.[4]

Not only did the comparative strategic force levels in October 1962 favor the United States, but the Soviets probably expected the disparity to get a good deal worse before it got better. For example, Soviet threat appraisals in mid-1961 had rather accurately anticipated a substantial growth of U.S. ICBM and SLBM forces, coming close to the pace and size of the deployments actually achieved by the United States up to the middle of the decade. [redacted]

However, if it is assumed that the Soviet offensive force deployments witnessed during the period up to about 1965 represented the upper limit of what had been programmed for deployment before Cuba,* it follows that the Soviet forces in prospect would not have begun to match the predicted U.S.

*The term "programmed" here refers to the forces eventually decided upon in the pre-Cuban period and does not include the possible earlier planning for a larger number. [redacted]

buildup. In short, Soviet planners, comparing a predicted mid-1960s U.S. level of around 1,000 ICBMs with their own pre-Cuba programmed deployment of about 225 ICBMs,* could have had little comfort.

Vulnerability of the Soviet Posture

Perhaps even more disturbing to Soviet planners than the inferiority in numbers they could discern in 1962 may have been the military vulnerability of their strategic posture, deriving chiefly from qualitative and basing limitations. Although there is no direct Soviet testimony available as to how they perceived this aspect of their strategic condition, the situation in the months preceding Cuba probably spoke for itself.

The small Soviet force of about 50 ICBM launchers, for example, presented no more than half that many soft aiming points to an attacking force. Soviet strategic bombers, both heavy and medium types, occupied about 60 airfields at most, and procedures for a high state of continuing ground or airborne alert for the bomber force apparently had not been instituted. Although an extensive early-warning system against enemy bombers was in place, backed up by a strong air defense force, the Soviet Union did not possess effective early warning capabilities against ballistic missiles. Even in the event that tactical warning became available, it was not clear whether Soviet ICBM or bomber forces could have responded promptly enough to escape destruction, given their sluggish reaction reflexes.

*Although initial deployment decisions for the SS-9 may already have been made prior to Cuba, this third-generation system, along with the SS-11, would not begin to reach operational status in the field until 1966; hence, these missiles are not included in the Soviet force of 225 ICBMs projected for the period up to 1965. This force consisted mainly of SS-7s, with a few SS-6s and SS-8s.

The most survivable Soviet force for attack on the continental United tates was probably missile-firing submarines, although how much of this :orce of about 37 diesel submarines and 9 H-class nuclear-powered submarines :he Soviets could have kept on patrol in 1962 is not known. However, when Soviet submarines went on alert during the Cuban crisis, few if any missile-launching submarines managed to reach station within range of the U.S. coast; others evidently remained in port, while some presumably were in transit under noisy operating conditions or snorkeling on diesel engines. Indeed, the noise characteristics of the then-available Soviet missile submarines may have meant that they, too, were vulnerable to countermeasures.*[6]

By the standards of strategic force survivability and effectiveness that became commonplace a few years later, the Soviet strategic situation in 1962 might thus have been judged little short of desperate. A well-timed U.S. first strike, employing then-available ICBM and SLBM forces as well as bombers, could have seemed threatening to the survival of most of the Soviet Union's own intercontinental strategic forces. Furthermore, there was the distinct, if small, probability that such an attack could have denied the Soviet Union the ability to inflict any significant retaliatory damage upon the United States. Although Western Europe remained hostage, Soviet planners might have viewed a coordinated U.S.-NATO first strike with forward-based aircraft and missiles as sufficiently effective against their peripheral attack capabilities, such as soft MRBMs and medium bombers, to negate the deterrent effect of hostage Europe.

*In this connection, during the naval quarantine phase of the Cuban crisis, [6] Soviet submarines of one kind or another were forced to surface by U.S. naval forces.

Given the apparent high degree of Soviet strategic vulnerability in 1961-62 it seems probable that Soviet planners found the potential consequences of a first strike against them unpleasant to contemplate. Their worries on this score may have been heightened in the summer of 1962 by a widely publicized speech made by Secretary of Defense McNamara at Ann Arbor on 16 June. In his speech, McNamara presented a strategic doctrine that had been in gestation within the U.S. Government for some time-- strategic forces should be employed against military targets, mainly nuclear offensive forces, and cities, assuming reciprocal restraint, should be purposely avoided by both sides.*7

To the Soviets, surveying the existing strategic equation from the viewpoint of the weaker party, especially the vulnerability of their much smaller intercontinental delivery forces, this proposal may well have appeared to be little more than a transparent rationale for a first-strike strategy, designed to justify U.S. counterforce preponderance and to deny residual Soviet forces even marginal deterrent value.

Soviet Leadership's View of U.S. Intentions

Whether the Soviet leadership entertained a real fear that the time was approaching when the United States might opt for a first strike against the Soviet Union is debatable. [redacted] There is no way of knowing

*For further discussion of this doctrine, see below, pp. 518-25.
**For previous discussion of this question, see above, pp. 336-39.

whether responsible Soviet decisionmakers shared the view of U.S. intentions promulgated within the military establishment by the Bulletin. Indeed, if they did, it might be argued that they were derelict in not having put the Soviet Union forthwith on a more obvious war footing than existed. It might also be argued that Khrushchev would never have committed himself to the Cuban missile venture had he not felt reasonably confident that the United States would refrain from using its growing advantage in strategic forces to launch an attack on the Soviet Union.

Whatever Khrushchev and other leaders believed about the likelihood of a U.S. attack, however, it would appear that the strategic circumstances in early 1962 presented the leadership with a case compelling enough to call for remedial action of some kind. Among steps that presumably fell in this category, one represented a major departure from previous Soviet policy--the covert emplacement of Soviet offensive missiles in Cuba, a move which culminated in the crisis of October 1962, and the motives for which remain to this day a matter of some debate.

