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# Buying for the Cold War: Influences on Air Force Procurement, 1945-1956

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# BUYING FOR THE COLD WAR:

# INFLUENCES ON AIR FORCE PROCUREMENT, 1945-1956

by

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ABSTRACT

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Military planning and buying changed dramatically after World War II as more attention and resources were applied toward the development of a strategy that made air power the center of strategic thinking. Nevertheless, when by 1947, aircraft production dropped so low as to threaten the viability of the aircraft industry, President Truman formed the President's Air Policy Commission, which spawned a cooperative effort between government and industry.

The relationship between government officials, particularly in the military, and industry executives became so close in the next decade that the health of the aircraft industry became linked with that of the military. Procurement of aircraft by the United States Air Force was affected by several factors, such as strategic thinking, government and institutional influences, and technological advances. This study investigates the relationship between the aircraft industry and what role air power played in Cold War strategy, by examining the procurement process, threat assessment, institutional behavior, and corporate profits. Procurement was affected by two main factors, first, the Soviet threat demanded the United States build up forces with the latest and best equipment, and second, advancements in technology grew in leaps and bounds, driven by the perceived Soviet threat, and prospects of lucrative rewards to risk development cost.

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# CHAPTER I

## INTRODUCTION

The relationship between the Air Force and the aircraft industry during the Cold War influenced the procurement process and convinced administration leaders to create a national policy that relied heavily on the use of air power to achieve foreign policy objectives. Faced with the dilemma of how to protect the nation from a threat traditional ground and naval forces were unable to meet, because of political and economic considerations, government leaders searched for alternatives. Air Force leaders contended that aerial bombardment was the most expedient method for containing the Soviet Union. However, the Air Force and the aircraft industry lacked the resources to fulfill the mission because of the demobilization following World War II.

The postwar years for the aircraft industry were difficult as production of aircraft dropped from thousands of units a year to a few score. The difficulties aircraft manufacturers and the desire of the government to have at its disposal an industry that could outproduce the Soviet Union presented a unique opportunity for peacetime military and industry cooperation. The relationship that developed between military and aircraft industry leaders linked the health of one with the other. Air Force leaders feared free enterprise would not insure the survival of the aircraft industry, and without a viable industry to produce weapon systems the Air Force would not be able to perform its mission.

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The journal consulted for this thesis was *A Manual for Writers*, Sixth Edition, by Kate L. Turabian.

The United States Air Force's procurement process during the early Cold War years, shaped by strategic thinking, technological advances, and government and institutional influences, represented a transition in national policy. Strategic thought precluded economic concerns as Air Force leaders saved the fledgling aircraft industry by underwriting all the costs associated with developing weapon systems that demanded innovation and the creation of new materials. The extraordinary amount of money spent on aircraft production highlighted the relationship between the Air Force officers and industry executives and prompted investigations into the procurement process by Congress. Technological development expanded strategic thought and provided an effective means for containing the Soviet Union and addressing sceptics' objections to an air power-based policy.

Strategic bombing, considered by Air Force leaders the most effective means of bringing the war to the enemy, dominated air power policy making. During World War II military leaders, as did the Soviet Union, considered large numbers of aircraft preferable to a few technologically superior aircraft. The vast quantities of planes put in the air rather than the quality of the aircraft determined air superiority. For example, Germany produced and put into service jet aircraft that were superior to anything the Allies could put into the air. Nevertheless, the Allies produced and sustained deliveries of aircraft in such large numbers that Germany could not withstand the onslaught of overwhelming destructive force. The United States continued to be more comfortable with its ability to produce large quantities of aircraft rather than devoting resources to aircraft that were more capable, intricate, and costly. Nevertheless, the implementation

of incremental refinements on existing technology, such as the Norden bomb sight and use of supercharged engines, allowed the United States to maintain a position of leadership in arms development and continue to deliver large numbers of aircraft with a short lead time. Air Force leaders continued to believe even after the introduction of the atomic bomb, that numerical superiority in aircraft would allow them to overpower the enemy. However, the introduction of jet engine technology forced the Air Force to reexamine the efficacy of its position. Leaders began to recognize that their forces would have to do more with fewer resources.[1]

The Cold War presented air power advocates with the opportunity to capitalize on World War II successes and overcome years of scepticism about the value of air power as the center of a strategic program. During World War I air power contributed tangentially to the war effort. Leaders rejected plans for widespread strategic bombing and relegated air power to reconnaissance missions. A notable exception to this policy occurred near the end World War I, when fifteen hundred planes used large formations to attack German ground forces, airfields, and communications. The attacking groups suffered heavy losses but maintained control of the air and inflicted heavy damage on the Germans. The success of these attacks helped support the notion that strategic bombing, attacks aimed at industrial centers that in effect cut off supply lines at their origin, could be effective in crippling the enemy's war effort.[2] Nevertheless, air power remained a

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[1]Lawrence Freedman, *The Evolution of Nuclear Strategy* (London: St. Martin's Press, 1993), 22-24; Richard Crockatt, *The Fifty Years War: The United States and Soviet Union in World Politics, 1941-1991* (London: Routledge, 1995), 141.

[2]Michael E. Brown, *Flying Blind: The Politics of the U.S. Strategic Bomber Program* (Ithaca: Cornell University Press, 1992), 30-35; I.B. Holley Jr., *Ideas and*

secondary consideration in planning for future wars and military development continued to be stymied by lack of doctrine.[3]

American air power evolved around three issues during the interwar period: bureaucratic autonomy for Army aviators, development of strategic bombardment doctrine; and deployment of long range bombers. The traditional military establishment opposed these ideas because a new bureaucracy would compete for scarce military resources and eliminate its control over air operations. Leaders in the Army and Navy recognized the importance of bombers, but they did not agree with radical proponents of bombardment that bombers were a strategic end unto themselves. Traditional military leaders viewed bombers as an integral part of their own defense program and did not want to relinquish any of their arsenal to others. Nevertheless, bombing proponents received more autonomy allowing them to stylize a bombing doctrine and formulate the requirements for a bomber acquisition program. Army aviation began to receive recognition with the establishment of the Army Air Corps in July 1926. However, due to limited expenditures and autonomy during the 1920s and early 1930s the Army Air Corps (AAC) failed to develop and procure the long range, high speed bombers they hoped to deploy.

Undaunted, the Air Corps continued to develop plans for strategic bombardment and specifications for bombers, while neglecting the role fighter aircraft would play in the future because it would drain resources away from bomber development. By 1935,

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*Weapons* (Washington, D.C.: Office of Air Force History, 1983), 30-64.

[3]Holley, *Ideas and Weapons*, 159.

the AAC had designed and built a plane, the B-17, that met its requirements for attacking economic and industrial centers. The Corps lobbied, unsuccessfully, for a significant order of sixty-five B-17s, but the War Department balked at the request urging the AAC to buy a more versatile, yet less capable aircraft for strategic bombing. The AAC demanded bombers possess "impressive range, speed, altitude, defensive armament, payload, and bomb delivery capabilities," but in many cases the "doctrine called for new technologies and new weapon systems" to be developed before the doctrine could be implemented.[4] Air Force leaders in the 1950s found themselves in a similar position of requiring the aircraft industry to become innovative to meet the increasing demands of doctrine, which was an unrealistic approach to development when considering the technological that had to be overcome. The primary difference between the periods was that the Air Force during the 1950s had the resources to underwrite research and development programs, limiting the financial risk to the aircraft industry. Support in Congress and the fear the Soviet Union would gain an advantage in combat aircraft encouraged rapid development of new weapon systems. The lack of support for advanced aircraft forced the AAC to accept incremental change in planes and powerplants, where the Air Force, because of the increasing Soviet competition, demanded major breakthroughs to meet minimum requirements that would allow the United States to prosecute a war from its shores.

Strategic bombardment theory solidified by 1935 and consisted of five main points. First, the AAC maintained that bombardment was the most dominant component

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[4]Brown, 45-47.

of air power and that air power was a decisive force in warfare. Second, attacking the enemy's infrastructure and economic capabilities was one of the most effective methods of undermining war making capabilities. Attacking military positions was only vital in the effort to maintain control of the air. For example, the AAC would focus attacks on air defenses, air fields, and aircraft only if it proceeded to further the attainment of destroying primary targets. The AAC feared that if attacks were concentrated on the battlefield the role of bombardment would become tactical in nature and succumb to the entanglements and influence of Army commanders on the ground, a problem air power proponents faced repeatedly.[5] Third, critical centers were targeted for bombardment. The AAC insisted that by thoroughly bombing key areas, the enemy's economy would crumble. Then, under the crush of air power, the enemy's leaders would be inclined to submit to the will of the United States. Fourth, pinpoint accuracy was required for bombing the well-defined targets. As a result, planes would be forced to make daytime bomb runs with bomb sights that could meet the demands of precision. No bomb sight existed that could meet the requirements of pinpoint bombing. Nevertheless, doctrine was not held back by what was unavailable. Finally, the AAC argued that high performance bombers could penetrate deep into enemy territory without the need of fighter escorts. Corps leaders believed that bombers would be able to defend themselves with formation flying and that many of the deadly air defenses would be eliminated by bombing early in the war. The sense of invincibility led the AAC to put little effort into

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[5]Ibid., 48.

a fighter escort program, "a decision many bomber pilots would rue in 1942 and 1943."[6]

As America prepared to enter World War II, the AAF had been able to attain autonomy and establish strategic doctrine that influenced the relationship between the AAF and aircraft manufacturers throughout the war and beyond. In June 1941 the AAC was replaced by the Army Air Forces (AAF) which reflected the widening activities of the AAC and a desire to establish an autonomous body that could be compartmentalized within the Army's bureaucracy. "The chief of the AAF was placed in charge of all Army aviation plans, policies, programs, and perhaps most significant, operational commands." One of the first tasks for the AAF was responding to a presidential request for an outline of the operational and production requirements in case of war. The proposed plan concentrated the daytime bombing effort on German air force bases and aircraft factories first, then directed the campaign to attack air defenses and industrial centers. The doctrine maintained that "by employing large numbers of aircraft with high speed, good defensive-firepower and high altitude, it is feasible to make deep penetration into Germany in daylight." The only variation from traditional air power thinking was the inclusion of a long-range fighter escort that was to be developed with urgency, because the British experience showed that bombers alone could not be defended without escorts.[7]

Interwar thinking had discounted the use of jet engines for aircraft. The United

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[6]Ibid., 48-51.

[7]Ibid., 60-61. Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1907-1960* (Maxwell Air Force Base, Alabama: Air University Press, 1989), 1-12, 61-108.

States did not begin to test the concept until the British showed General Hap Arnold a version of a jet engine in 1941. Arnold had one of the jet engines shipped back to the United States from Britain, but the emphasis in research concentrated on the piston engine. The jet engine was considered too complicated and inefficient when compared to the piston engine. Leaders argued, it was a waste of time and resources to attempt to develop a propulsion system that was not practical. As a result, throughout World War II the jet engine continued to be developed by the United States but it never received top priority because of wartime economic constraints[8]

One of the shortcomings of the Army Air Corps and Army Air Forces was the lack of an internal scientific office within the organizations. Most officers had little training in engineering, which left a large gap between those who flew and commanded the aircraft and the engineers who designed and built them. The Germans, unlike the Americans, had very close ties among the aircraft manufacturers, scientific community and military. This relationship enabled the Germans to fly successfully a jet prototype a short time before the start of hostilities in 1939, and deploy an air superiority fighter before the end of the war in 1945.[9] The AAC was a young organization, under tight financial constraints, and did not have the organizational resources the Air Force attained in the late 1940s and 1950s after the major military reorganization. Nevertheless,

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[8]I.B. Holley, "Jet Lag in the Army Air Corps," in *Military Planning in the Twentieth Century: Proceedings of the Eleventh Military History Symposium, USAF Academy, 10-12 October 1984*, ed. Harry R. Borowski, Department of History, United States Air Force Academy, Office of Air Force History, United States Air Force (Washington, D.C.: U.S. Government Printing Office, 1986), 134-38.

[9]Ibid., 137.

General Arnold's recommendation to study jet propulsion showed leadership in forging the future in an atmosphere where most were considered to be technologically myopic.[10]

United States designers pursued the development of a jet engine because they feared being behind the Germans technologically without having an adequate research and development program. Intelligence reports about the Germans' production of jet fighters forced the Army Air Forces in 1943 to begin development of a powerful jet engine for a bomber. The initial phase of the development program proceeded well because the AAF had maintained past policies and followed a sequential procurement policy where prototypes were designed, built, flown, and the final decision to build was based on comparative flight testing.[11]

Military leaders faced problems moving from propeller to jet planes, due in part to the shift from a sequential to a concurrent procurement strategy. Sequential strategies are based on the presumption that development programs are infused with technological uncertainties that are resolved by progressing in an orderly, sequential procedure. The various stages of development are not compressed and do not overlap. Efforts are made to develop and test systems thoroughly before the decision is made to start production. Prototypes are built during the development phase and, if possible, competing models are tested against each other. Final designs and program schedules are kept flexible throughout development testing. The tests provide decision makers information that are based on solid facts on which they can base their production decisions. Funding is kept

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[10]Ibid., 124-31, 141-45.

[11]Brown, 69-72.

at a minimum during development to prevent procurement from gaining momentum and to keep costs in check. Troubled projects have a tendency to continue when large amounts of money are invested and the hope of a return on investment is imminent. To prevent troubled projects from going on too long, production decisions are made based on development results and a clear line is established between production and development.[12] The B-47, for example, developed under the sequential strategy of procurement was considered a success from cost, schedule, and performance standpoints.

Nevertheless, the Air Force needed to accelerate the rate at which new weapon systems were put into service and changed its procurement policies to a concurrent plan. Under the concurrent policy, production began before the completion of all testing, which theoretically allowed planes to enter service faster than the sequential policy where production did not begin until most of the imperfections had been worked out and the plane proved it could accomplish the assigned mission. Air Force leaders gambled that costs would not increase when they produced planes while the prototypes were still under development. The acceleration created a serious problem in the production phase, such as forcing contractors to rework planes already in production or finished, which increased the cost of procurement.

Air Force leaders, in July 1946, based their decision to accelerate production using the concurrent strategy on three considerations. First, advances in fighter capabilities "were making older, propeller-driven bombers obsolete." The AAF had begun development of high performance fighters at the end of World War II and

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[12]Ibid., 17-18.

understood that future advances mandated the development of high speed bombers as a countermeasure. The limits on how much the older bombers that were stockpiled after the war could be modified and improved were being reached and the modified bombers did not meet the requirements of the defense plan. Thus a push was made to accelerate programs that were already under development.[13]

Second, the Soviet Union made use of the technological windfall of captured German aircraft facilities it had shipped to Russia and built with the aid of German engineers and technicians. The Soviets' once primitive air defense system became formidable. In April 1946 the first flights of two jet fighters, the Yak-15 and MiG-9, occurred with the aid of captured German weapon systems and facilities. The AAF had studied German technology at the end of hostilities and suspected that the Soviet Union possessed advanced fighters, swept wing, and turbo jet technologies, which were used to create the MiG-15. The capture of German lands, which included 80 percent of the aircraft production facilities, entire weapon systems, 300,000 aircraft workers, technicians, and air research staff, had been lucrative for the Soviet Union. Military leaders feared the Soviet Union would take the lead in developing new weapon systems because of the aid provided by German technology and the lack of resources being applied by the United States. The AAF established performance standards for jet bombers in 1944 when the future of war and technology was unclear. The standards remained constant until the Air Force became an independent service and technological advancements provided more options. Third, postwar relations with the Soviet Union

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[13]Ibid., 92.

deteriorated. As a result, the AAF ascertained that to stay ahead of the Soviets the United States must not only have a jet bomber in development but in production. Jet bombers became the centerpiece of future conventional and nuclear missions.[14]

The Air Force and its predecessors played a dominant role in the development of the jet bomber program. The AAC and AAF took the lead in approaching manufacturers about the project. The main concerns were strategic, rather than economic, for formulating policy and doctrine for bombers. During the early Cold War years leaders pushed the procurement process by calling for new technologies to be developed rather than relying on existing technologies. However, problems occurred when production accelerated before all systems were proven. Subsystems failed to operate as desired or needed and the jet bomber program fell into disarray.

Instead of recognizing the failure of the system and reverting to a proven method, the Air Force rewarded the defect, institutionalizing the flawed policies in future programs because of parochial bureaucratic interests. According to Morton Halperin, core bureaucratic interests included preserving main missions, enlarging mission capabilities, expanding departmental budgets, increasing autonomy, increasing morale by staying included in important national activities and providing appealing career prospects, and increasing political influence, which allows the organization to pursue its goals more effectively.[15] Strategic bombardment, for example, is a core mission for the Air Force, consequently a high priority is having a bomber program in the procurement

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[14]Ibid., 93-94.

[15]Morton Halperin, *Bureaucratic Politics and Foreign Policy* (Washington, D.C.: The Brookings Institution, 1974), 71-93.

process whenever possible.[16]

Technological development produced advancements in design and performance that were better than or equal to the effort put into them. For example, by concentrating on the new technology of jet engines instead of the existing technology of piston engines designers achieved greater performance. The new technology was more expensive, but the benefits still outweighed the costs. By the mid-1950s the aerospace industry began to ignore the cost-benefit side of the equation, and instead pursued rapid technological advancements regardless of costs and in some cases without thorough testing, because the military paid the bills and demanded progress. Defense contractors concentrated on new products for military consumption as a debate surfaced over military expenditures, and what steps the United States should take to stay ahead of and control the Soviet Union. For example, the United States initiated studies such as Project Control that attempted to develop methods of managing the Soviet Union through the use of overwhelming air power.

Policy leaders came into question when lawmakers could not determine if security recommendations came from the military or the companies that supplied the military. Lawmakers voiced these concerns during hearings that investigated the B-36 bomber program in 1949 and the entire aircraft industry in 1955. Some in Congress considered aircraft companies' profits excessive and thought companies' lined their pockets and insured their future at the expense of the taxpayers. Congress was in a position to spend more peace time dollars on the military than any previous congress had,

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[16]Brown, 7.

but they had an unclear view on how best to manage military spending. Before World War II the military was relatively small and the procurement policies had little impact on the economy. At the height of the war the military consumed up to 42 percent of the gross national product (GNP) and more than 85 percent of the national budget. Instead of returning to a small force at the end of hostilities, the military budget remained a significant portion of the national budget. For example, in 1946 defense spending was 72 percent of the national budget, hitting a low of 30 percent in 1950 and increasing to 66 percent in 1954.[17]

As the United States rapidly demobilized after World War II, the aircraft industry became financially fragile because orders for planes dropped from thousands of units to a handful. The military could no longer rely on free enterprise to meet its needs, since there was little capital available in the aircraft industry. Therefore the military developed an industry primarily dedicated to supplying the military. The goods supplied became more complicated and exotic, consuming greater numbers of engineers and technicians devoted to developing and manufacturing materials for war. The result came to be known as the military-industrial complex (MIC).

Literature concerning the MIC debates two main arguments. The first contends that large sums of money spent on the military weaken the economy and serve no productive purpose. A large number of individuals dedicated to scientific and engineering research for the military drained resources from the economy that could not

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[17]John Lewis Gaddis, *Strategies of Containment: A Critical Appraisal of Postwar American National Security Policy* (New York: Oxford University Press, 1982), 359.

be used to further their social aims, e.g., building better roads and bridges, developing new drugs and cures. Finally, the military itself was corrupted by the MIC, accepting weapons that were useless or unneeded, thus corrupting the military ethic of dedication to the country for devotion to the business ethic. For example, jobs provided by MIC corporations after leaders retired from the military are considered a payback for sending contracts to companies while they were in the military. The corporations that worked for the military became defacto corporate welfare recipients.

The second argument contends that far from draining resources from the economy in minds and material, the technological advancements made by the military eventually spun off to the private sector. Furthermore, there would not be many of the advances enjoyed by society as a whole if not for military development. Business would not risk the capital needed to develop many of the products that came about only as a byproduct of military efforts. The personal computer (PC), for example, would not be prevalent today because no company devoted to the private sector had the need for the technology that, as a byproduct, produced the PC. Other examples included light material, composites and the space program. Lastly, the MIC produces jobs that direct transfer payments fail to create.

While many of the observations on the MIC were astute, some of the harshest critics have overstated the case. The following books discuss the development of the MIC and its influence on military procurement. Paul Koistinen in *The Military-Industrial Complex* describes how the business military relationship denigrates professionalism. The power elites, bankers and industrialists, dominate the government

and control the military. The elites rely on economic prosperity and growth to solve problems, and maintain an economic empire abroad. The military, in its close association with business had unwittingly expanded its role within the MIC, becoming dependent on business. The outgrowth of the relationship is that the Cold War tensions were increased by the MIC instead of decreased as intended.[18] Koistinen's views can be bolstered by the numerous examples of top Air Force officers migrating from the military to industry after retirement. Some in Congress feared that the money being paid by aircraft companies to former military personnel weakened the military by drawing talented people out of the service, or as a payoff for support of a company while in service, or to use an officer's influence in the procurement process. However, investigations by Congress into the practice of hiring former military personnel failed to produce examples of irregular hiring. Furthermore, the aircraft industry needed experts with practical experience and knowledge of weapon systems the Air Force might want in the future. To avoid the appearance of impropriety aircraft companies took measures to insure former officers were not involved in the procurement process although the amounts paid still troubled those in congress.[19] Robert W. DeGrasse contends that regardless of the economic spinoff, the military may contribute it does not make up for the opportunities lost to private investment. Military expansion destroyed the economy because those industries that served only the military were less productive than those that were not involved with the military. Since a large portion of industry was dedicated to

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[18]Paul A.C. Koistinen, *The Military-Industrial Complex: A Historical Perspective* (New York: Praeger, 1980).

[19]"Hebert Demands Plane Pay Inquiry," *New York Times*, 25 February 1956, 38.

the military, the overall technological innovation had decreased because military spending was an inefficient way of developing new products and the emphasis was placed on high performance rather than low cost.[20] DeGrasse is correct in asserting that military and government spending are not efficient in bringing about technological innovation. Bureaucracy within the government has generally been more bloated and inefficient than business. However, government has the ability to absorb costs of projects that might result in a technological dead end. Private companies would be financially wiped out if even a portion of a large project failed to produce as expected and private capital seeks the most secure ventures. Without government expenditures on major technological innovations many consumer spinoffs would be delayed until enough capital could be gathered to venture into high risk areas.

Gregory Hooks argues that the state's relationship with society fundamentally changed during and after World War II. Firms that expanded during the war came out dependent on the government for their continued survival, and he suggests that mobilization of the economy for World War II replaced the New Deal state with the national security state. That these firms continued to exist was based on government planning for needs that were outside the consumer driven economy. The power elites did not drive the formation of the MIC but the need to develop a strong defense in response to the threat presented by the Soviet Union.[21] Hooks tends to overlook the influence of

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[20]Robert W. DeGrasse, Jr., *Military Expansion, Economic Decline: The Impact of Military Spending on U.S. Economic Performance* (Armonk, NY: M.E. Sarpe, 1983).

[21]Gregory Hooks, *Forging the Military-Industrial Complex: World War II's Battle of the Potomac* (Chicago: University of Illinois Press, 1991).

tax law during World War II on the financial health of the aircraft industry. Aircraft companies had a more difficult time retaining profits than established industries. First, prewar profits determined how much profit a company could retain during war. Aircraft companies had small prewar profits compared to established industries, and they received higher windfall tax rates. Coupled with rapid expansion, companies within the aircraft industry failed to retain enough profits to continue operations during rapid postwar demobilization. The United States could not risk the collapse of an industry that would be needed in the next war and it took measures to assure there would continue to be a viable aircraft industry.

Ann Markusen examines the transitions companies made from hot war to the Cold War. The aircraft industry coped with going from a period of rapid expansion to a period when all business was at a standstill. Commercial orders did not fill the gap created by the loss of wartime demand. The companies that had become rich from wartime production could survive only if the government revived a strong air power policy. Cold War orders for military goods were not just for planes, but for complete weapon systems, and were so large that by 1958 the aircraft industry was employing as many people as it had during World War II. Communities such as Los Angeles catered to industry and military needs and desires. What was good for the military was not only good for the aircraft industry but was vital to the survival of the entire community that supported the industry. Once there were enough communities in the position of having to rely on military activities for their survival, pressure placed on Congress kept the flawed system going. The manner of competitive practices was one of the system's

flaws. Contracts were awarded on non-price competition to the company that was able to demonstrate competence and the ability to develop the product. The company was guaranteed a certain profit for doing research and development. The government assumed all the financial risk, leaving little incentive for the company to control costs. After the R&D process was complete, the government absorbed above normal development costs and weapon systems that failed to meet expectations.[22] Markusen's observations are astute, however, her implication that the competitive practices used by the military were flawed is severe. Congress investigated the policy of using negotiated contracts over competitive bids as the primary method of buying major weapon systems and made few changes to procurement practices. Industry and government officials' prevailed in arguing the impracticality of using the same procurement practice for large complicated weapon systems as for buying commodities. While it is true that the government assumed most of the financial risk for new projects, aircraft companies faced the possibility of losing money on contracts if their performance did not meet expectations.

The previous authors dealt with the military-industrial complex as a whole and in general without highlighting specific programs or systems, the following books deal with the specifics of the aircraft industry and procurement problems. Charles D. Bright, for

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[22]Ann Markusen and Joel Yudken, *Dismantling the Cold War Economy* (New York: Basic Books, 1992); Ann Markusen, Scott Campbell, Peter Hall, and Sabina Deitrick, *The Rise of the Gunbelt: The Military Remapping of Industrial America* (New York: Oxford University Press, 1991). For an additional view that coincides with Markusen, see Henry O. Steckler, *The Structure and Performance of the Aerospace Industry* (Berkeley: University of California Press, 1965).

example, looked at the aerospace industry's process, problems and progress by examining specific programs and systems. Instead of judging the relationship between the government and industry as good or bad, Bright evaluated the problems and successes each had and strove to analyze the origins of each. Friction between what pilots wanted and industry provided played a pivotal role in modifying future aircraft. Nevertheless, the aircraft industry had to satisfy multiple aims and desires within the military organization.[23] Budgets, timetables, special requirements, and changes in the manufacturing processes made managing the entire development process a challenge, necessitating close cooperation and compromise between the military and manufacturers. The President's Air Policy Commission, formed in 1947 by Harry S Truman, examined the readiness and ability of the aircraft industry to meet future military needs. Policies in the report encouraged a closer relationship between the government and industry. *Sabot High Speed Interceptor Aircraft Design*, by Dave Dober presents examples of cooperation and problems between the military and aircraft designers during the developmental process. Lack of longstanding technical expertise within the Air Force hindered progress in overcoming obstacles.[24]

The line between strategy and tactics began to blur, from the view of the military

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[23]Charles D. Bright, *The Jet Makers: The Aerospace Industry from 1945 to 1972* (Lawrence: Regents Press of Kansas, 1978). For an analysis of the industry through World War II, see Jocob A. Vander Meulen, *The Politics of Aircraft: Building an American Military Industry* (Lawrence: University Press of Kansas, 1991). For a competent overall view of aviation see Roger E. Bilstein, *Flight in America, 1900-1983* (Baltimore: Johns Hopkins University Press, 1984).

[24]Dave Dober, *Sabot High Speed Interceptor Design* (Monterey, CA: Naval Post Graduate School, 1994).

services, as technology allowed the production of multi-role aircraft. *Flight in America, 1900-1983*, by Roger Bilstein, follows the development of flight, highlighting important transitions and grouping breakthrough periods. Robert Futrell's *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1907-1960*, is a comprehensive history that analyzes the progress of the Air Force from infancy to autonomy, and the role air power played in influencing planning. In *Aviation: An Historical Survey from its Origins the End of World War II*, Charles Gibb Smith gives a cursory examination of aviation development, touching on highlights and problems facing flight. Bill Gunston discusses problems in the designs of early *Supersonic Fighters of the West* and asserts that the search for speed occurred out of habit rather than for tactical reasons. For example, most dog fights occurred below 20,000 feet and under 500 mph even though both combatants possessed more capable planes. Robert Jackson's *F-86 Sabre: The Operational Record*, and Mike Spick's *Designed for the Kill: The Jet Fighter, Development and Experience*, take a "nuts and bolts" approach to how aircraft are designed and modified to meet changing needs and adversaries. The changes in development provided the Air Force with multi-role aircraft that could serve in close air support and strategic bombing roles.[25]

A review of the literature finds that the following sources deal with the economic

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[25]Bilstein, *Flight in America, 1900-1983*; Futrell, *Ideas, Concepts, Doctrine*; Charles Gibb Smith, *Aviation: An Historical Survey from its Origins to the End of World War II* (London: Her Majesty's Stationary Office, 1970); Bill Gunston, *Early Supersonic Fighters of the West* (New York: Scribner, 1975); Robert Jackson, *F-86 Sabre: The Operational Record* (Washington, D.C.: Smithsonian Institution Press, 1994); Mike Spick, *Designed for the Kill: The Jet Fighter, Development and Experience* (Shrewsberry: Airlife, 1995).

implications of defense spending. John Boies, for example, argues that by monopolizing scientific and industrial resources the military undermines society in *Buying for Armageddon: Business Society and Military Spending since the Cuban Missile Crisis*, because resources were not used in an efficient manner as they would be in the private sector. David Horowitz edits a series of essays connecting corporate America to foreign policy and the effect it had on the Cold War in *Corporations and the Cold War.* Meyer Jacobstein analyzes who makes a profit from war in *Effects of the Defense Program on Prices, Wages, and Profits.* Robert Lotchin argues that urban communities economies were based on meeting all the needs of the military in *Fortress California, 1910-1961: From Warfare to Welfare.* Alex Mintz uses a political science perspective to explain military spending in *The Political Economy of Military Spending in the United States.* A good history of government buying habits is presented by Marton Peck in *The Weapons Acquisition Process: An Economic Analysis.*[26]

The following books look at the aircraft industry from the perspective of policy. Jacob Vander Meulen traces the origins of the military-industrial complex and the relationship to politics. He contends in *The Politics of Aircraft: Building an American*

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[26]John Boies, *Buying for Armageddon: Business, Society, and Military Spending Since the Cuban Missile Crisis* (New Brunswick: Rutgers University Press, 1994); Meyer Jacobstein and Harold G. Moulton, *Effects of the Defense Program on Prices Wages, and Profits* (Washington, D.C.: Brookings Institution, 1941); David Horowitz, ed., *Corporations and the Cold War* (New York: Monthly Review Press, 1969); Roger Lotchin, *Fortress California 1910-1961: From Warfare to Welfare* (New York: Oxford University Press, 1992); Alex Mintz, *The Political Economy of Military Spending in the United States* (London: Routledge, 1992); Marton J. Peck, *The Weapons Acquisition Process: An Economic Analysis* (Boston: Harvard University, Graduate School of Business Administration, 1962).