The Cuban Missile Venture

According to Khrushchev's own account, he originated "the idea of installing missiles with nuclear warheads in Cuba without letting the United States find out they were there until it was too late to do anything about them."[9] While claiming that the Cuban missile venture was his own idea, conceived during a trip to Bulgaria in May 1962, Khrushchev in his memoirs also noted that the deployment decision came about only "after two or three lengthy discussions of the matter" within the collective leadership.[10]

Other accounts offer differing versions of where the missile deployment idea originated. Khrushchev himself, for example, said publicly in December 1962 that the Cubans had asked for additional assistance, which included "the stationing in Cuba of a few dozen Soviet ballistic missiles of medium range,"[11] while Fidel Castro at various times declared both that the missiles were sent at Cuban request and that Khrushchev suggested the idea.[12] Some Western observers, among them Averell Harriman, have attributed the deployment to Soviet initiative, but have felt that rather than having been conceived by Khrushchev, the project was pressed on him by his hard-liners among the party and military leadership.[13] Other observers, on the contrary, have thought it likely that the Soviet military command and perhaps some conservative-minded political figures opposed the "adventurism" of Khrushchev's deployment scheme,[14] while still other analysts have suggested that the deployment proposal may have arisen out of the temporarily converging interests of several individual and organizational sources, including perhaps a group of "young Turks" within the new strategic rocket forces who could have been particularly concerned about the strategic balance.[15]

But whatever the origins of the proposal, a strategic offensive force deployed to Cuba after arrangements with the Cubans had been completed, probably in July 1962.[16] According to Fidel Castro, his brother Raul, the Cuban Defense Minister, had taken up "the arrangements for installing the missiles" during a visit to Moscow in early July 1962. Actual introduction of strategic missiles into Cuba is believed to have begun with the arrival of MRBMs and associated equipment on 8 September,[17] following several months of increased shipments of other types of arms to Cuba,

including such defensive weapons as interceptor aircraft, SA-2 surface-to-air missiles, and coast defense cruise missiles.

The offensive force covertly installed in the western part of Cuba in September and October consisted of 6 MRBM sites with a total of 24 SS-4 launch pads, and 3 IRBM sites with 12 SS-5 launch pads, along with some 40 IL-28 bombers.[18] Prior to the naval quarantine imposed by the U.S. on 24 October, 42 SS-4 missiles had reached Cuba and 6 more were presumably on the way to provide 2 missiles per launcher. No SS-5 missiles had arrived at the IRBM sites, which took longer to construct than the MRBM sites. Both types of sites were laid out like their counterparts in the USSR, and it was this typical "signature" which led to their discovery. On the basis of 2 missiles per SS-4 launcher and either 1 or 2 for each SS-5 launcher, the intended size of the initial missile deployment probably would have been from 60 to 72 missiles with nuclear warheads. So far as known, no nuclear bomb loadings were available for the IL-28 aircraft. According to Khrushchev, the "obsolete" IL-28 bombers were too old to penetrate U.S. airspace without being shot down but "would be useful against an enemy landing force."[19]

Between 14 October, when high-altitude U-2 photography first confirmed the introduction of Soviet offensive missile sites in Cuba, and 28 October, the day Khrushchev agreed to dismantle them, all of the MRBM launchers but none of the IRBMs had reached operational status. It is little-remarked that--in addition to instructors, technicians, and operational missile personnel--Soviet ground combat troops also accompanied the missile force, but were not clearly identified until low-level photographic missions began, and hence were not included in President Kennedy's removal demands on 22 October. These combat troops comprised four regimental units

numbering at least 5,000 men, with T-54 tanks and antitank weapons. Some estimates are as high as 10,000 combat troops out of a total of 22,000 Soviet troops in Cuba.[20] It is not clear whether the primary mission of these troops was to defend the missile sites against a possible U.S. attack or to insure that they remained under Soviet rather than Cuban control.

Soviet Motives

Why the Soviets undertook an unprecedented deployment of strategic weapons to Cuba is a complicated question that has never been wholly clarified. Among the motives attributed to Khrushchev and his associates are the following:

1. To use the threat of missiles emplaced in Cuba for limited political ends, primarily to extract a pledge from the United States not to take military action against the Castro regime, whose fears of invasion--whether justified or not--had led to pressure upon the Soviet Union for some form of protection.
2. To use the missiles and IL-28s as bargaining counters to induce the United States to withdraw its forward-based missiles [redacted] in exchange for withdrawal of Soviet offensive weapons from Cuba. A tradeoff of the Soviet missiles in Cuba for U.S. JUPITER IRBMs [redacted] was proposed in Khrushchev's 27 October letter, though this may have been an afterthought for crisis bargaining purposes.[21]

3. To employ the "surprise" leverage of a Soviet strategic force in Cuba for major political gains elsewhere--especially to bring the United States to accept a settlement on Soviet terms in Berlin, against which a renewed campaign would be opened after the U.S. elections in November 1962 and Khrushchev's scheduled visit the same month to the United Nations, where he would "unveil" the presence of Soviet missiles secretly deployed to Cuba.[22]
4. To enable Khrushchev at one bold stroke to outflank his critics in Moscow and Peking by exacting a high price from the United States for withdrawal of Soviet missiles from Cuba--the price to include not only concessions on Berlin, but also perhaps abandonment of Taiwan, which in turn might make Peking beholden to the Russians and persuade the Chinese to postpone their own nuclear ambitions.[23]
5. To provide a relatively cheap "quick fix" that would alter the unfavorable Soviet strategic position in 1962 by more than doubling the Soviet missile forces targetable against the United States, thus strengthening the Soviet position militarily, giving the United States a taste of strategic "encirclement," as well as providing a favorable political and psychological basis for further Soviet global initiatives.

The customary Soviet explanation, including that offered by Khrushchev in his memoirs, has followed the lines of the first item above, namely, that the missile deployment was intended to deter an

anticipated U.S. attack on Cuba,[24] although Khrushchev also asserted that "in addition to protecting Cuba, our missiles would have equalized what the West likes to call 'the balance of power'"--suggesting that he may have counted on the Cuban venture to serve broader ends than the defense of the Castro regime alone.[25] Some of Castro's own explanations of the purpose of the deployment also indicate that the Soviets had their sights set not only on protecting Cuba, but also on achieving a worldwide strategic breakthrough.[26] But whatever relative weight the goal of defending Cuba or of equalizing the strategic power balance may have had in the Soviet deployment decision, the military logic involved has remained puzzling to Western analysts.

The Question of a Military Logic for the Cuban Deployment

If the Soviets indeed credited the United States with damage-limiting strategic superiority and a serious intent to attack Cuba, the small force of missiles installed on highly vulnerable sites in Cuba seemingly would not have promised to degrade materially the U.S. capability to strike either against Cuba alone or against both Cuba and the U.S.S.R. Had the Soviets wished to protect Cuba by visibly linking Soviet and Cuban defense interests, a mutual defense treaty and Soviet military presence fashioned specifically for defense against air attack and amphibious invasion would seem to have sufficed without making Cuba a very vulnerable and unavoidable strategic target. While it might be argued that such a defense-oriented Soviet presence would itself have appeared provocative, not to mention being vulnerable at the end of a long logistics line, it would hardly have raised the stakes as high as deployment of a nuclear offensive force.

Some see no rational military calculus to justify the placing of offensive missiles in Cuba, which in itself might have been testimony to the grim state of the Soviet strategic condition.[27] In this view, given the immediate character of the strategic balance, the Soviets must have known that they possessed a much less credible deterrent force than the United States in the event of a crisis, even if the threat of a preemptive Soviet first strike were to be taken seriously. Although the missiles in Cuba, when fully operational, would have doubled Soviet strategic strike capabilities against the United States and would have been able to inflict considerable damage on U.S. bomber bases in a surprise attack, the total Soviet force would still have been inadequate to destroy enough of the American strategic strike capability to preclude severe retaliatory damage to the USSR. And if the outcome of an arsenal exchange looked unpromising even under conditions of a preemptive Soviet attack, the prospects could only look still worse in the event that the United States struck first.

Thus, it might be argued, the forces emplaced in Cuba made little military sense, since the only strategy to which they could have contributed would have been preemptive attack. In short, if the United States were to be deterred in a crisis situation, American leaders would have to be persuaded that their own losses in a nuclear exchange would not be worth whatever satisfaction might be derived from inflicting even greater damage on the Soviet Union.

Indeed, this may have been precisely the rationale upon which Khrushchev had acted. Rather than heeding military calculations of the unequal outcome to be expected in the event of any strategic exchange

between the two sides, Khrushchev may have believed that the mere possibility of destruction of a few American cities would suffice to keep U.S. leaders from risking a nuclear confrontation, or at least deter them from ordering their superior strategic forces into action. Something of this sort is suggested by Khrushchev's later comment on the Cuban crisis:

> We hadn't had time to deliver all our shipments to Cuba, but we had installed enough missiles already to destroy New York, Chicago, and the other huge industrial cities, not to mention a little village like Washington. I don't think America had ever faced such a real threat of destruction as at that moment.[28]

Although either a high degree of military irrationality or a disposition to gamble with the fate of his own country could be imputed to Khrushchev if the above logic actually prevailed, there is another interpretation which argues that the deployment of missiles to Cuba may have been undertaken on the basis of military calculations that promised a tolerable outcome for the Soviet side in the event that a strategic exchange should actually take place. In essence, in this view, the Cuban deployment may have dovetailed with the adoption of a strategy centering on Soviet capability to carry out a preemptive attack against the U.S. command and control system for strategic forces.

Though it might not guarantee decisive success, such a strategy would at least promise to prevent the worst case from a Soviet standpoint--a fully coordinated first strike by the entire U.S. strategic delivery force. According to this view, Soviet strategic planning in the year before Cuba may have come to count both on the Soviet Union's being able

to neutralize a greater proportion of the U.S. strategic delivery force than customarily assumed, and on fewer of the USSR's own missile site locations being targetable by the United States than actually were.

The first point rests primarily on the supposition that knowledge gained from their 1961 nuclear test series may have convinced the Soviets that they could utilize EMP effects* to cripple the command and control facilities of virtually the entire U.S. strategic strike force, reducing the number of aiming points that would have to be struck by a factor of as much as four, and thus making it possible to contemplate a counterforce attack with numerically inferior Soviet strategic forces. Under this concept, Cuba-based missiles could have reduced the warning time available to U.S. bomber alert forces and missile control facilities in the United States. Thus, rather than a desperate quick-fix measure, the Cuban deployment might be seen as a calculated move to fill gaps in Soviet coverage against particular targets in the United States, even though Khrushchev himself may have grasped at the strategic rationale for the deployment because it happened to fit his political and economic needs of the moment.

A further possible basis for the above interpretation rests upon several unexplained adjustments to Soviet missile programs that began in the summer and fall of 1962, and which therefore could have reflected decisions made at the same time as the Cuban deployment decision. As previously noted,** one such set of adjustments concerned the SS-7 program; in July-August SS-7 construction starts at various locations were

*The potential effects of EMP (Electromagnetic Pulse) were not fully appreciated in the United States until several years after the 1961 Soviet test series.

**See above, pp. 379-83.

suspended, but in the September-December period some additional SS-7 sites were started at different locations, overlapping in time with the testing of a new SS-7 RV with lower beta and increased yield. Since these RV characteristics would reduce accuracy, but probably improve EMP propagation, the suggestion is that SS-7 program changes may have been connected with a rather recently conceived plan to focus upon attacking American command and control and missile guidance systems. Another missile deployment adjustment during the time period involved the hasty construction of a number of special SS-4 and SS-5 sites in the USSR which might have been intended to permit use of EMP effects against U.S. SLBM launch areas.*

On the point of the Kremlin leadership's perception of Soviet vulnerability to strategic attack, the argument is that the Soviets may have believed while they were planning the Cuban deployment that the United States, despite its reconnaissance effort, lacked precise data for targeting strategic missile and bomber bases in the Soviet Union. Only after the Cuban crisis had begun to unfold, and when the Soviets got back the results of their own first satellite reconnaissance mission (supposedly on 20 October), did they realize that U.S. satellite coverage had probably been good enough to pinpoint the location of pertinent targets in the USSR. Hence, the belated realization that their own forces were more vulnerable to a preemptive attack than they had thought may have been a factor leading to the Soviet backdown several days later.

While such an interpretation would tend to reendow the Soviet deployment of missiles to Cuba with a strategic rationality it has seemed

*See above, pp. 369-70.

to lack, and would help to explain some curious anomalies in missile deployment within the Soviet Union, it credits the Soviets with rapid exploitation of technical data derived from the nuclear test series in the autumn of 1961 and with a finely articulated process of strategic planning for which the supporting evidence is tenuous at best. Without less speculative evidence, therefore, it would be hard to sustain a thesis that the Cuban missile venture represented the clinching element in a well-meshed strategic plan to neutralize U.S. delivery forces in the event of a showdown.