*Military Industry*, that competition within the aircraft industry was in place because of congressional political objectives. William White addresses the problem of rising costs for new tactical aircraft in *U.S. Tactical Air Power: Missions, Forces, and Costs*. George Quester examines air defense policy in *Deterrence before Hiroshima: The Airpower Background of Modern Strategy*, contending that attempts to defend against bombers is not a new problem and the strategies used to defeat aircraft are rooted in pre-World War II thought.[27]

To summarize, in the decade that followed World War II, the Air Force gained its autonomy and received funding to implement its plans to make air power the center of national defense policy. The Air Force built its sophisticated planes but this was not the solution to all defense problems, as Robert Futrell noted:

> the U.S. Air Force equated air power with strategic air striking power--bombs on target--preferably nuclear bombs on the enemy heartland targets. . . . The years 1945-1962 were the days of glory for the U.S. Strategic Air Command (SAC). . . . Acceptance of a bombs-on-target concept of air power strapped the Air Force into a lone wolf configuration poorly prepared for the requirements of war and confrontation in the years following the Cuban missile of 1962.[28]

In 1946 the Soviet Union was the most likely country to be a threat to the United States while the free world forces were in turmoil. The atomic stockpile was small with

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[27]Vander Meulen, *The Politics of Aircraft*; William White, *U.S. Tactical Air Power: Missions, Forces, and Costs* (Washington, D.C.: Brookings Institution, 1974); George H. Quester, *Deterrence before Hiroshima: The Airpower Background of Modern Strategy* (New York: John Wiley & Sons, 1966).

[28]Robert F. Futrell, "The Influence of Air Power Concept on Air Force Planning, 1945-1962," in *Military Planning in the Twentieth Century: Proceedings of the Eleventh Military History Symposium, USAF Academy, 10-12 October 1984*, ed. Harry R. Borowski, Department of History, United States Air Force Academy, Office of Air Force History, United States Air Force (Washington, D.C.: U.S. Government Printing Office, 1986), 253.

only 2 warheads in 1945, 9 in 1946, 13 in 1947, 50 in 1948, and 250 in 1949. Before the end of the decade the United States atomic threat was hollow.

> Air Force planners did not grasp distinctions between defense, deterrent, let alone detente usage of military power. Air planners rationalized that the deterrent capabilities of strategic bombing would be readily convertible into war-fighting defense capabilities, which was not proven. Despite Air Force contentions it was untrue that forces for large wars could win small wars.[29]

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[29]Ibid., 257, 269.

# CHAPTER II

# THE INFLUENCE OF NATIONAL SECURITY POLICY AND AIR FORCE STRATEGY ON PROCUREMENT

Air Force and national security policy affected the aircraft procurement decisions followed by leaders of the United States. The United States' position to deter total war with the Soviet Union created an opportunity for the Air Force to demonstrate that air power, and the threat of strategic bombardment in particular, could meet national policy objectives and spearhead the military elements of deterrence. The inability of the United States to develop a consistent postwar foreign policy allowed the Soviet Union to capitalize on what it perceived as weakness of the United States by solidifying its position in eastern Europe and cutting off Berlin. By the end of the 1940s, American fears that the Soviet Union would surpass the United States in military strength spurred an acceleration in the procurement of new weapon systems for the military. As national policy evolved to a position of containing the Soviet Union and communism, the Air Force shaped its plans and procurement practices to mirror national policy, expanding its core missions to, in effect, receive more money for its weapon systems. As national policy evolved between 1945-1950, the United States Air Force emerged as the leader among the military services. The Air Force's strategic vision, the use of strategic bombing, could only work if there were improvements in technology and aircraft, which in turn drove procurement.

The Air Force benefited from the strategy leaders followed after the end of World

War II as the wartime balance of power unraveled after the death of President Franklin Roosevelt. President Harry S Truman believed he was carrying out the policies of Roosevelt by following the advice of W. Averell Harriman, United States ambassador in Moscow since 1943, and from General John R. Deane, head of the American military mission in Moscow. Harriman and Deane had gone to Moscow believing that Roosevelt's strategy of unconditional surrender was the proper one to follow. They began to develop reservations about the strategy when the Soviet Union provided little information and few facilities in return for lend-lease materials supplied by the United States. "We must make clear what we expect of them as the price of our goodwill," Harriman wrote in September 1944. "Unless we take issue with the present policy there is every indication [that] the Soviet Union will become a world bully wherever their interests are involved," Deane wrote three months later encouraging a revision of the Roosevelt strategy.[1] However, the policies strained relations between the Soviet Union and United States creating opposition among the allies.

Roosevelt's vision of creating a Grand Alliance of mutual trust that would survive the defeat of Hitler failed to materialize because of the strained East-West relations. Put off by Soviet demands for material and its lack of appreciation of the effort put forth by the United States, American leaders argued for a change in strategy. George F. Kennan, one of the State Department's trained Russian experts, argued that there was little chance

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[1] W. Averell Harriman to Harry Hopkins, September 10, 1944, U.S., Department of State, *Foreign Relations of the United States*, 1944, (Washington, D.C.: U.S. Government Printing Office, 1955), 4: 989. (Hereafter cited as *FRUS* with year and volume number or *volume name*); John R. Deane to George C. Marshall, December 2, 1944, *FRUS*, 1944 *Yalta*: 448.

of reconciling differences with the Soviet Union unless it was done with the acknowledgment of respective spheres of influences. In the view of the United States, the Kremlin intended to dominate the areas surrounding the Soviet Union. Therefore, the United States and its allies should not condone the conduct the Soviets might use to achieve the goal. Harriman and Deane, however, were not willing to follow Kennan's lead, opting instead for a *quid pro quo* policy for bringing the Soviets into line.[2]

Historian John Lewis Gaddis noted that FDR was not opposed to using "sticks and carrots" to make a *quid pro quo* strategy work but only after hostilities ceased, preventing a fissure in the alliance. Nevertheless, Harriman and Deane continued to press for applying more pressure on the Soviet Union while the war was still on believing that America would lose the leverage of Lend Lease and have to revisit issues the Soviets considered settled to their satisfaction. According to Gaddis: "Roosevelt's priority, to the end, was to win the war: *quid pro quo* bargaining might follow, but it would not precede, that accomplishment."[3] Nevertheless, the death of FDR opened the way for the strategy to be revised, be it abrupt and confused, and set into motion discussions of policy that would influence Air Force procurement over the next decade.

By 1946 the *quid pro quo* strategy proved to be flawed and ineffective, hampering United States efforts to be a world leader. The anticipated leverage the Truman administration expected never materialized. The Soviets avoided becoming dependent on American economic aid even though such aid would have speeded the recovery

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[2]Gaddis, 15.

[3]Ibid.

process. The atomic bomb failed to become a viable or believable threat and the mere presence of the weapon did little to help manage or influence the Soviet Union. The Soviet Union appeared impermeable to outside influences, and as such bargaining to effect change continued to be problematic. By February 1946, the time had come for a revision in strategy which came in the form of Kennan's "long telegram."[4]

Kennan became the catalyst for a new strategic view of how to handle foreign policy and the Soviet Union, filling the intellectual void of a haphazard foreign policy. The telegram described American foreign policy toward the Soviet Union throughout and after World War II as wrong. Integration and bargaining had faltered because the United States failed to recognize that the hostility exhibited by Joseph Stalin was based on the insecurities bred by external threats.[5] Soviet foreign policy was implemented to develop a situation that created domestic security through totalitarian control over the state and society, rather than responding to an action by the West. The United States found it difficult if not impossible to find a way to deal with the Soviet insecurity. Responding to Stalin's February 9, 1946 Bolshoi Theater speech Kennan wrote, "That suspicion in one degree or another is an integral part of [the] Soviet system, and will not yield entirely to any form of rational persuasion or assurance."[6] Through the filters of Washington, D.C., Kennan's ideas emerged in the form of Secretary of State James Byrnes' "patience and firmness" strategy.

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[4]Ibid., 18.

[5]Ibid., 19.

[6]Vladislav Zubok and Constantine Pleshakov, *Inside the Kremlin's Cold War: From Stalin to Khrushchev* (Cambridge: Harvard University Press, 1996), 34-35.

"Patience and firmness," a dramatic departure from previous practices, laid the groundwork for the Truman Doctrine and NSC-68, which became part of the driving forces for the expansion and acceleration of procurement.[7] The strategy of "patience and firmness" strove to air disagreements openly and limit the expansion of Soviet power by defending future targets without trying to emancipate areas already under the control of Moscow. Strengthening the military expedited the goals of the policy, and offers of military and economic aid encouraged United States allies to participate in the control of the Soviet Union, further increasing exports of American military hardware. The United States continued to use negotiations, but as a vehicle to confirm Soviet acceptance of American positions and for displaying, to the public and allies, those Soviet positions that were contrary to Western ideals. The rationale for the idea was that the Soviet Union wanted to avoid Western firmness and would gladly act accordingly thus bringing it into line with American policy. Or as Clark Clifford reported to President Truman in September 1946 on Soviet-American relations: "it is our hope that they will change their minds and work out with us a fair and equitable settlement when they realize that we are too strong to be beaten and too determined to be frightened."[8]

A major problem with the "patience and firmness" strategy was the inability of the United States to match the means to an end By the time of Truman's March 12, 1947 pronouncement that "it must be the policy of the United States to support free peoples who are resisting attempted subjugation by armed minorities or outside

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[7]The NSC, National Security Council, was a cabinet-level committee designed to advise the president on matters where defense policy and foreign policy intersected.

[8]Gaddis, 21-22.

pressure," the military had been reduced dramatically. The lack of means placed pressure on the administration to limit the vital interests of the United States because the political and economic circumstances prohibited expansion of capabilities. The postwar rush to demobilize the 12 million-man force left the military with a strength of only 1.6 million in 1947, which severely restricted the capabilities of the United States. The 86 billion dollars spent on defense in 1945 leveled off at just more than 13 billion dollars per year for 1947-1950. These circumstances inhibited the United States ability to defend all of its vital interests and confined military procurement.[9] The United States needed to pursue a policy that could be effective without increasing expenditures

As director of the State Department's Policy Planning Staff in 1947, Kennan became one of the leading proponents of containment as a strategy, which appeared to be feasible and economical. He articulated the need to restore the balance of power left unstable by the defeat of the axis, to rank and prioritize interests, and to establish a strong point rather than perimeter defense. Kennan's approach to foreign policy with the Soviets was asymmetrical, matching U.S. strengths to Soviet weaknesses, as opposed to matching every capability in a symmetrical approach. By 1949 Kennan fell out of favor with the Truman administration, because his assumptions became politically difficult to defend in public. Kennan assumed that there might be a remote danger of war; asymmetry would work indefinitely. Moreover, negotiations had the possibility of being beneficial, if they served the interests of both sides. In other words, diplomacy should be

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[9]As quoted in Ibid., 22-23.

flexible.[10]

The events of 1949 shocked the United States into shifting policy further toward military and away from economic containment. The Soviets tested their own atomic bomb; Truman was blamed for "losing" China; the services continued to debate military strategy; the Berlin airlift continued; and the interests and commitments of the United States continued to expand. In early 1950 the administration began a study that developed a statement of threats, interests, and possible responses that could be communicated easily within the bureaucracy. The outgrowth of that study was NSC-68 (April 14, 1950). Prior to NSC-68, the military faced limited budgets and a hollow force, making it difficult to carry out the objectives of the United States. The policies of NSC-68 changed the way the military operated and significantly affected the way the Air Force procured its aircraft.

The most significant aspect of NSC-68 was that the United States response to Soviet challenges changed from acting only to when interests were vital to acting whenever there was an interest, in effect increasing the demand on existing resources and technology. Part of determining what became vital depended upon the resources available to protect the interest; NSC-68 argued that the United States could economically afford to meet all interests. As a result, the Air Force received virtually all the money it needed for weapon systems, but the systems had to work and remain superior to the Soviet Union's weapon systems. If the systems failed to meet

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[10]Ibid., 83. See also Melvyn P. Leffler, *The Preponderance of Power* (Stanford: Stanford University Press, 1992), 496-516.

expectations the Air Force faced losing procurement funding and reverting to a supporting role in military strategy.

NSC-68 preoccupation with the military balance of power forced military expenditures to increase. Truman's Fair Deal, which called for limited military expenditures of $13.5 billion for fiscal year 1951, fell out of favor as pressure mounted from allies for the United States to do more about the Soviet threat. Accepting the conclusions of NSC-68 meant accepting a massive military build up and increased spending. This came about because the distribution of power changed dramatically with the defeat of Japan and Germany and the decline of Britain and France The change created a vacuum the United States and Soviet Union tried to fill. Furthermore, NSC-68 stated that "the Soviet Union, unlike previous aspirants to hegemony, is animated by a new fanatic faith, antithetical to our own, and seeks to impose its absolute authority over the rest of the world."[11]

NSC-68 made a strong case for acting immediately and with all the resources practical to contain the Soviet Union. The fundamental goal of Soviet leaders was to "retain and solidify their absolute power," and destroy any opposition that interfered with that design. The underlying conflict between the United States and the Soviet Union remained one of ideas, the rights of individual freedom versus "the idea of slavery under the grim oligarchy of the Kremlin."[12] If the United States was to remain superior to the Soviet Union and shape its will, advances would have to be made to prove the United

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[11]Ernest R. May, ed., *American Cold War Strategy: Interpreting NSC-68* (Boston: Bedford Books of St. Martin's Press, 1993), 25.

[12]Ibid., 26-27.

States was technologically and militarily strong.

The strategic objectives of NSC-68 prescribed a method of containing the Soviet Union while maintaining the core values of the Constitution and the material well being of the United States. The threat to the United States was not only to its values but to the physical capacity and ability to protect, at home and abroad, the environment of those values. To defend against the Soviet threat the authors of NSC-68 suggested increasing military and economic strength within the United States and its allies to frustrate the Kremlin design and change the Soviet system. By fostering a change in the nature of the Soviet system, the threat to the United States would end. Moreover, the threat of atomic warfare prevented the authors from considering that simply "checking" the Kremlin's design would be a worthwhile objective.[13]

According to NSC-68, the Soviet Union's economy was directly related to its policies and could be used to erode American leadership. Furthermore, the Soviet military was developing the capacity to support the design for world domination. The threat to the United States was real and imminent because the Soviets already had forces in excess of those needed to defend Soviet territories. The Joint Chiefs of Staff predicted that in 1950 the Soviet Union had the capacity to overrun Western Europe, launch air attacks against resources in the Atlantic and Britain, use atomic weapons against targets in the western hemisphere and prevent a "Normandy" type landing on the European continent. Once the initial conquests were made in Western Europe and its positions consolidated, the Soviet Union could then proceed to mount full-scale attacks on the

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[13]Ibid., 29.

British Isles, invade the Iberian and Scandinavian peninsulas, expand operations in the Middle East, continue operations against North America, and conduct diversionary attacks in other areas.[14]

Since the intentions and capabilities of the United States dramatically contrasted those of the Soviet Union in 1950, opportunities arose to contain the Soviet threat. To take advantage of this, the United States fostered a cooperative world environment where the American system could survive and flourish, which meant rejecting the interwar concept of isolation. European participation became vital for the concept of containment, "which seeks by all means short of war to (1) block further expansion of Soviet power, (2) expose the falsities of Soviet pretensions, (3) induce a retraction of the Kremlin's control and influence, and (4) in general, so foster the seeds of destruction within the Soviet system that the Kremlin is brought at least to the point of modifying its behavior to conform to generally accepted international standards," to work. The maintenance of military strength became important because it guaranteed national security and was a vital backdrop to the policy of "containment." Without military capabilities the policy of containment would be no more than a bluff, NSC-68 argued.[15]

NSC-68 concluded that the first requirement for the United States to attain its aims was to "[d]evelop a level of readiness which can be maintained as long as necessary as a deterrent to Soviet aggression, as indispensable support to our political attitude toward the USSR, as a source of encouragement to nations resisting Soviet political

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[14]Ibid., 38.

[15]Ibid., 41.

aggression, and as an adequate basis for immediate military commitments and for rapid mobilization should war prove unavoidable." Without a strong military and a cooperative international effort the only course open to the United States would have been to withdraw until it realized that the positions of vital interest had been sacrificed.[16]

The means to achieve the objectives, laid out by NSC-68, was to demonstrate military superiority and to deter attack. A war of mass destruction was to be avoided, however, using force in limited ways to thwart the Kremlin design of usurping United States freedom might be needed. For the United States military developing a strategy to combat a nuclear armed Soviet Union became vital. If using the entire complement of forces available was not allowed because of the risk of total war, how was the Soviet Union to be contained? The Air Force and the use of strategic bombers became the answer, which in turn contributed to the driving forces of procurement.

The rise in importance of the Strategic Air Command began in 1943 when postwar planning formed around Army Chief of Staff General George C. Marshall's belief that the United States should limit the size of military forces in peacetime. At the end of 1943 Marshall returned plans offered him with the marginal comment: "I think maintenance of sizable ground expeditionary forces probably impracticable except on the basis of allotment of fillers after six months. Having air power will be the quickest remedy."[17] In August 1945 Lieutenant General Ira C. Eaker, Deputy Commander Army

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[16]Ibid., 79, 76-81.

[17]Memo for CS Army from Major General Thomas T. Handy, Asst. CS Operations Division, subj: Outline of Post-War Permanent Military Establishment, 28 October 1943; marginal comments by G.C.M.; as quoted in Futrell, "Air Power Concept," 256.

Air Forces, ordered the establishment of a 70-group Air Force with 400,000 men as a minimum force requirement after Marshall rejected plans for a 105-group and 78-group Air Force. This equaled the strength needed to maintain forces for mobilization, support bases around the world, and keep national aircraft production alive.[18]

The AAF Postwar Plans Division wanted to create a single Continental Air Forces (CAF) to furnish strategic bombing and then to back up exploitation forces. As a result, CAF began to operate out of Bolling Field in April 1945 and on 8 September 1945, Major General Samuel E. Anderson, CAF Chief of Staff, sought permission to provide global striking force, plan United States air defenses, train crews, establish rotation schedules for overseas duty, and furnish tactical air for cooperative training with the Navy and Army. Chief of Plans, Major General Lauris Norstad, regarded tactical air force as an outstanding accomplishment of World War II. However, the atomic bomb had possibly made the tactical air force "as old fashioned as the Maginot Line."[19] General Carl Spaatz, Commander AAF, reviewed the CAF proposal in January 1946 with General Dwight D. Eisenhower, Chief of Staff of the Army, and after the conversation Spaatz organized the Air Force combat elements into a Strategic Air Command, Tactical Air Command, and Air Defense Command. In air plans, General Norstad presumed that at the outbreak of war strategic air and air defense would be needed immediately while tactical air could wait for general mobilization, because tactical air would be used in the support of ground forces which would take some time to deploy. Rapid demobilization

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[18]Futrell, "Air Power Concept," 256.

[19]Ibid., 257.

in 1946 forced General Spaatz to give first priority to "the backbone of our Air Force--the long-range bomber groups and their protective long-range fighter groups organized in our Strategic Air Command."[20] This policy contributed to tactical air remaining understrength for the next decade and demonstrated the strong support within the Air Force for a single minded strategic bomber force.

In 1946, while the United States military forces were in disorder because of rapid demobilization, the Soviet Union became identified as the most likely threat to American security, and there was little the Air Force could do about that threat. At the end of 1946 the Strategic Air Command had only one viable B-29 bomber group of 27 aircraft that could carry nuclear weapons. By mid-1947 SAC had 160 B-29s on operational status, with most outfitted for conventional bomb loads. United States strategic power before 1950 represented "a hollow threat." Throughout 1946 and 1947 the AAF Plans Division developed criteria for attacking the Soviet Union which mapped out the requirements for replacement of the B-29 with bombers that had technological obstacles to be overcome before they could be produced and deployed.[21]

On 21 January 1948 Generals Spaatz, Vandenberg and Secretary Symington appeared before the Congressional Aviation Policy Board defending force requirements, Air Force strategy, and seeking more money to increase the prominence of the Air Force in national policy objectives. The committee's concern over the use of atomic weapons in a war with the Soviet Union highlighted the rising debate as to the efficacy of using

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[20]*Military Establishment Appropriation Bill for 1948*, 600; as quoted in Futrell, "Air Power Concept," 257.

[21]Ibid., 257-58.

the atomic bomb as a main means of deterrence. The Air Force considered atomic weapons another tool within its arsenal that would be used to complement conventional bombing. The Air Force continued to center its plans around atomic weapons although General Vandenberg estimated that it would be five to seven years before atomic weapons could force capitulation of the Soviet Union. "Capitulation is not certain during that period and should not be considered as probable until sometime after the next five or six years. . . . Even if we got 75% or 80% of them dropped in the exact spot we want them, that is not shot down before the bomb is dropped, we would probably have to depend on conventional bombing to finish up the job " General Spaatz added that "the use of atomic bomb as available will be closely integrated with the overall requirement of aircraft. . . . We figure it would take about 200 [conventional bomb] plane loads to accomplish the same result" of a single atomic sortie.[22] Spaatz's estimate appears correct considering Little Boy, the uranium bomb exploded over Hiroshima August 6, 1945, had a yield equivalent to 20,000 tons of TNT. The B-29 had a capacity to carry a payload in excess of 10 tons making it necessary to deploy 200 conventional bomb loads for one atomic bomb load.[23] However, as nuclear technology developed and atomic yields grew, the number of conventional planes needed to match that yield would grow, making the

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[22]Discussion Following Air Force Presentation to the Combat Aviation Subcommittee, Congressional Aviation Policy Board, Room 4E-870, The Pentagon, 21 January 1948, 1-2; Record Group 341, Records of Headquarters United States Air Force (Air Staff), (hereafter RG 341), Entry 337, Box 12, National Archives at College Park (NARA).

[23]American Airpower Heritage Museum of the Confederate Air Force, "The Aftermath: Casualties of the Atomic Bomb," [http://www.avdigest.com/aahm/trafter.html], August, 1999.

use of atomic force an attractive economical alternative to large numbers of surface forces. Nonetheless, Air Force leaders realized they had little capacity in 1948 to use air power as the sole method to prevail in a total war. Nuclear weapons had to be developed further and a large conventional force had to be maintained while work continued on building and improving nuclear forces.

In their plan to attack Russia, Air Force leaders prioritized fifteen major target points to be attacked to blunt Soviet war making capabilities, supporting the need for additional procurement resources. Each target had been studied to evaluate how many atomic bombs would be needed to destroy it, and planners established the best available method for delivery of the weapons. Delivery of weapons became a major concern considering the vast size of Russia and the capabilities of the Soviet air defense system. With these two considerations in mind General Spaatz thought attacks, be they long range one way or from bases in Europe, would need to be carried out under the cover of darkness to be effective, creating the need to develop long-range and night navigation aids for the bombers. However, "how much damage it will do is open to question. The thing that impresses a nation . . . is not only the destruction, but the hopelessness of the situation. If the strike against a country like Russia must be made under the cover of darkness, and we have no control of air in daylight, there is no evidence that the will of the nation to resist is destroyed and we must be prepared to carry out other operations."[24] Air Force leaders understood that the Soviets could not be forced to capitulate during the initial bombing campaign. With the United States military in a weak condition, Air

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[24]Discussion Following Air Force Presentation, RG 341, 3.

Force commanders hoped that Soviet capabilities would be reduced to allow enough time for mobilization and follow-on operations.[25]

Range of aircraft dictated changes in tactics and increased the need for procurement of new aircraft. Control of the air over Russia became a top priority to protect the few resources flying into Soviet airspace. Establishing forward air bases became a top priority to ensure that bomb runs could be made en masse with the protection of escort planes and with the shortest turnaround time. Without this protection continuous bombing would be sporadic and loss of planes heavy. Furthermore, fear of losing planes with atomic weapons dictated that they be interspersed with conventional planes for more protection. Obviously losing a group comprised of nuclear planes would be devastating to the firepower of the United States, whereas loss of an entire group with a mix of planes would be acceptable, if not inevitable. Nonetheless, the plan called for defense of the United States against Soviet attack, blunting of Soviet capabilities, and mobilization for a combined air, sea, land invasion of the Soviet Union.[26]

The major problem with the Air Force plan was cost, which would only increase with time as new planes became complicated and expensive. Truman proposed a meager $14.4 billion military budget for 1950, and the estimated cost for the Air Force plan would be over $7.5 billion per year, an unacceptable situation for the budget conscious president. The B-36 met the range requirements, was in production and ready to be

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[25]Ibid., 4.

[26]Ibid., 5-10.

delivered later that year, but that did not eliminate the need for creating bases closer to the targets. Radar installations had to be established to perform the task of detecting Soviet planes. The Soviets continued to produce planes at World War II levels while United States production sputtered because of the lack of resources being applied. Secretary Symington believed the United States was in a poker game with the Soviet Union, and that "the second best Air Force is just as valuable as the second best poker hand."[27]

Over the years in-fighting among the services, such as seen in the Revolt of the Admirals, affected strategic contingency planning Funds had always been short for the services but procurement increased tensions because increased funding for one service decreased funding for another. After surveying the 1945-1950 time frame, historian Robert Little concluded: "'The number of strategic plans of every type overtaken by events or time was legion. Short-range plans that gained approval were typically and admittedly infeasible and hardly more than a beginning was made on intermediate and long-range plans, or on mobilization plans. . . . Although the Korean War was perhaps not foreseeable, its planning had to proceed virtually from scratch, barely ahead of implementing actions and operations." As the Korean War ended strategy changed so that the emphasis should be placed "upon the capability of inflicting massive damage upon the USSR by our retaliatory striking power as the major deterrent to aggression, and a vital element of any U.S. strategy in the event of general war."[28] The Air Force

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[27]Ibid., 34, 39: the comments were attributed to General Arnold who routinely used the saying to boost funding for the Air Force.

[28]As quoted in Futrell, "Air Power Concept," 261, 264.

compiled several plans in this endeavor.

The threat of Soviet expansion throughout the world and the United States response to contain the Soviets with minimal expense provided Air Force leaders the opportunity to prove that air power could support political objectives. Popular support for the Air Force from the public and Congress helped increase funding for procurement in both size and number of contracts. By pursuing addtional funding the Air Force assumed greater risks of casualties, which appeased the United States distaste for mass casualties of past wars. Furthermore, air power became an easy way to meet obligations with allies while limiting exposure. Nevertheless, the Air Force continued to face opposition to increased funding from the other military services and critics of air power who favored a more balanced force structure. Additional funding increased oversight from Congress, but the effectiveness of the additional funding remained in question.

# CHAPTER III

## CONGRESSIONAL OVERSIGHT AND THE EFFICACY OF PROCUREMENT

Although strategy in large measure dictated what types of weapon systems the Air Force should buy to meet the Soviet threat, procurement was also influenced by Congress and the changing status of the Air Force within the armed services. The National Security Act of 1947 and Executive Order 9877 made the Air Force responsible "for the preparation of air forces necessary for the effective prosecution of war and the expansion of the peacetime components of the Air Force to meet the needs of war." Some of the functions of that charge included maintaining general air supremacy, operating a strategic air force and strategic reconnaissance, furnishing a means of coordinating air defense with all the services, dispensing air support for naval and land forces, and providing air transport for all the services.[1] The Air Force had a multitude of duties and many parties trying to influence the way it completed its mission. Although other organizations tried to influence how the Air Force did its job, Congress remained the arbiter of disputes betwen the services, in the end determining which service would receive funding to continue its mission.