Rather, it seems more plausible that the deployment decision answered primarily to Khrushchev's search for strategic and political gains, together with a mistaken belief that he could attain them without great risk by imposing upon the United States the same psychological stress of hostile forward bases under which the Soviet Union had long suffered. At the same time, however, one ought not to dismiss out of hand the possibility that during the Cuban deployment period--whether at Khrushchev's immediate behest or not--there began to emerge the basic features of a strategy of targeting against the U.S. command and control structure that would continue to play a part in Soviet strategic planning and programs long after the Cuban missile venture.[29]

Soviet Misreading of Nuclear Crisis

Most postmortems of the Cuban episode tend to agree that Khrushchev and his associates probably had not bargained on finding themselves in an intense nuclear crisis. Early on, while planning the missile deployment, Khrushchev may have been swayed by the belief, reflected in his remarks to

various visitors. that the Soviet Union must be treated as an equal and that democracies had become "too liberal to fight".*[30] Later, President Kennedy's efforts to reassure the American public prior to the crisis that Soviet activities in Cuba had not yet become a strong threat, and his failure to mention the missiles explicitly in his 18 October meeting with Foreign Minister Gromyko, may have been taken by the Soviets as confirming signs that the United States wanted to find a formula under which it could tolerate the presence of the missiles.

Gromyko's reported "joviality" after his White House talk with Kennedy could be taken to indicate that the Soviets expected no harsh reaction from the United States,[31] even though by this time, as many observers have pointed out, Khrushchev had been amply warned that the United States would not look the other way were the Soviet Union to establish an "offensive" military capability in Cuba.[32] At any rate, the Soviets appear to have been quite surprised when Kennedy on 22 October suddenly and publicly raised the confrontation to the level of a nuclear crisis.[33]

Besides announcing the immediate imposition of a naval quarantine to block further shipments of offensive weapons to Cuba and calling for prompt removal of those already emplaced, the President made the nuclear complexion of the crisis clear by vowing a "full retaliatory response" against the USSR for any launching of Soviet missiles from Cuba. This retaliatory threat was underscored by placing SAC on a high state of alert earlier in the day. The following day the Soviet Union announced special

*The "too liberal to fight" characterization of the United States attributed to Khrushchev by Robert Frost is said by Arthur Schlesinger to have been a garbled quote, but the implication was essentially the same

alert measures for its own armed forces, but by then any hope that Khrushchev may have entertained of presenting the United States with a fait accompli in Cuba had evaporated, and he faced the decision of whether to risk a military confrontation.[34]

After finding that he had a full-blown nuclear crisis on his hands, Khrushchev had several choices: (1) He could stick to his course, which meant challenging the quarantine and continuing the construction of missile sites in the face of mounting U.S. determination to remove them with local force, if necessary; (2) he could threaten or actually provoke a confrontation elsewhere on more favorable ground, such as Berlin, for the purposes of a trade-off; (3) he could assert his determination to keep the missile bases in Cuba but try to avert U.S. military intervention by freezing work on the incomplete IRBM sites and by not challenging the quarantine; or (4) he could take the face-saving line of retreat left open to him by the United States, claiming that he was withdrawing the missiles to avert the danger of nuclear war and that their deployment had succeeded in winning a U.S. pledge not to invade Cuba.

In making a choice among these options, Khrushchev doubtless found himself obliged to weigh carefully, if he had not done so before, the military postures of the opposing parties. It is difficult to determine whether U.S. local military superiority or strategic superiority had the greater influence on Khrushchev's crisis decisions. Both were involved and tended to reinforce each other. The conventional military superiority of the United States in the Caribbean area made Khrushchev's first option extremely risky, unless the Soviets had confidence--which they evidently lacked--that their strategic power could reliably deter local U.S. action.

The second course might have recommended itself if the Soviets were confident that their own local military advantages in Berlin plus their strategic forces could be relied on to deter escalation. But, as the lesson of the Berlin crisis of 1961 had shown, their strategic posture would not sustain the risks of bringing superior local strength to bear in an area of such vital interest to the United States. The third course involved a further gamble on U.S. lack of resolve, regarding which Khrushchev had already been proved dangerously wrong. In the end, accepting the most graceful exit available, Khrushchev chose the fourth course.

Impact On Subsequent Soviet Strategic Policy

The Cuban missile crisis seems to have marked a major turning point in the pattern of Soviet policy for dealing with the strategic arms competition. Before Cuba, despite boasts of Soviet strategic strength and frequent recourse to missile diplomacy, the Soviet Union had devoted much less attention to creating genuine intercontinental striking power than did the United States. After the crisis, the Soviet Union embarked on a strategic buildup that was to produce during the next decade an unquestionably competitive strategic offensive arsenal of intercontinental range.

This before-and-after contrast has contributed to the widespread impression that the Soviet strategic buildup of the 1960s derived wholly or in large part from the embarrassment suffered in the Cuban showdown, and to the "never again" syndrome with which the Soviet leadership emerged from that unhappy experience. While it is doubtless true that the Cuban setback played a significant part in shaping subsequent Soviet strategic

policy, it might be a fallacy of misplaced causality to attribute the whole post-Cuban course of Soviet strategic policy to the Cuban episode alone.

Various signs suggest that a growing awareness of the need to improve the Soviet strategic posture had existed for some time before the collapse of the Cuban missile venture. For example, in 1960-61 a brisk internal dialogue among leading Soviet military figures focused on how to realign Soviet doctrine and posture with the "technical revolution" in military affairs, reflecting, among other things, concern over the strategic balance and questions like the vital importance of being in a position to seize the strategic initiative.[35] The Cuban missile deployment itself, as discussed earlier, may have represented a stopgap attempt to improve the Soviet strategic posture, pending the longer term buildup of the USSR's intercontinental forces. Most of the R&D programs providing the foundation for such a buildup had in fact started by the time the Cuban venture was conceived. Another indication that measures to strengthen Soviet strategic capabilities had acquired a high priority in the pre-Cuban period could be seen in the massive 1961 nuclear test series, which tested new warhead designs for missiles still under development and investigated such nuclear effects as EMP.

But, accepting that pre-Cuba trends paved the way for expansion of Soviet strategic programs later in the 1960s, there is little reason to doubt that the Cuban experience acted as a catalyst which brought to a head latent dissatisfaction with various aspects of Soviet strategic posture and lent fresh urgency to programs for competing more effectively with the United States in deployed strategic forces.

Lessons Drawn by Soviet Leadership

It is generally felt that the Cuban affair shook Khrushchev's standing within the Soviet leadership severely, providing his opponents--led by Frol Kozlov--with a new opening to challenge him on a wide range of issues, including de-Stalinization, party reform, and economic management, as well as strategic policy.* [36] Without trying to retrace the internal reaction within the higher echelons of the Soviet leadership which led to a substantial shift in the size and nature of subsequent Soviet strategic deployments, it may be useful to speculate briefly upon the lessons drawn from the Cuban crisis by the Soviet leadership that would appear to have had particular pertinence to Soviet strategic policy.

First, most of the Soviet leadership evidently came to the conclusion that a marked disparity between Soviet and American strategic power could no longer be tolerated. As previously mentioned, a "never again" mood seems to have been created by Cuba, and to have been translated into a resolve to catch up with the United States in strategic power by one means or another. Just where Khrushchev himself stood is not entirely clear, but the colleagues who succeeded him certainly set a high priority on the task of catching up.

Second, there arose the question of whether the existing Soviet strategic posture could ensure nuclear deterrence, even though the Soviets had the compensatory advantage of holding Europe hostage. And even if it felt on balance, that deterrence of nuclear war remained unshaken,

*As noted above, p. 349, Kozlov's stroke in April 1963 came at a fortuitous time for Khrushchev. It gave him a reprieve from internal pressure that might have brought about his ouster even sooner than actually occurred.

he Soviet leadership seems to have concluded that it had insufficient strategic assets to sustain Soviet political interests in an intense crisis.

A third and related lesson apparently was that major political effects derive mainly from deployed strategic forces, rather than, as previously assumed (or asserted), from demonstrated technological achievements. A corollary conclusion drawn from this lesson appears to have been that in order to be competitive on reasonably economical terms, a new and less costly ICBM system than any already in hand would have to be developed urgently.

Fourth, the Soviet leadership evidently emerged from the Cuban crisis with a fresh appreciation that nuclear threats and potential nuclear confrontations must be handled with great caution, especially in situations involving the vital interests of the United States. Although Khrushchev and other Soviet leaders continued to advance occasional claims that the USSR's "nuclear rocket might" served both to guarantee Soviet security and to avert aggression against third countries,* the use of nuclear coercion as a tool of Soviet diplomacy became notably more restrained after Cuba. Thus, in the war in Vietnam and the 1967 war in the Middle East, the backing furnished Soviet clients stopped well short of invoking nuclear threats.

Fifth, the collapse of the Cuban venture doubtless helped to persuade Khrushchev that a period of eased tension in U.S.-Soviet relations would be advisable while the Soviet Union decided how best to square the demands of expanded military programs with other claims on the Soviet economy.

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*Typical of Khrushchev's reluctance to abandon the diplomatic authority of Soviet missiles entirely were his remarks during a visit by Castro in January 1964. After noting that he had been criticized for emplacing missiles in Cuba and then "taking them away," Khrushchev said: "And we told the enemies of Cuba that if they butted in, our missiles would not necessarily have to be in Cuba. Our missiles will reach you at the farthest corner of the world from Soviet territory." Pravda, 18 Jan 64.

Khrushchev's successors evidently learned from his pre-Cuban strategic boasting, if not from the Cuban episode itself, that they should avoid high visibility for Soviet strategic programs, at least until the buildup began to approach parity with the United States.

Finally, although the Cuban experience may have contributed to a consensus within the leadership on the necessity for a strategic posture based on strategic superiority and forces adequate to ensure national survival if deterrence should fail, this apparently did not mean that agreement on a specific set of strategic R&D and deployment programs flowed automatically from such a consensus. Rather, it would appear that during the last 2 years of Khrushchev's tenure, when the post-Cuban strategic buildup got underway, considerable internal debate occurred over specific strategic issues, particularly procurement and deployment decisions involving large resources.

Start of the Post-Cuba Strategic Buildup Under Khrushchev

Khrushchev's position on the tempo of the post-Cuba strategic buildup and the specific programs that would be involved is not precisely known, although it is generally assumed that internal leadership pressures, together with external factors affecting the strategic power balance, persuaded him to go along with a more substantial set of strategic deployment programs than he would have preferred.

Perhaps the basic decision reached in the wake of the Cuban episode with regard to strategic programs was that the lion's share of effort and resources should go into third-generation ICBM systems, even though expansion of the existing deployment programs for the second-generation

SS-7 and SS-8 would have permitted an earlier buildup of deployed forces. As previously noted, the ultimate deployment ceiling for these two missile systems came only to about 220 launchers, most of them already under construction by the end of 1962.*

Evidently, the writing-off of the SS-7 and SS-8 as candidates for a significant role in the post-Cuba buildup occurred not later than the spring of 1963, for shortly thereafter new construction of launch sites for these missiles ended and construction crews were transferred to begin preparatory work on field sites for the SS-11 and the SS-9--the two leading candidates for deployment among Soviet third-generation ICBM systems.

SS-11 Program

The antecedents of the SS-11 program have never been entirely clear. Many analysts have tended to regard this as a "crash" program contrived on an urgent basis in 1962 immediately after and in response to the Cuban crisis.[37] The crash nature of the program was suggested by two unusual features: (1) It was developed by a special design team brought together in Moscow under the leadership of V.N. Chelomei, rather than by either of the established design teams of Korolev or Yangel;** and (2) despite a high initial rate of test failures, large-scale operational silo construction began early in 1964, more than a year before the missile was first successfully flight tested in April 1965, a departure from customary Soviet practice.***

*See above, pp. 379-84. The SS-7 deployment, largely completed in 1964, topped out at 128 soft and 69 hard launchers, while the SS-8 program was completed in early 1965, with 14 soft and 9 hard launchers deployed.

**For previous discussion of the work of missile designers S.P. Korolev and M.K. Yangel, see above, pp. 373-78.

***It should be noted that field site construction for the SS-7 had also been initiated considerably in advance of its first successful flight test. On the other hand, flight testing of both the SS-6 and SS-8 ICBMs, as well as the SS-9, slightly preceded the start of field site construction. See above, pp. 371 ff.

Some data, however, point to the origins of the SS-11 program in the pre-Cuban period, perhaps as early as late 1960 or early 1961, when plans were made to set up a new missile design bureau in Moscow headed by Chelomei, under whom, incidentally, Khrushchev's son, Sergei, worked as an electronics engineer.[38] The addition of facilities to house Chelomei's new bureau at the Fili aircraft plant No. 23 in Moscow, where the SS-11 was to be fabricated, began sometime in the latter half of 1962, which also might suggest that planning for the SS-11 project had begun prior to Cuba. But whatever its origins, the SS-11 program apparently took on fresh importance after Cuba.