The United States Congress made several investigations into what the Air Force procured and the process of how leaders arrived at their decisions. The Air Force and Department of Defense faced serious questions about the procurement of the B-36 in the

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[1]"General Vandenberg, Vice Chief of Staff, USAF, Before Congressional Air Policy Board on 21 January 1948," 1-1.5; RG 341, Entry 335, Box 311, NARA.

summer and fall of 1949. The House Armed Services Committee examined allegations of impropriety between the Air Force and Consolidated Vaultee (Convair), the primary contractor for the intercontinental bomber program. The hearings made public some of the problems the Air Force was having in producing an intercontinental bomber and highlighted the tenuous condition of the aircraft industry.

Plans for developing the first intercontinental bomber had started in early 1941 because leaders feared that Britain might fall to Germany, thus eliminating bases of operation for the heavy bombers. Propeller driven B-35s and B-36s were developed to meet the requirements of intercontinental bombardment should the forward bases be lost to the enemy. However, by 1944, with reports of German jet fighters in service, a second phase of bomber development began that increased the requirements and capabilities of an intercontinental bomber. The Air Force abandoned the B-35 project as a result of Truman's postwar military cost cutting, and the B-52 program continued to be developed by Boeing. Eventually the B-52 won the contract for an intercontinental bomber program, beating the B-36 in the competitive bid process, after Boeing comprehensively redesigned its bomber with swept wings and turbo jet engines. The effort to redesign the B-36 into an all jet version (B-60) in 1950 fell short of Air Force desires and the B-52, with vastly superior design and capabilities, ruled the competition and is still in service today after being deployed in 1955.[2]

Prior to the United States official entry into World War II, the AAC wanted to build a long range bomber based on "strategic beliefs, doctrinal inclinations, and

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[2]Bilstein, 178-90, 218-27.

bureaucratic motivations." However, the primary catalyst for the program proceeding was the realization that in 1940 the United States was dependent on overseas bases for its bombers to be effective. For example, the B-17C had a maximum range of 2,400 miles with a useful combat radius of 900 miles and even the anticipated arrival of the B-29 with a range of more than 5,000 miles remained short of intercontinental requirements. As a result, Consolidated and Boeing participated in research and development of a preliminary design to see if it was possible to build a plane that could fly 12,000 miles. The AAC planned to wait for the preliminary results, allowing time to overcome major technical obstacles, before setting the final requirements However, the deteriorating situation in 1941 forced the AAF to set requirements and order prototypes before the preliminary studies were finished. Time constraints of war affected the procurement process by applying pressure on officials and contractors to produce planes quickly.[3] This same pressure reappeared during the Cold War, increasing costs and change orders.

The AAF chose in late 1941 what seemed to be the most promising of conventional designs, Consolidated's six engine bomber with a pusher configuration, which raised questions in Congress on how the decision was made to build the bomber. The choice was made by basing the award of the contract to Consolidated on tentative paper calculations and limited wind tunnel testing. The Army's Air Material Division embraced Consolidated's plane based on the theory that the designs were "within the practical bounds of the aeronauticle art." Ironically, six months before the AAF awarded the contract, Consolidated determined what the "aeronauticle art" would be. Air

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[3]Brown, 109-13. The AAF was created on June 20, 1941.

Material Division knew little about technological possibilities and requested that Consolidated provide answers on what the future would look like.[4] One of the problems the Air Force had to overcome was the lack of engineering knowledge within the ranks of pilots and Air Material Division.

The rush to develop the ill conceived bomber program began in November 1941, when Consolidated agreed to build and deliver two prototype B-36 bombers by May 1944 for $15.8 million. In the summer of 1942, Consolidated recommended that full construction begin on 100 planes concurrent to the development of the prototypes, after arguing that deployment could be achieved up to two years earlier. The AAF declined to make the order and opted to start production on the B-35. However, when development problems for the B-35 persisted during the next year an order was placed for 100 B-36s in June 1943. This decision was made because the United States was not a certain winner of the war and all options needed to remain open. For example, leaders of the AAF had argued that forward bases in the Pacific might not be available for the existing heavy bombers (B-17 and B-29[5]) and the United States needed to continue rapid development of an intercontinental bomber. Another factor was the fear that in time of peace there would not be the need for such a bomber and it might not be built during non-war years, because it was anticipated that defense budgets would be cut and the desire for the expensive weapon would wane. Therefore, the AAF wasted little time in

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[4]Ibid.

[5]The B-29 had its first flight in 1942 but was not deployed until spring 1944.

accelerating the B-36 program when production problems occurred for the B-35 in 1943.[6]

Problems for the B-36 program began to appear shortly after production accelerated, forcing changes within the program to prevent congress from ending the program. For example, Consolidated had problems minimizing the weight of the plane which reduced the range to less than 8,000 miles. The airfoil failed to live up to expectations and needed to be redesigned. By 1944, Consolidated's project lost top priority because of performance and schedule deficiencies. Furthermore, design problems increased costs, which were exacerbated by Consolidated's recommendation to shift to a concurrent production plan. Consolidated maintained its order for the 100 planes, but problems continued into the postwar era as the company was forced to redesign the bomber because of the persistent technical problems. Embarrassed, the AAF had to admit in December 1945 that the B-36 was still in the development stage when the tail, wing and landing gear had to be redesigned. Residual technical problems were underestimated by the AAF, and the decision to proceed with production compounded the problems. Fear that congress would cut funding for the program forced the AAF to make changes to the B-36, but only to the extent that enabled it to fly.[7]

During a periodic review of the B-36 program in 1946, reports indicated that the bomber did not meet performance requirements, specifically range, creating questions on why the program still continued. SAC commander General George Kenney commented that "I could find no indications from our own engineers or those in industry that anyone

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[6]Brown, 115, 122.

[7]Ibid., 121-27; Futrell, *Ideas, Concepts, Doctrine*, 216-19, 232-33.

really expected that the B-36 would make its originally predicted 10,000 mile range. Even the Consolidated people talked about 8,000 mile ranges as about what we could expect."[8] Nonetheless, promises of modifications kept the program alive and congress out of the picture. By 1948 the prospects of midair refueling allowed the B-36 to meet range requirements, if only as an interim bomber. Still, the bomber received criticism from some within the military and congress for being militarily inefficient and obsolete. The plane was slow and took too many people to operate with missions lasting up to forty hours with an in-air refueling.[9] Convair (as Consolidated came to be known in 1944) avoided cancellation of its contract by modifying the bomber with jet engines and promising delivery within four months.

The improvements by Convair and research obtained from the Germans, prompted Boeing to redesign the B-52. In order to keep pressure on Boeing the Air Force decided to keep the jet-modified B-36 in production until the B-52 was ready for production.[10] According to Dudley C. Sharp, Assistant Secretary of the Air Force (Material), the Air Force hoped competition would increase the capabilities of weapon systems and decrease their costs.[11] Air Force leaders could not risk the possibility of a

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[8]Brown, 130.

[9]Marshall Cavendish, *Modern Warfare* (New York: Arco Publishing, 1985), 109.

[10]Brown, 130.

[11]Congress, House, Committee on Armed Services, Sub Committee Special Investigation, *Aircraft Production Costs and Profits: Hearing before the Subcommittee for Special Investigations of the Committee on Armed Services*, 84th Congress, Second Session, February 16 through March 22, 1956, 2819-29 (Hereafter *Aircraft Production Costs).*

weapon system failing to work without having a viable alternative in place because they risked losing funding to the other military services. Furthermore, spreading contracts out to several contractors help to ensure that there would be capacity to expand rapidly during mobilization. Nevertheless, aircraft builders knew they had to produce or lose their only customer.

The decision to continue building the B-36 created a public controversy, because the long and simmering feud about roles and missions between the Air Force and Navy came to a boiling point in the spring of 1949. The Navy had been against long-range bombers since the 1920s. The capital ship was being replaced by the atomic bomb and strategic bomber as America's first line of defense. The Navy feared it might be subsumed organizationally as budgets shrank and military missions became de-emphasized. The center of naval strategy focused on the development of a new flush-deck "supercarrier" that would be able to operate long-range aircraft. The carrier would keep the Navy institutionally viable and maintain a key role in strategic bombardment. However, Secretary of Defense Louis Johnson canceled the supercarrier project in 1949, in essence removing the Navy from the strategic bombardment mission and the funds that poured into the atomic delivery program. Johnson's approval of the B-36 helped land him into the cross-hairs of the interservice rivalry. Anonymous charges made against the B-36 program resulted in a full scale investigation by the House Armed Services Committee.[12]

On May 26, 1949, Representative James E. Van Zandt of Pennsylvania made a

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[12]Brown, 131-45; Futrell, "Air Power Concept," 245-58.

speech on the House floor outlining some of the charges of impropriety involving the B-36 program and insisted on a full investigation that might in the end help restore funds for the Navy. Van Zandt asked why some air programs were being enlarged and others reduced or canceled. Van Zandt claimed that he had reports that implied there were inappropriate connections between aircraft manufacturers and high ranking officials. These contacts, Van Zandt alleged, involved the solicitation and payment of political campaign contributions to the Democratic party during the 1948 election.[13]

The reports implicated Secretary of Defense Louis Johnson, Secretary of the Air Force Stuart Symington, and Floyd Odlum, President of Atlas Corporation, a superholding company that controlled Convair. Symington had spent weekends at Odlum's house in Palm Springs while traveling at government expense, setting the stage for conspiracy. That in itself was not a major concern, but Van Zandt voiced concerns about other actions of the Air Force and parties involved. For example in 1947, Convair held contracts for 100 B-36 bombers and tried to merge with Lockheed Aircraft Company, but the Security and Exchange Commission blocked the move. In late 1947, Odlum's Atlas company acquired control of Convair and he became chairman. In January 1948, the Air Force produced a directive that canceled the B-36. General Lauris Norstad recommended that the program be cut back to 50-60 planes, instead of total elimination, to prevent the financial collapse of Convair. In May, the Air Force announced the composition of the 70-group force, with no mention of the B-36. By then

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[13]Congress, House, Committee on Armed Services, *Investigation of the B-36 Bomber Program: Hearings before the Committee on Armed Services*, 81st Congress, First Session, August through October 1949, 12-13 (Hereafter B-36 Investigation).

only ten B-36s had been produced and the Air Force announced that production would be cut from ninety-six to sixty-one. Lastly, Johnson was connected to Convair as a director and attorney for the corporation.[14]

Van Zandt proclaimed that the Air Force saved the B-36 and Convair at the expense of other contractors. In the summer of 1948, the Air Force planned to reduce the number of B-36s, but by January 1949 it canceled contracts with other companies to produce more B-36s, "which not many months before had been found to be unsatisfactory as bombers and were to be used as refueling tankers. The renegotiation of the canceled contracts with other manufacturers was handled by an outside law firm, reportedly upon the recommendation of Mr. Johnson. The firm had been retained for some time [by] Odlum's Atlas Corp."[15] Van Zandt also alleged that Odlum wanted to establish a huge aircraft combine under the control of Atlas, and that Symington was going to resign from his post as Air Force Secretary to be president of the combine as soon as more money had been obtained for the B-36 project. Funding for the B-36 would come from the cancellation of other programs, and by transferring programs from other manufacturers to Convair. Van Zandt pointed to the cancellation of the F-87 all weather fighter and the transfer to Convair from Northrop of the B-49 program. As a result of the cutbacks Convair might receive $200 million of the $300 million the Air Force transferred from canceled to existing programs. Furthermore, the $2.5 million modification of adding jet engines to the B-36 represented a price tag that was more than

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[14]Ibid., 13.

[15]Ibid., 14.

the cost of any new plane other than the B-36. With charges made and an investigation demanded, the House Armed Services Committee held hearings.[16]

Critical of the Air Force and a strong supporter of the Navy, Van Zandt based the allegations on an anonymous report written by Cedric R. Worth, special assistant to the Assistant Secretary of Navy for Air and later to the Under Secretary of the Navy. Worth made allegations of impropriety against the Air Force, Truman administration officials, and Atlas Corporation as a way to get back at the Air Force for its part in ending the supercarrier program. The allegations insisted that Convair prevented a directive from being signed that would have canceled the B-36 program. Studies made by the Air Force indicated that the B-36 was not suitable for bombing, yet it was still being produced because of the improper relationship between Odlum and administration officials. One hundred B-36 bombers had been on order but none of them were assigned to any units, signifying that the Air Force did not really want or need the planes, yet pressure was applied to continue the procurement process. Symington benefited from his post in government by allowing his former company to renegotiate a deal with the War Department. Furthermore, Symington was involved with a bomber defense turret manufacturer during the war and the contract stipulated that they must rework defective turrets with the cost absorbed by the company. However, the renegotiation transferred the cost of the repairs to the government. Moreover, Worth's report alleged that Symington and Johnson used their posts to raise money for the Democrats during the 1948 election by asking Odlum to funnel $6.5 million to the party. Convair reported a $1

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[16]Ibid., 14-15.

million profit in the first quarter of 1949, the first in thirteen years. The Air Force acted improperly, according to the report by Worth, conducting a publicity campaign that boasted the B-36 would make war a clean and quick affair in order to boost the value of Convair stock. Symington would head a large conglomerate of aviation interests, where any company that did not merge would have its business adversely affected. For example, Northrop's B-49 was canceled because the company did not join the alliance.[17] The Air Force and administration had considerable explaining to do and the committee needed to find out if the accusations were baseless and who was the author of the document.

Robert A. Lovett was Special Assistant to the Secretary in charge of air matters during the inception of the B-36 program and testified about the conception of the program and put into historical context the events that surrounded the program from 1941-1945. Lovett testified that by late in 1941 the country saw the situations as follows: "Britain was isolated, alone, and obviously in desperate straits. Western Europe, from northern Norway down through the entire littoral into Italy and then into Greece, was in the hands of the potential enemy." With this in mind, the Air Plans Section made studies and an overall strategic plan. In April 1941 the section recommended that designs be studied for a heavy bomber with range of 10,000 miles and bomb loads of 10,000 pounds. Consolidated, Boeing, and Douglas were asked to submit conventional designs, while Northrop was asked to present plans for an experimental design (the B-35 and B-49 flying wing became the origins of today's B-2 and F-117A). The "quick and dirty"

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[17]Ibid., 15-20.

studies made by various plant engineers were studied in August 1941 by the AAF at Wright Field in Ohio. They determined that Consolidated's plan was the most likely to meet the needed requirements and orders for two prototypes were placed.[18]

In the summer of 1943, the United States increased the priority level of the intercontinental bomber program, because the success of the island hopping campaign in the Pacific remained unclear, and mid-air refueling had not been developed. Urged by Consolidated, the Army Air Force ordered 100 B-36s even though the prototypes had not been completed. Generally the military anticipated a five-year production period for new weapon systems or two to three years if the projects were given top priority. It was feasible that the long range bomber might be ready by 1945 if the technical problems were worked out with little delay. However, the B-36 did not have high priority because resources were going to projects such as the B-29; therefore, the AAF could not anticipate having the B-36 before the end of 1945. Lovett advanced the Air Force position that though the project was behind schedule and suffered technical problems, this was normal when developing a new major weapon system. Lovett furthered the cause of Consolidated by stating that the project was conceived by air planners and not any of the companies involved. Furthermore, the other participants in the competition still had plenty of work, for Boeing the B-29 and Douglas the C-47. Therefore, Consolidated's financial advantage did not increase because it won the competition in 1941.[19]

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[18]Ibid., 20-25.