Smaller than either the SS-7 or the SS-8, and in this respect also a departure from the "normal" progression of Soviet missile designs, the SS-11 appears to have been selected as the entry in a numbers competition in deployed launchers with the United States, whose MINUTEMAN ICBM program promised to establish the price for staying in the missile competition of the 1960s at something upward of 1,000 ICBMs. Although the characteristics of the SS-11* would not give it a counterforce capability against hard targets such as that possessed by the SS-9--another third-generation Soviet ICBM that would be available for deployment during the same period--the SS-11 had the virtue of costing only about one-third as much as an SS-9.

*The SS-11 was a liquid-fuel ICBM with a lift-off weight of about 120,000 pounds (compared with 70,000 pounds for the solid-fuel U.S. MINUTEMAN) and a payload of 1,500 to 2,000 pounds. The initial SS-11 design carried a warhead of about [redacted]

Thus, one may surmise, the SS-11 received a major role in the Soviet strategic buildup of the 1960s chiefly because it met the need for a relatively inexpensive means of competing in the ICBM "numbers game." How large a deployment of the SS-11s had been sanctioned during Khrushchev's tenure, however, is not known. If it is assumed that launch-site construction starts at 5 SS-11 complexes in 1964 represented the upper limit approved by Khrushchev,* then his program would have come to about 400. This would mean that the remainder of the SS-11 program, which brought the number of deployed launchers to about 1000 in the 1970s, resulted from further decisions by his successors.** [39]

SS-9 Program

A somewhat different set of considerations from those pertaining to the SS-11 probably applied to the SS-9 program.[40] Serious development work on this missile, essentially a scaled-up version of Yangel's SS-7 design, apparently began in 1960 or 1961 at Dnepropetrovsk. Its first flight test took place in December 1963, and construction of the first field launch sites began at 6 new complexes soon after. Initially, the SS-9 may have been conceived as a follow-on system to the SS-7, intended for mating with some of the large-yield warheads tested in 1961. What strategic requirements the SS-9 was originally expected to fulfill has never been entirely clear, although it is a plausible supposition that it--together with the abortive SS-10 system--may have been designed in response both to military requirements for a counterforce weapon capable of

*Allowing for lead time between program approval and start of construction, the decisions on the initial size of the SS-11 force presumably were made in 1963, possibly at about the same time that a revision of the Seven-Year Plan for the national economy (1959-1965) was taking place. For further discussion of the economic side of the strategic buildup, see below, pp. 506-08.

**For discussion of these decisions in 1965 and subsequently, see below, pp. 644-45.

attacking hard targets and to Khrushchev's demand for another dramatic symbol of Soviet strategic accomplishments.

However, after the 1962 Cuban crisis, when the Soviet leadership faced the choice of trying to catch up with the United States or remaining clearly inferior in deployed strategic forces, the question of where to fit the SS-9 into the deployment picture evidently had to be viewed in a new light. As the largest and most expensive missile yet developed by the Soviet Union, the SS-9* did not recommend itself as the choice for a numbers competition with MINUTEMAN--a role that went to the SS-11. For the SS-9 to have a significant place in the buildup, some other deployment rationale would be required.

There has been much debate as to what considerations led to eventual deployment of an SS-9 force of about 290 launchers--roughly one-third the number of SS-11 launchers but costing approximately the same. Some analysts have surmised that this deployment scheme may have derived from little more than bureaucratic convenience: That is, equal distribution of resources to the two systems and their respective missions, with the SS-9 intended to provide a counterforce capability, and the SS-11 providing large numbers of deployed launchers, whatever their counterforce potential, or in this case, lack of it.

It has seemed to other analysts, however, that Soviet planning for the SS-9 probably involved more than the simple expedient of a fifty-fifty budget split with the SS-11, particularly the decision on how many of the

*The SS-9, 4 successive versions or mods of which appeared during the 1960s, was a large missile with a lift-off weight of around 420,000 pounds, employing storable liquid propellant. The most powerful of the 4 versions (mod 2) had a payload in excess of 13,000 pounds, [redacted]

several versions of the SS-9 should go into the force mix. For Soviet planners in 1962-64, when post-Cuba strategic programs were up for decision, the SS-9 system offered a number of apparent advantages: (1) It was further along in development, with fewer failures in its test program than the SS-11, and hence could be seen as a hedge against the latter's early uncertainties. (2) As a large payload booster, the SS-9 had a better growth potential for numerous modifications and diverse applications than any other system at hand. (3) It would provide a large missile comparable to the U.S. TITAN II, thus affording the Soviet Union the option of matching or surpassing the United States in the heavy ICBM category. (4) Designed for silo emplacement, the SS-9 would be as survivable as the SS-11. (5) Finally, it was the only system under advanced development which would provide a counterforce capability against hard targets.

Of all the questions explored in analyses of the SS-9 program, perhaps the most controversial has been its counterforce implications. Although the SS-9 appeared to be a hard-target killer, and, judging from its firing azimuths, aimed at U.S. ICBM complexes rather than major urban centers, it would not be deployed in sufficient numbers to threaten more than a nominal portion (less than one-third) of the silo-based U.S. ICBM force.* Did this mean that Soviet planners judged the SS-9 to be too expensive to deploy in the numbers required to cover the U.S. force? Or, had they found a way that promised to do the job with the numbers of SS-9s they could afford to deploy?

It is generally supposed that cost dictated deployment and that Soviet planners got what solace they could from the thought that having half

*On the assumption that the number of aiming points to be attacked was the same as the number of individual U.S. launchers.

a loaf of counterforce, or less, was better than none at all. But there is also an argument that Soviet planners may in fact have believed that they had found an Achilles heel in the U.S. MINUTEMAN force that would permit disabling it with smaller numbers of SS-9s. The Achilles heel that might have been noted was the Launch Control Center--1 for each 10 missiles in a MINUTEMAN launch complex. Thus, an SS-9 force little more than one-tenth the size of the MINUTEMAN force at any given time might suffice, and this could explain the intended mission of some 250 SS-9 mods 1 and 2 that were eventually deployed.*

Soviet planners may have also entertained a variant of the Launch Control Center option for putting the MINUTEMAN force out of commission--the previously mentioned possibility of utilizing EMP effects against strategic command and control and missile guidance systems.**

Whether either of these ways of achieving a counterforce capability against the bulk of the MINUTEMAN force had actually become part of the rationale for the SS-9 deployment program may never be known. In any event, internetting and other measures later adopted by the United States in 1965-67 to reduce known vulnerabilities of the MINUTEMAN force may have served to weaken such a rationale, and to postpone the day when Soviet planners could hope to mount a significant counterforce threat against U.S. land-based missiles. Even so, by the late 1960s the SS-9 program had the

*Most of the SS-9s deployed were the mod 2 version, which had a [redacted] warhead, compared with [redacted] for the mod 1. The mod 3, designed to operate in a Fractional Orbiting Bombardment System (FOBS) or a depressed-trajectory mode, and the mod 4, a triple-warhead MRV version of the SS-9, would later be deployed only in small numbers.

**See above, pp. 485-87.

effect of prompting the United States to seek--via SALT--to dissuade the Soviet Union from further large-scale SS-9 deployment on the grounds that it would pose a potential first-strike threat that could upset strategic stability.

Other Strategic Delivery Programs

During the last years of Khrushchev's tenure, decisions also were made about several other strategic delivery systems--two of which were to play a part in the buildup of Soviet intercontinental strategic forces in the 1960s, and one of which was to be abandoned after a seemingly promising start.

The latter was Korolev's SS-10,* a third-generation ICBM about two-thirds the size of the SS-9. Since both missiles were developed at about the same time and entered flight test together at the end of 1963, they are presumed to be prototype competitors. Judging from the test facilities constructed for the SS-10 at Tyuratam in 1962-63, at least three basing modes appear to have been considered for the SS-10--fixed soft, silo, and perhaps rail mobile.

A decision to deploy the SS-10 may have been made not later than the fall of 1963; construction of SS-10 silos began in early 1964 at the test range and perhaps at two field complexes. One year later, however, the SS-10 program was abruptly terminated. Flight testing ended after a series of 10 apparently successful shots, the silos under construction were stopped, and the field sites were converted to house SS-9s. It has never been determined why the SS-10 program was abandoned, though perhaps the

*Some analysts believe this missile was a Chelomei design and used storable propellants.

explanation is that like earlier products of Korolev's design bureau, the SS-10 apparently depended on operationally unsuitable cryogenic propellants--thus providing grounds for backers of the rival SS-9 system to argue successfully for reversal of the SS-10 deployment decision.

This explanation rests on untested assumptions about bureaucratic interplay among the weapon design, procurement, and operations elements of the Soviet system. Here the assumption would be that while the Korolev bureau was influential enough in the R&D area to get its product accepted for deployment in the first instance, other elements with different organizational channels and interests in the operational realm, such as the strategic rocket forces, were later both willing and able to sidetrack the SS-10 in favor of its prototype competitor, the SS-9.[41]

Among the other new strategic delivery systems for which a place was found in the post-Cuba buildup of the Soviet strategic forces, was the SS-13, the Soviet Union's first solid-fuel ICBM. The decisions approving its development appear to have occurred during the 1963 reappraisal of Soviet strategic requirements, and construction of test facilities at Kapustin Yar began in mid-1964, followed early the next year by the building of similar test facilities at Plesetsk

Although the SS-13 compared more closely than any other third-generation Soviet missile in size and other characteristics with the solid-fuel U.S. MINUTEMAN, it evidently encountered technical problems in development that ruled it out as a post-Cuba choice for the numbers competition in deployed launchers. Its first known test flight did not take place until late 1965, with field construction of silos beginning a year later. This delay may

have prompted the increase in SS-11 deployment in early 1966. Proceeding at a modest pace thereafter, the SS-13 deployment program reached its final strength of about 60 silo-emplaced launchers at one complex in the early 1970s.[42]

Last among the new strategic delivery programs which began during the last years of Khrushchev's tenure came the Y-class submarine program, intended to give the Soviet Union a submarine-launched ballistic missile capability roughly comparable to the U.S. POLARIS. The decision to devote large resources to this program, which was to receive major emphasis in the Soviet strategic buildup of the late 1960s and early 1970s, evidently came not later than early 1963, when construction of shipyard facilities for building the Y-class submarines began at Severodvinsk

Preliminary design work on the Y-class may have been authorized as early as 1958,* but the go-ahead with development and production programs for the submarine and its associated missile system probably came at about the same time in 1963 that post-Cuba decisions bearing on the deployment of the SS-11 and SS-9 ICBMs were being thrashed out.

It is not clear whether the Y-class program gained its impetus primarily from the same post-Cuba syndrome that helped to spur the land-based ICBM buildup, or whether the Soviet naval command would have managed to make a case for trying to match the U.S. POLARIS fleet without the stimulus of Cuba. In any event, the Y-class submarine, equipped with 16 tubes for submerged launch of the 1,300-nautical mile SS-N-6 ballistic missile, became an important element of the Soviet strategic offensive arsenal from 1968 on, when the first unit entered operational service.**[43]

*See above, p. 372.

**The Y-class program was to be completed shortly after the 1972 SALT accords, with 34 in the Soviet SLBM force. By that time, the USSR also would have begun to acquire ballistic missile submarines of the more advanced DELTA classes.

Strategic Defense Programs[44]

Soviet strategic defense preparations in the last years of Khrushchev's tenure appear to have been less immediately affected by the Cuban experience than strategic offense programs, although some new deployment decisions bearing upon ABM defenses appear to have been made in the 1962-63 period.

The most vigorous air defense effort continued to be the extension and technical improvement of the SA-2 high-altitude surface-to-air missile system. Deployment of the low-altitude SA-3 system, on the other hand, proceeded slowly; indeed, this program came almost to a standstill in 1964, and was not resumed until 3 years later.* Meanwhile, the new Fiddler and Flagon A interceptor aircraft were nearing the end of the R&D cycle, but they would not begin to enter operational service in the PVO until 1965 and 1967 respectively.

The least well understood strategic defense program and one which apparently involved some initial deployment decisions in the immediate post-Cuba period, was the SA-5 or TALLINN system. The first elements of the SA-5 began to appear in the Baltic-Leningrad area in 1963, reaching operational status around 1966, while at the same time R&D work associated with the system -but only intermittently observed by the West-- continued. Whether the SA-5 was meant to have an ABM capability as well as an air defense mission is a question long debated in the West and still unsettled.**

*For previous discussion of the origins of these air defense missile systems, see above, pp. 364-65.

**For further examination of the possible roles of the SA-5, which eventually turned out to be one of the largest strategic programs undertaken by the Soviet Union in terms of numbers, see below, pp. 648-52.