[19]Ibid., 20-41.

In order to place events into their proper perspective, Air Force Major General Frederick Harrison Smith, Jr., became the second witness before the committee and briefly reviewed the war years with respect to the development of the B-36 and the strategic situation. For four hours over two days Smith read his statement and answered a litany of questions. His main objective was to educate the committee on how the Air Force procured a weapon system. First, leaders determined the mission, then translated the mission into what equipment might be needed to carry out that mission. Once requirements, such as range, speed, operating altitude, armament, bomb carrying capacity and the like became set, the design contest winner received an experimental contract to develop and test a prototype. After being tested for quality, and with approval from a board of senior officers and the Secretary of Air, the contractor would be awarded a production contract. Certification for the amount to be produced went through a system where, "the Air Force recommend[ed] to the Secretary of Air Force and recommend[ed] to the Secretary of Defense, who obtain[ed] the opinions of these same four agencies [Research and Development Board, Munitions Board, Office of Budget, and Joint Chiefs of Staff] as to the appropriateness of the certification and the means for which the money is to be expended."[20] Then the president released the funds for the procurement.

Smith tried to demonstrate that the AAC and the AAF had acted properly by following the guidelines for procuring new aircraft. Smith emphasized that the AAF had reevaluated the program on a periodic basis and found that the B-36 continued to meet the needs of the long range bomber program. After a review in 1944, General Hoyt

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[20]Ibid., 43.

Vandenberg, then Deputy Chief of the Air Staff, voiced the opinion that the postwar period would be an "unsettled" one, and the Air Force would be wise to have a plane in its inventory that did not necessitate the need, in the early phase of the war, for seizure of overseas bases. Accordingly, Vandenberg recommended that the B-36 be continued with the original order for 100 bombers to be included in the postwar design of four bomber groups.[21] Nevertheless, Air Force leaders showed signs of insecurity by defending their position at any cost. No quarter was given to the possibility that the review process was flawed and that the Air Force threw good money after bad at a threat that had not materialized. Overseas air bases were not likely to disappear in the postwar era as Vandenberg and others feared. Furthermore, one can presume that the B-36 would have been given highest priority for development if leaders anticipated a true need to implement the weapon system.

In mid-1945 as the first experimental model of the B-36 crept to completion, Wright Field headquarters for R&D and procurement, kept a close eye on the progress Convair made because of the slow and troubled progress. The AAF applied pressure to correct management problems that would help to improve the quality of workmanship and procedures. By 1946, procurement officers at Wright Field reported considerable progress with the management problems and improvement in workmanship. Convair defended itself by ascribing its difficulties to the low priority of the B-36 project, indicating it had trouble getting adequate labor and materials. The argument was valid during the war when all resources were designated for certain projects, but after the war

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[21]Ibid., 44-46.

the aircraft industry saw a rapid reduction in production and a rapid increase in available labor and materials. On August 8, 1946, the first flights of the experimental plane began. While testing continued on the first B-36 model, changes were made to the second plane that reflected design improvements. Smith failed to point out that during concurrent development any design changes had to be made to planes in production, which not only included changes to the planes on the line but also included capital improvements to equipment used in production.

Critics of the B-36 appeared within the Air Force, contesting the validity of pursuing a procurement program that failed to meet requirements. On December 12, 1946, General Kenney, Commanding General Strategic Air Command, wrote to General Spaatz, Commanding General, AAF, suggesting that procurement be cut, because evidence suggested the B-36 had several shortcomings including a lack of range, speed and protection for the gasoline. Furthermore, the B-36 was inferior to the modified B-29 (B-50) in all aspects except range and bomb load, and the range itself did not warrant adoption of the B-36. General Twining, Commanding General, Air Material Command, studied the recommendations and proffered a different opinion. Twining argued that the potential of the B-36 should not be judged only on the results of testing on the experimental model, because it had just begun. New aircraft designs have difficulty at the development stage, and there had been not a greater amount of trouble with the B-36 than with the B-17 or any other plane that became a success. Range and speed were already being improved with the installation of more powerful 3,500 HP engines, and improvements to the landing gear were expected to allow the B-36 to operate from the

same fields the B-29 was using. Twining believed that the best way to make improvements in design was to test a few models in the field. "The proper employment can be learned only through actual operations in tactical units." Furthermore, it would be unwise for the Air Force to abandon a project when it was almost complete even if it was considered obsolete. It might seem better to start from scratch, but there would be nothing to bridge the gap between the outdated technology and the new.[22] Following Twining's logic, from an economic standpoint, all the money that went into development would see no return of investment. Therefore, it would have been unwise for the Air Force to abandon the project just because a better project was on the horizon, because there would be no guarantee that the new project would be a success. Nevertheless, Twining's view tends to support the theory that the Air Force had made a mistake and was doing everything to protect itself while General Kenney saw the B-36 as a hindrance to the mission of the Air Force and an apt lesson on how not to build a plane.

In 1947, funding became an issue of concern as the Air Force considered updating the engine of the beleaguered bomber. Through this point of the project, funds had been appropriated during the war, but these funds were running out and new sources were needed. The Air Force decided to use procurement funds instead of research and development funds because of the shrinking budget. To accomplish this, the number of aircraft had to be reduced to absorb the increased costs, which resulted in the charge that the Air Force had cut back the program, but the size of the contract remained the same. The Truman administration had reigned in the defense budget so tight that there was no

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[22]Ibid., 47-48.

room for any military service to expand a budget.[23] Therefore, creative accounting made it appear like the Air Force was cutting back a program when in reality leaders were making do with what they had. It may have been a game of semantics between the Air Force and Navy on what a cut meant, but the bottom line showed that the American taxpayer paid the same on the contract but received fewer units for the same dollar amount.

In the first meeting of the USAF Aircraft and Weapons Board (Summer 1947) some members wanted to eliminate what they considered an obsolete B-36 and procure fast jet bombers. Three factors kept the program from being canceled. First, new jet bombers would not be ready for several years. Second, there was no other aircraft that could deliver atomic weapons without the aid of overseas bases. Third, there was a desire to keep the government-owned Fort Worth, Texas plant operating in case there might be a need to mobilize in the near future. General Smith commented that paradoxically, "the Air Force had been forced to speed up the production schedule of the B-36 contract, thereby hastening the end of operations at Fort Worth, in order to utilize the funds made available under fiscal year 1942-46 appropriations." Furthermore, peculiarities of funding programs and the Air Force's desire to avoid going to congress for new funds created a condition where objectives conflicted and had to be prioritized. Funds for the project had to be used by June 1948, otherwise congress would have to be asked for new appropriations to complete the contract. The accelerated production

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[23]Herman S. Wolk, "The Defense Unification Battle, 1947-1950: The Air Force," *Prologue*, Spring 1975, 22-24.

program was to be completed by January 1949, leaving only seven months of production unfunded, which would be less difficult to fund.[24]

"Stop and go" funding of projects remained one of the wasteful aspects of the government procurement process forced upon the military. The Air Force did not, and could not adopt long range production plans because it did not know if funds would be available to complete a planned purchase. For a company, this meant that when it dealt with the government, it would produce quantities of a product that would get the company through a fiscal cycle. Therefore, the company could not take advantage of economies of scale that come with long production runs. For agencies within the government, lack of long range funding meant that strategic plans might have to be changed, therefore it was as important to plan for contingencies as it was for creating the strategic plan.

By the end of the hearings, the Air Force had made a compelling case that no inappropriate action by the parties involved had occurred. General Smith effectively explained why the B-36 had been needed and demonstrated that there was disagreement within the Air Force on procurement matters, but this divergence of views was healthy. Generals Smith, Kenney, and Vandenberg, testified that the project continued because of decisions made within the organization, with the consent of administration officials and Congress. Symington, Odlum, and Johnson answered all of the committee's questions and were exonerated of the charges. The committee determined that Van Zandt's allegations were false. Part of the finding stated that: "The charges bearing upon the

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[24]B-36 Investigation, 205-42, quote 241.

integrity and honesty of Government officials and others mentioned in the anonymous document were based on hearsay, rumor, and imagination, rather than on demonstratable fact. Competent and compelling evidence before the committee clearly proved all to be false. Under an oath, Mr. Worth was unable to establish any one of his charges and recanted and repudiated every one of them,"[25] closing the committee hearing on the issue of the B-36. However, the final committee report advocated maintaining a plural defense establishment noting that strategic air was but one element of the overall strategy. That hearing ended one controversy for the Air Force but leaders had to address issues from other organizations.

Congress had the ability to end a procurement program at any time if it determined that costs were excessive or if a service failed to carry out a mission effectively. Congress helped reduce costs within the aircraft industry by conducting vigorous investigations and scrutinizing appropriations, but it helped increase costs by providing generous funding to the military and providing pork barrel projects to constituents. Nevertheless, the power of the congressional purse string encouraged the services to guard their missions. The Air Force had to perform missions in support of the Army, but if it failed to carry out the mission effectively the Air Force risked losing it to the Army. An example of this occurred when the Army criticized the Air Force's implementation of close air support during the Korean War. General James A. Van Fleet, commander of the Eighth Army in Korea, wrote a letter to the Far East Command of the Air Force pointing out the shortcomings of close air support. Van Fleet indicated

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[25]Ibid., 659, 619-45, 475-504.

that deficiencies included insufficient number of sorties; airfields were too far from front lines; administrative delays caused increased time from requests of support to delivery; it took too long once planes were over the area until munitions were placed on target; there were too few tactical air controllers; controllers were inexperienced and had too short a tour of duty; and "the failure, since World War II, to develop special aircraft & armament capable of providing more effective close support to ground units."[26]

Van Fleet proposed that an organization be established that would be similar to the one the Marines and Navy had, in effect stripping a core mission and limiting future tactical air procurement for the Air Force. The Eighth Army would have some squadrons under its direct control for close air support. Air strikes would be controlled by army personnel with requests coming from divisions and filled by corps-level commands. The changes would provide more close support without affecting the ability of the Air Force to meet air interdiction demands, in Van Fleet's opinion, and reduce time requirements.[27] The Air Force had a different opinion and was prepared to fight for its position.

Throughout 1951 criticisms of the Air Force surfaced in the press and in Congress that the procedures in use for close air support were inefficient, prompting the Air Force to take a defensive position. Congressman Vinson wanted to avoid hearings in the Armed Services Committee and requested that the Army and Air Force solve their differences. The Air Force felt it needed to be prepared for some form of an investigation, but leaders were ready to negotiate with the Army in order to avoid the

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[26]Memo from James A. Van Fleet to Commander-in Chief, Far East Command, APO 500, 20 December 1951, 2, RG 341, Entry 330, Box 296, NARA.

[27]Ibid., 3-4.

Secretary of Defense impanelling a civilian or military board of investigation.[28]

The Air Force considered an investigation and the resulting publicity about how it ran tactical air to be detrimental to the image of the young service, because good relations with the public translated into dollars from Congress. A study by the Air Force demonstrated how a report to an investigating body should be produced, what points should be included and what actions should be taken to cast the service in the best light. The problem for the Air Force was that dissatisfaction with the "Air Force System" of close air support came from congress, the press, and all the other services. At the time of the report the Air Force had not established or disseminated doctrine on the use of tactical air and recommended that the parties testifying should all agree with most aspects of tactical air.[29]

The clamor for an investigation of tactical air came to a head in late 1950 because of the poor performance in coordinating close air support in Korea. The catalysts stemmed from the early reverses in Korea, the lack of a tactical organization within the Air Force, overemphasis of strategic bombardment, and the publicity value of the controversy for the other services. In Congress Senator Ralph E. Flanders and Representative William Sterling Cole took the lead in calling for an investigation on the shortcomings of the Air Force. They shared the same feelings as the commander in Korea that the Army should be in control of its own close air support. The Navy and

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[28]Memo for Secretary Finletter from General Robert E.L. Eaton, Director Legislation and Liaison, December 12, 1951, RG 341, Entry 330, Box 296, NARA.

[29] "Air Force Actions Concerning a Possible Congressional or Other Highlevel Investigation of Tactical Aviation," October 1951, 1-3, RG 341, Entry 330, Box 296, NARA.

Marines were not opposed to an investigation, believing that both services would make gains for their own programs at the expense of the Air Force.[30]

The Air Force had not disseminated its developing doctrine on tactical aviation, and wanted to avoid providing evidence for the other services that tactical air was not a significant priority. In early 1951 leaders prepared ideas to meet the looming controversy in an effort to prevent any loss of core missions. In the presentation "Basic Concepts of Air Power" the writers placed the tactical air problem in context of an overall scheme of air power. The tone of the paper suggests that the Air Force worried about losing part of its mission which would translate into loss of money for programs. For example, if leaders adopted the Marine method of ground support, the Army might gain its own air force and the Air Force would lose a mission and funding. Flexibility became a key ingredient used to defend the concept of close air support. The Air Force contended that it must be capable of mounting a swift concentrated mass attack on any military objective for air power to be effective. Mobility of firepower coupled with increased capabilities would allow Air Force strategists and tacticians to pursue military objectives that ranged from enemy forces engaged in battle to the destruction of production facilities. Taking away one element of their forces, the Air Force argued, would cripple the ability of the air forces to meet all possible objectives that present themselves [31]

Air Force planners believed that critics were short sighted in their views on the use of air power, because no two air wars will ever be the same, but the organization,

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[30]Ibid., Tab 1, 2.

[31]"Characteristics and Employment of the Tactical Air Force: Basic Concepts of Air Power," 5 January 1951, section I, 1-3, RG 341, Entry 330, Box 296, NARA.

command and concept of employment must be in place to permit full utilization of all air resources. Equipment had to be designed to meet a wide variety of situations and targets. Technological limitations forced the Air Force to build planes that were effective for only one part of the target spectrum. For example, a plane designed for attacking heavy industry is not capable of being used as an air defense interceptor. Furthermore, national objectives and limitations of resources prevented the Air Force from building a tactical plane for every combat situation. Nevertheless, the Air Force argued that strategic and tactical air forces complemented each other. Heavy, medium, and light bombers had different roles based on capabilities that were ineffective, usually, when roles were crossed. For example, during World War II bombers were used primarily against hard targets (bridges, factories, etc.), but they were also used in support of troops during the D-day invasion. Tactical aircraft served in ground support roles and as escort to bombers providing a variety of utilization.[32]

While it planned for future needs, but contrary to the Air Force's position on building single purpose aircraft, the threat of air attacks and technological developments prompted the Air Force to build a specialized aircraft for interceptor air defense. The aircraft had to be able to climb rapidly to altitudes not thought possible a few years before and find and destroy targets in any weather conditions, day or night. Nevertheless, planners intended the plane to accomplish other missions such as fighting air to air combat over a ground battlefield and attacking ground targets within the battle zone. Therefore, it was important that the Air Force build into its equipment features that were

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[32]Ibid., section I, 3-7.

flexible and adaptable to meet a variety of missions without compromising the primary function.