If any aspect of Soviet strategic defense planning received fresh impetus from the Cuban experience, one might expect it to have been the ABM program. In 1962 the GRIFFON project at Leningrad was clearly over with, and Soviet effort had turned to the GALOSH system.* Unlike the SA-5, the GALOSH system's characteristics put it unambiguously in the ABM category. A decision to deploy the GALOSH system around Moscow evidently came not later than early 1962, judging from visible steps taken during that and the following year. Such steps included the start of construction of Triad guidance installations and Dog House acquisition and tracking radars in the Moscow area in 1962, and the beginning of work on Hen House early warning radars at four widely located sites in the USSR in 1963.

Although Khrushchev doubtless participated in the decision to deploy GALOSH, there was little sign that he sought to accelerate the deployment program in the wake of Cuba. On the contrary, the fact that construction of the first GALOSH launch site outside Moscow did not begin until early 1965, after Khrushchev's removal from office, might suggest that the program for deploying the world's first ABM defenses had run into some difficulty while he was still in office.** If so, one problem area might have been technical uncertainties whether the GALOSH could attain significant success against the U.S. missile threat. Another source of difficulty might have been the question of making large new commitments to strategic defense at a time when the competing resource demands for a buildup of strategic delivery forces were in the offing.

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*See above, pp. 365-66.

**Although the first few GALOSH launch sites became operational by 1967, the deployment program would be halted the following year and not resumed until after a 3-year interlude of intensive research activity, suggesting that Khrushchev's successors also had reason to be dissatisfied with the system.

Military Expenditures in Khrushchev's Last Years

During his final years in office, Khrushchev's attitude toward making the military expenditures required to improve the Soviet Union's strategic posture appears to have been ambivalent. Despite a professed desire to continue his earlier "economizing trend" in military spending, he apparently recognized the difficulty of doing so in the aftermath of Cuba. In an important speech on 27 February 1963, for example, Khrushchev acknowledged that consumer needs must yield to defense needs, and that very large military expenditures would be required to prevent the balance of power from passing to the enemy.

The following month, at a rare joint meeting of the Party Presidium and the Council of Ministers, it was announced that D.F. Ustinov, the Soviet Union's top defense production expert, would head a newly created Supreme Economic Council, and that his deputy would be L.V. Smirnov, also a defense-oriented administrator and chairman of the State Committee on Defense Industry. Creation of the Supreme Economic Council, which tended to reverse Khrushchev's economic decentralization measures, has generally been interpreted as one of the signs that Khrushchev's leadership authority was slipping badly in February-March 1963, while that of his rival, Kozlov, was on the rise.[45] The economic reshuffling which occurred at this time included revisions in the 7-Year Economic Plan, which still had 2 years to run. Conjecturally, it would appear that some of the revisions in the economic plan related to new defense planning decisions and were intended to accommodate increased military claims on resources, such as higher levels for deployment of third-generation missiles.

These developments suggested that Khrushchev had yielded to post-Cuba pressures for reorganization of the country's defense production effort, presumably aimed at strengthening the Soviet strategic posture. The latter point became somewhat more explicit in Khrushchev's private remarks to a Western diplomat in early March 1963, when the Soviet leader spoke of the burden of armaments and of having been obliged, reluctantly, to lay out large sums for a new strategic delivery system. Precisely which system he did not specify, but the two leading candidates at that point were the SS-11 and the SS-9, one or both of which he may have had in mind.[46]

Although Khrushchev had evidently concurred by early 1963 in a post-Cuba acceleration of some strategic programs, this did not show up immediately in Soviet military expenditures, at least if Western estimates of these expenditures are anywhere near the mark. In both 1963 and 1964, the overall level of military spending did not rise greatly above 1962. In the two basic strategic categories--offense and defense--the estimated allocations likewise showed no spurt over the 1962 levels; indeed, there was even a decline in the strategic offense category, as shown below:

ESTIMATED SOVIET EXPENDITURES[47]
(Billions of 1970 Constant Rubles)

	1962	1963	1964
Overall Military Budget	31.3	31.7	32.4
Strategic Offense	6.3	5.6	5.1
Strategic Defense	2.7	3.2	3.2

Although these figures do not seem to show any marked boost in the Soviet strategic effort during Khrushchev's last years this impression may be somewhat misleading In 1963 and 1964, the SS-11 and SS-9 programs

that were to become the backbone of the strategic buildup of the later 1960s were still mainly in the development and testing phase, with operational site construction just beginning in the latter year. The Y-class submarine program also was just getting underway, and in the strategic defense category, the principal new program requiring deployment funding, the GALOSH ABM system, had not yet reached the stage of launch site construction. Hence, the heaviest impact on the budget would not be felt until these programs attained large-scale procurement and deployment, which still lay ahead.

If these circumstances serve to explain the apparent plateau in strategic spending in 1963-64, it does not necessarily follow that the Soviet leadership during this period had already fully resolved such issues as the pace, eventual size, and costs of the future strategic buildup. Indeed, there is some reason to suppose that Khrushchev was troubled by the economic implications, in particular, of the buildup he had helped to set in motion, and which would call for a mounting commitment of resources in later years. In his memoirs, Khrushchev spoke regretfully of the reversal by his successors of the "economizing trend" he had sought to establish, commenting that the "new trend of military overspending is putting a pinch on some of the more important, but still under-financed, areas of our country's life."[48]

The particulars of any differences Khrushchev may have had with his military advisers and perhaps some of his political peers over the question of putting a lid on future strategic expenditures have not come

to light. However, such differences may have contributed to the coup to get rid of him in October 1964--which came just a month after he ha put forward long-term economic guidelines indicating that he was oppos to a major increase in military allocations.

Although the full extent of the impact of the Cuban missile crisi on Soviet strategic force decisions is not clear, it is evident that b the end of 1964 the Soviets were embarked on a major expansion of thei strategic offensive and defensive forces programs. The Cuban crisis h dramatized, painfully for them, the inferiority of the Soviet Union in nuclear offensive power. It must also have reinforced their earlier intentions to build up their intercontinental missile forces. By 1965 it became evident that the buildup would be more rapid and on a much larger scale than previously planned. Just as the U.S. buildup of mis forces after Sputnik represented a wide swing of the pendulum, so the Soviet buildup of missile forces after Cuba represented another wide swing of the pendulum of strategic competition.