Designing weapon systems to be flexible reduced costs and expenditures by eliminating the number of procurement programs for single purpose aircraft, but it forced the Air Force to compromise technologically attainable characteristics. For example, a bomber does not need guns, self-sealing gas tanks, or armor plates to accomplish its mission as a pure bomber, and theoretically the extra weight may hinder speed, range and bomb load capacity. However, the impediments must be accepted, because the bomber would be contested and it must have a survival capability to complete the mission. Planners contended that the same would be true for tactical air forces. "They must have characteristics which will enable them to fight enemy air forces, at least on even terms, or they will be shot down like flies and will fail in their mission. These employment considerations, then, dictate essential compromises in design characteristics for all classes of our aircraft." The basic concept dictated that all air forces must be mutually complementary, with no aircraft designated to a single mission, so that all can be used to support an overall strategy on a wide range of targets. "This characteristic of air power we must never destroy by organizational and command compartment which will result in rigid assignment of any part of military air force to any one fixed, immutable, isolated mission."[33] In the opinion of the Air Force, the Army tried to restrict its ability to perform the mission assigned by taking away flexibility.

Air Force planners recognized the strengths and limitations of air power and

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[33]Ibid., section I, 8-9.

thought others should recognize them as well. The most economical use of air power was against concentrated targets. The more dispersed the targets, the harder they were to destroy. For example, one atomic bomb against a tank factory could have eliminated all production. If it was not destroyed, and thousands of tanks were committed to battle, then it would take thousands of precision air attacks to achieve the same result. Furthermore, "it would have been difficult to fight and conquer the American Indian on the plains of the West with modern air power. This means that if our future strategy commits American ground forces against enemy ground forces, our own ground forces must be able to stop infiltration tactics and must be able to fight the widely and individually dispersed enemy with their own weapons in a reasonably effective manner." Air power will be able to assist in ground fighting but it is not a substitute for it. "The Army should not expect the Air Force to do all its fighting for it or to destroy all enemy resistance in front of it. If air power could do this, we would not need an Army."[34] Planners suggested that the Army should expect the Air Force to disrupt enemy supplies, communications, and maneuverability, but while wanting to preserve their core missions they knew there were limitations to air power. Economy of force had been a selling point in the creation of the strategic bomber force. However, using aircraft for eliminating small dispersed targets would be uneconomical and increased the chances of losing valuable aircraft.

The Air Force viewed the employment of tactical aviation more broadly than the Army, making operational compromises between the services difficult to attain. The Air

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[34]Ibid., section I, 12-13.

Force had three general missions in the tactical realm. The first priority was maintaining air superiority. If ground forces were being attacked by aircraft, the Air Force viewed it as an unacceptable failure. Second, tactical air elements were to interdict enemy supplies, troops, and communications in the rear areas to isolate the battlefield. Third, attacks were to be made on the battlefield in close cooperation with Army forces. All three missions were to be performed by the same planes from the same fields under one control structure.[35]

The Air Force feared that by following Army recommendations, close air support tactics would resemble practices used during World War II in Africa, where air forces had been parceled out to individual sectors without a unified control system, creating devastating results for the allies. For example in North Africa, Allied forces had failed to gain control of the air and individual commanders would not release their air forces to assist with general air control. Consequently, both ground and air forces were under constant harassment from enemy air forces. Furthermore, no single command had the responsibility for preventing reinforcements from outside of Africa which allowed thousands of troops from Italy to come in almost unopposed. Air assets were dispersed to isolated areas by commanders who were concerned only with their own problems, and not the overall battle plan, contributed to the lack of a strategic air force. Commenting on the problem at the time to the Commanding General Army Air Forces, General L.M. Kuter, commander 242 Group and XII Air Support Command, noted that: "During this period the Allies had more aircraft than the Axis. However, the superior air power

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[35]Ibid., section II, 1-2.

inherent in our greater numerical advantage was never developed nor employed. . . . The overall effect of the unsound organization and operational concept of our air effort was graphically illustrated by the fact that the enemy was permitted to move, in lightly escorted and unarmed transports," unaccosted by Allied air forces.[36]

Air Force leaders believed problems with tactical air had been solved when, following the lead of the British, the United States reorganized tactical air units in 1943. General Eisenhower commented on the new organization stating that

> The new administrative and operational organization successfully solved one of the basic problems of modern warfare -- how to apply air power most effectively to the support of land operations. Direct support of ground troops is naturally the method preferred by the immediate military commander concerned, but this needs to be supplemented by assaults on the enemy's bases, on his lines of communications, and on his factories, which are beyond the immediate range of the local commander's vision.
>
> The problem in a given operation is further complicated by the competing demands of individual commanders on a far-flung battle front, each of whom would naturally like to have at his disposal some segment of the air forces for his own exclusive use. To a large extent in our experience the creation of separate Strategic and Tactical forces resolved the conflict between the immediate needs of the commander for direct air support, and the equally compelling necessity of knocking out the enemy's war potential far behind the lines; but, perhaps, the greatest advantage of the new organization was its flexibility. Aircraft of the different combat formations could be fused in a single mission as the need arose, and as a result the local commander had for direct support the combined weight of the Strategic and Tactical forces when he most needed it.[37]

In the view of the Air Force, the Army was unrealistic in its expectations of close air support and ignored the comments of their own great military minds from the past. What the Army wanted was for the Air Force to continue to be responsible for gaining air

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[36]Ibid., section II, 4-7.

[37]Ibid., section II, 8-9.

superiority and isolating the battlefield, and that special units be developed for close air cooperation with ground troops. In the Air Force's opinion, to grant the Army's request would take all the funding away from other weapon systems and be applied to servicing the ground forces. In the end, taking away the flexibility of tactical air would inhibit the usefulness of air power and cause additional casualties on the battlefield.[38]

National policy influenced how military leaders developed their strategy, and in turn set the requirements for procurement, Congress and the other armed services played key roles in refining procurement decisions. The Air Force maintained its missions by providing national leaders strategies that would accomplish stated objectives, but it had to prove that these strategies would be cost effective and complimentary within the total force structure while minimizing loss of life and material. The animosity among the services continued to thrive, forcing the Air Force to spend considerable time defending itself. Nevertheless, the Air Force continued to develop plans and weapon systems that would meet national policy objectives and maintain its role as a leader among the services.

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[38]Ibid., section III, 1-4.

# CHAPTER IV

## CONTROL OF RUSSIA BY AIR AND OTHER MEANS

After the Korean War Air Force leaders once again focused their attention on plans to control the Soviet communist threat. With policy at the top level solidified, strategic studies within the military concentrated on how to contain the Soviet Union. In June 1954 the Air War College, located at Maxwell Air Force Base, Alabama, presented to the Air Force Chief of Staff a report that developed concepts designed to cripple and separate the unified forces of Communism. Air Staff requested on 22 June 1953 that *Project Control: Control of Russia by Air and Other Means* be developed, and a year later Air University delivered the report. The project, divided into four reports and twelve research memoranda, laid out the Air Force's concept of how the Soviet Union could be controlled primarily by use of air power.[1] *Project Control* refined the strategy of the Air Force, which was vital in determining the requirements for types and quantities of weapon systems. Gone were the days when a plane could be delivered to the military to be equipped with the ordnance in use by other units. The Air Force developed complete weapon systems, down to the ladder to get into the aircraft, to meet the Soviet threat.

The centerpiece of the study contended that control of the air was the highest

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[1]Colonel Robert J. Goewey to Commander Air University, "Transfer of Project Control," 8 June 1954, 1, RG 341, Entry 335, Box 292, NARA: although many of the early versions of Project Control are still classified it appears that work began in January, 1951, and progress reports given to the Air Staff in January and June 1953.

priority in the defense of the United States. Colonel Robert J. Goewey's transmission letters with the report stated

> The concept of Control by Air and Other Means (CAOM) maintains that the primary principle of world power today rests upon the control of the air just as control of the seas was the primary principle of world power during the last century. The study maintains that control of the air supported by tanks, guns, troops, ships, or indigenous control forces, as required by the situation, enable a power to control the behavior of people on the surface.[2]

CAOM was a political-military concept striving to establish an international "freedom of the skies." Just as there was freedom of the seas by control of the seas, CAOM contended that freedom of the air would only come about by control of the air, in essence United States freedom could only be attained by overriding Soviet freedom. The concept wanted to avoid the mass use of troops, instead using the "economy of force" principle of war emphasizing initiative, offense, mobility and the employment of mass destruction as the decisive method. From the beginning of the project it was evident that minimizing loss of troops was foremost in the authors' minds.[3]

Control of the USSR was to be achieved by attaining objectives that would force the Kremlin to succumb to the will of the United States and its allies. The actions that were to force Russia into compliance included the unification of Germany, resolving the contentions in Indochina, disintegrating the Iron Curtain, establishing a forward air patrol, and using reconnaissance as an offensive tool. The Air Force wanted each objective to be achieved without starting a full scale war with the Soviet Union, which reflected the tenants of national policy In short, the plan's design made life for the

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[2]Ibid., 2.

[3]Ibid.

Soviet Union so difficult that the Kremlin would prefer to act in a way prescribed by international opinion. In effect, the Soviet Union would prefer to retreat rather than go to war for an insignificant interest. However, avoiding a full scale war seems dubious since the Soviet Union would see any attempts at unifying Germany or destroying the Iron Curtain as an affront to its vital security interests and another example of American imperialistic expansion.[4]

Pressure became the key to forcing the Soviet Union to stop its quest for international domination. *Project Control* recommended several operations to pressure the Soviet Union into compliance with the Air Force as the primary catalyst. For example, preemptive initiative through the reconnaissance offensive would allow the United States to launch a strategic atomic offensive, as a defensive measure, when it was determined that the Soviet leadership demonstrated "intent to strike through their continued political warfare, their deployments, and force disposition." Other measures included control of the air, destroying Soviet war potential, conducting allied exercises in Europe, and negotiating terms to end the pressure.[5] The report envisioned that after pressure had been applied a new government would be formed in the Soviet Union. The report even went so far as to recommend what elements of the government should continue.

Control of Russia through control of the air required a comprehensive plan that integrated all air force missions, but emphasized the importance of SAC. "It is important

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[4]Ibid.; Zubok, 52-55; *Project Control Research Memorandum No. 4.3: The Unification of Germany*, June 1954, 1-25, RG-341, Entry 335, Box 292, NARA.

[5]Goewey, "Transfer of Project Control," 3.

to recognize that under the strategy, operations in Indo-China, in East Germany, or in other peripheral areas are possible only through the enabling operations of disintegrating the Iron Curtain and the reconnaissance offensive, together with the ever present threat of the strategic atomic offensive capabilities of the United States Air Force." The report indicated that no nation can risk the possibility of atomic war, thus making the atomic offensive the centerpiece of United States defense. The plan became "a single global strategy of global dimensions against the USSR and its captive nations. It integrated small wars, such as Korea, with the strategy of controlling Russia."[6]

The mission of the Air Force under this strategy would be to control the air over Russia and thus control Russia. By having such a mission the Air Force argued that all air power resources should be unified under one responsible party. As an infant service the Air Force did not want the Army and Navy to erode the independence it gained six years earlier, which showed that the flexible nature of Air Force planning was in fact ridigid when it came to protecting its missions. The reporting officer recommended that *Project Control* be developed as a pattern for national policy, more research be done to show Soviet weaknesses that could be exploited, a political warfare force be organized, and research dollars continue to flow to ensure new development.[7]

During this same period of 1953-54, the Air Force began developing its concepts and doctrines which reflected the prominent role it played in national policy objectives. As policy shifted once again with the election of a new president, the Air Force adapted

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[6]Ibid.

[7]Ibid., 4.

to the change in leadership, and by doing so secured future procurement funding. Eisenhower's New Look emphasized the use of massive retaliation which fell into the jurisdiction of the Air Force. In a briefing given on April 23, 1954 for Deputy Secretary of Defense Robert Bernard Anderson, Major General R.C. Lindsay discussed the employment of air power and the importance of SAC in supporting the current national policy. The national policy promulgated in NSC-162/2 (October 1953) had shifted further in favor of the Air Force as the country relied upon the use of nuclear weapons as the primary deterrent to Soviet aggression. General Lindsay described how the Air Force's unique position supported the national policy intent to ease pressure on the domestic economy while applying pressure on the Soviets. Nevertheless, the New Look represented a transitional policy that anticipated the United States nuclear superiority would eventually end. With that in mind, Air Force leaders planned for the day when the Soviets capabilities would match those of the United States and that the use of nuclear weapons would be employed by strategic and tactical forces.[8]

The Air Force contributed to four policies contained in "Military Strategy and Posture," which continued to reinforce its position as a leader in carrying out national policy. The first emphasized retaliatory response as a method of deterring aggression. The second policy withdrew forces from peripheral conflicts to create a strategic reserve force based in the United States. The third maintained a strategic continental defense system within the United States. The fourth provided tactical atomic support to allied

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[8]Freedman, 83.

and United States troops in the event of general or limited war.[9]

The Air Force viewed these changes in policy as evolutionary rather than a radical departure from past policies, and complemented the use of advanced weapon systems. Nevertheless, Lindsay stressed that the United States still needed assistance from its allies to continue to protect those areas overseas that were vital interests. Deterring the Soviet Union had been a primary objective of the United States and exploiting atomic weapons was only strengthening the ability to maintain that policy. Furthermore, enemy attack against the United States had been a fundamental concern and the extra attention given to air defense was based on the expanding capabilities of the Soviet Union. Policy demanded that the Air Force provide resources that could survive a Soviet takeover of Europe and thus a greater emphasis was placed on United States-based forces and less on overseas commitments.[10]

The Air Force's 137-wing program was designed to support evolving national policy that wanted economy within its military forces. Professor of War Studies Lawrence Freedman observed that the Eisenhower Administration expected military commitments to be kept at a low cost. The United States Joint Chiefs of Staff moved to a policy of using nuclear weapons whenever appropriate to reduce manpower costs, the most expensive part of the service. The policy allowed the United States to meet the

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[9]Briefing by Major General R.C. Lindsay for Deputy Secretary of Defense Anderson on "Air Force Concepts" April 23, 1954, 1, RG 341, Entry 335, Box 285, NARA (Hereafter Lindsay Briefing). "Military Strategy and Posture" was a report submitted to the Secretary of Defense in December 1953 by the Joint Chiefs of Staff in response to Eisenhower's New Look.

[10]Ibid., 2.

Soviet threat without hurting its economy.[11] Nevertheless, great amounts of money were needed to produce the weapons in support of massive retaliation.

The Air Force organized basic concepts into three functional divisions: strategic, tactical and air defense. Strategic air power was centralized into a single organization, the Strategic Air Command (SAC). SAC constituted United States long range striking capabilities for world wide employment. It envisioned global flexibility free from local commitments and met policy requirements of massive and immediate retaliation.[12] The technical requirements of such an endeavor were immense, which required the government to become one of the driving forces in technological developments that would not have been created by private industry because of the lack of demand. The Strategic Air Command became the center of the Air Force's quest for institutional stability through the expansion of capabilities. The policy of the administration and the capabilities of the military forced the United States and Soviet Union onto a path where both parties had to achieve invulnerable retaliatory forces to create a nuclear stalemate. Nevertheless, air power presented leaders with the ability to apply sanctions with little resistance making deterrence a credible strategy.[13]

The role of SAC in a general war was to conduct preplanned operations against the Soviet Union. In a limited conflict SAC became available to local air commands. The objectives of SAC during a general war were to "blunt" the Soviet ability to attack

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[11]Freedman, 81.

[12]Lindsay Briefing, 2.

[13]Freedman, 88-89. Bright, 65-69.

the United States (BRAVO objective), and "disrupt" Soviet war making capacity (DELTA objective). These two objectives contributed to a third objective (ROMEO) which with other participants was the "retardation" of Soviet ground operations.[14]

The initial and primary objective of SAC, Lindsay indicated, was ensuring the success of the blunting mission. At the time of the briefing in April 1954, there were 60 long range air force targets that had to be destroyed at the time of hostilities. Typically the targets, Soviet strategic nuclear forces, were to be destroyed by B-36s or B-52s launched from the United States within eight hours of a presidential authorization. Simultaneously, medium bombers were to be launched and staged at forward air bases in the United Kingdom and North Africa where the attack could continue the following day. BRAVO was not an easy objective to achieve. Soviet warning and dispersal plans made surprise a key element. A problem with the attack scenario was catching planes on the ground and destroying them. Failure to damage Soviet airfields early in the conflict would have hindered the United States' ability to make attacks that were to follow for several days.[15] The key to a successful "blunting" operation was knowing the intentions of the Soviet Union. For example, if the Soviet Union failed to attack the United States in the opening assault, the Air Force was confident that it could prevent an attack from ever occurring by destroying pertinent targets in a preemptive strike.

SAC became the centerpiece of the Air Force plan to help implement national policy and required vast resources. Nevertheless, the Air Force had a broad array of

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[14]Lindsay Briefing, 3-6.

[15]Ibid., 4.

responsibilities to meet that required forward thinking in all areas. SAC had assisted in making "on call" attacks whenever ground situations required since 1950. However, through the first half of the 1950s the spread of atomic delivery capabilities to tactical air and naval forces diminished the need for SAC to participate in direct ground support. Thus for objective ROMEO, SAC was to be available on call when the ground situation dictated.[16] The Air Force recognized that each role was becoming more specialized and the only way to stay ahead was to anticipate and limit future needs. Policy requirements created a technological demand for weapon systems that did not exist and it was not known if they could be produced on time or at all.

After air defenses had been disrupted, the attack plan turned to destroying industrial targets that supported the war effort. Important targets included atomic energy, liquid fuels production and storage, aircraft manufacturing, guided missiles and tanks. The Air Force planned that it would take up to thirty days to complete the DELTA objective using nuclear weapons. Nevertheless, the effects of the operation would not be felt on the battlefield for up to six months. The effects of atomic weapons on the will of the opposing force to continue at war remained unknown. The air offensive was designed to create the maximum shock on the Soviet population and government and was intended to be completed as quickly as possible. The damage was intended to create a condition that would cause the enemy to avoid a prolonged war. The strategic offensive became an opportunity for the Air Force to provide an effective psychological weapon

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[16]Ibid.

designed to create defeatism on the part of the Soviet Union.[17]

The Air Force had learned lessons from the war in Korea and by planning for future limited conflicts it tried to avoid repeating them. SAC, with its all-weather capability, was still a vital asset in the tactical theater. The tactical air forces were designed to achieve a number of air tasks. In a general war, tactical air was to assist in the defense of Europe where future attacks would be launched from forward air bases, and continue the role it served during World War II. Those activities were to include attacks on airfields, transportation and communication systems, close ground support and reconnaissance within the theater.[18]

The most dramatic change to the role of tactical air operations came with the addition of atomic capabilities to the mission. The change influenced the mix and delivery of weapons allowing heavy bombers to carry lighter loads at a greater range. Future light and medium bombers were to have better capabilities in all weather and the ability to carry heavier bomb loads. Most important, a greater segment of the tactical air force was to be held in a newly created strategic reserve. The reserve was to protect the forces in vulnerable positions and allow for a flexible world wide response while maintaining a small number of tactical aircraft in forward positions to show visibly United States support for its allies.[19]

Elements of the Air Force's defensive concept required a complex and large

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[17]Ibid., 5.

[18]Ibid., 7.

[19]Ibid., 8.

organization designed to stay ahead of Soviet capabilities. The plan called for building a belt of radar stations surrounding the United States to detect invading forces, establishing an early detection line across Canada and elimination of ground observation posts as radar improved. In conjunction with the radar system, the concept called for the creation of an interceptor force that was capable of working in all weather and armed with missiles to protect offensive weapon systems. Antiaircraft guns and missiles operated by the Army became the final ring of defense with all elements of the defense program guided by control centers.[20] For the program to work communications and implementation of orders had to work together; a break in the chain that held the organization together presented a potential disaster. Overall, the Air Force plan maintained its long held concept of mobility and provided security against a surprise attack by implementing air operations that were complementary to each segment of the mission and supported national policy.

Regardless of the efficiencies of air power, the Cold War forced American leaders to examine how much they would pay to keep the Soviets at bay. The cost of maintaining a modern and effective air force throughout an indefinite Cold War might become prohibitive if planning and procurement policies were left unchecked. Effective use of air power might reduce the costs of maintaining an Air Force that was second to none, but that required political leaders to know how best to utilize air power. In a 1953 essay entitled *Thoughts on Air Power as a Political Weapon*, Eugene M. Emme, a noted theorist, argued that "air power inherently possesses tremendous capacity for exploitation

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[20]Ibid., 9-11.

as a political weapon furthering decisions and actions by hostile nations consistent with American aims as well as encouraging the like-mindedness of our allies." Military leaders, Emme suggested, needed to help formulate policy of the air forces to meet political objectives thus avoiding the "well documented lag of military doctrine and thought behind technological progress [that] has paralleled in the oft-cited lag in American political know-how in international affairs behind our technical capabilities." American air power deterred Soviet aggression because it influenced Kremlin decision making. For example, primarily the B-36 paid for itself because it deterred the Soviet Union from initiating an attack. Second, air power may be the only means to avoid total defeat by preserving economic facilities and selectively destroying targets in the Soviet Union thus encouraging a position of peace. Clearly, Air Force leaders knew that they needed overwhelming force to prevent the Soviet Union from attacking the United States. The recommendations and war plans were based on long held notions described by Secretary of Defense Forrestal

> Whatever may be the evolution of military power of the future the best guarantee for universal peace is to have the most potent force in the hands of the most peaceful nation. To that end this Nation must strive.[21]

Nevertheless, air power contributed to the Soviet Union leaders' xenophobia that had been awakened by the atomic bomb, and exacerbated by the Marshall Plan, the creation of NATO, and the Korean War. Soviet aggression appeared to be deterred because of United States military capabilities, but the lack of a master plan for global domination is

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[21]Eugene M. Emme, *Thoughts on Air Power as a Political Weapon* (Maxwell Air Force Base, AL: Air University Press, 1953), iii, viii, 11-12, 27-29, RG 341, Entry 335, Box 295, NARA. This was a Top Secret essay distributed by Air University.

a more likely scenario.[22]

*Project Control* recommended that the concepts described in *Air Control* be implemented by Headquarters USAF in Korea and a study of *Air Control of Russia* be initiated by the Air University. In a June 10, 1953 progress report the Air University visualized six major reports for the study of *Air Control of Russia*. The reports were to address the general concept of *Air Control*, analyze the usefulness of *Air Control* from a historical perspective against Japan and Germany, and research concepts of Air Persuasion, Air Pressure, and Air Administration of Russia.

The first problem for the planners was to determine what the objectives should be for the Air Force, including the objectives of *Air Control*. Five years earlier General Lauris Norstad, Chief of Plans, and his staff had briefed members of the State Department on potential atomic bomb targets in the Soviet Union.

> After the briefing Mr. Boleyn stated that to atom bomb these targets would cause the Russian people to fight us in a bitter guerilla war. Mr. George Kennan added that to atomic bomb Russia would identify Americans as western capitalist beasts just as Communist propaganda had been telling the Russian people for thirty years.[23]

poignantly, the State Department told the Air Force that political objectives could not be attained through atomic bombing.

The Air Force planners disagreed with the State Department and relied on Clausewitz for linking political and military objectives. Clausewitz stated that: "War is a continuation of political intercourse by other means." Following this famous dictum he

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[22]Zubok and Pleshakov, 51, 71, 282.

[23] *A Plan for Studying the Air Control of Russia: A Progress Report on Project Control*, June 10, 1953, 1, RG 341, Entry 335, Box 292, NARA (Hereafter *Report on Project Control).*

added that, "The commander can demand that the political policy be not incompatible with these means . . . but the political design is the object, while war is the means." Thus, the military objective and the political objective are directly related and the commander can demand that policy and means of war be compatible. Furthermore, politicians can demand that the means of war promote political objectives.[24] The preoccupation with the means of mass destruction demonstrates how strategy was separated from diplomacy and the analysis of values and interests. The Air Force reliance on past strategists begs the question of whether it is proper to rely on dictums that could never have envisioned a nuclear age where the line between war and peace is blurred. Air Force planners failed to realize that as political objectives change their plans may not be appropriate for for future circumstances.[25]

Air Force leaders needed to demonstrate that the plans to contain the Soviet threat were viable as the cornerstone of American strategy. During World War II some Air Force leaders thought air power was seen as ancillary to the surface strategy. Air superiority over Japan and Germany simply allowed ground troops to make their landings and could not on its own bring about the capitulation of the enemy. Nevertheless, Air Force planners suggested that the policy of unconditional surrender allowed air power to pursue an objective of "progressive destruction and dislocation of German military, industrial and economic systems and the undermining of the morale of the German people to the point where capacity for armed resistance is fatally weakened." Therefore,

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[24]Ibid., 2.

[25]Freedman, 48-58.

Air Force planners viewed their role against Russia in the same light as they did in World War II. The objective of the Air Force was to blunt the ability of the Soviet Union to deliver atomic weapons and destroy its ability and will to wage war.[26]

*Air Control* became the method the Air Force used to meet political objectives and at a lower cost than surface forces, increasing its ability to attract additional procurement dollars. *Air Control* simply meant "the use of aircraft as the primary arm to support the political administration for the purpose of creating law and order." Thus, air objectives and political objectives become the same and the air arm was at the disposition of the political.[27] The main problem with this thinking is that Air Force planners anticipated only one way to deal with Soviet transgressions, and that was with force. There were too many possible scenarios that would prevent American leaders from taking actions that would lead to total war. It is conceivable that a small ground force might be more effective and less threatening to bring about the end of a minor crisis. Nevertheless, air power allowed the United States to remain a comfortable distance from areas that would require substantial ground forces to have the same effect.

The concept of *Air Control* was composed of several elements that explained what had to be done to control the Soviet Union and provided justification for further expansion of the Air Force role in national policy objectives. First, the Air Force must have the capability to control the air and exercise what planners termed, air persuasion, air pressure, and air administration. Second, intelligence must provide accurate

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[26]*Report on Project Control*, 3.

[27]Ibid., 5.

information on political, economic, cultural, psychological and military matters. Third, the objective was to produce behavior from hostile nations that was acceptable to the United States under feasible terms. Fourth, communications must be established with hostile nations to transmit terms, warnings, and receive responses. Fifth, there must be an organization within the hostile country that controls the power and can make terms with the United States.[28] At first glance the concept of *Air Control* appears to be reasonable. However, if any one element is not fulfilled, the concept is doomed to fail. For example, obtaining intelligence information from a closed society is difficult at best, and interpreting the information accurately is a greater challenge. Furthermore, if communications are one of the main targets using nuclear weapons the question arises of how terms are to be exchanged with the ruling government. Aside from the operational problems, *Air Control* requires that capabilities continually be expanded and that the United States take the initiative to prevent the Soviet Union from developing thermonuclear capabilities. *Air Control* assumed that political objectives would remain the same as well as the methods of attaining them.

Air Persuasion, which State Department officials thought had no effect on foreign policy, was the deterrent aspect of air power, which included the atomic bomb. Air Force planners believed that hostile nations acted accordingly because they feared reprisals from improper actions. Planners cited the Berlin airlift as a good example of Air Persuasion because the Soviets backed down after the United States demonstrated that air power could support land operations and overcome their actions. However, this

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[28]Ibid., 9.

demonstrated that capabilities alone could not deter the Soviets from acting in the first place. Nevertheless, the inability to prevent the airlift from continuing cast a stigma on Soviet ability to make inroads into the West. The Air Force did not have planning in place to run an operation like the Berlin airlift and the Soviet Union thought Berlin would wither on the vine once land routes were cut off because the West did not have the capabilities to support the city. This prompts the question of whether the Soviets would still have pursued the same objective if its leaders knew the West had the capabilities to supply Berlin by air, or would they simply have anticipated the move and countered it with another maneuver. Furthermore, since the Berlin airlift was an unanticipated event, how would the Air Force plan for other unanticipated events? Deterrence only works if the actors are rational and there is a strong chance that punishment can and will be enforced.[29]

The Air Pressure phase starts when firepower is delivered to the aggressor. Planners intended the pressure to increase along with information on terms for the ending of aggression. Air Administration involved the landing of ground forces in key areas or policing the country from the air. The most important aspect of *Air Control* was that it did not wait for total war to be implemented and was designed to try to prevent war from occurring.[30]

Nevertheless, plans are based on assumptions and influenced by the characters involved. Planners failed to anticipate that the use of nuclear weapons might not be

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[29]Freedman, 183-85, 188, 217, 220, 320; Gaddis, 80, 100-1, 146.

[30]*Report on Project Control*, 10-13.

authorized; that future wars would not all be in metropolitan areas with vital centers; that the nuclear monopoly would be lost; and that the United States would not have a long-lasting technological superiority. Furthermore, "too little thought was given to the fact that strategy can outwit technology; note the guerrilla who cautiously refuses to provide aiming points for advanced firepower." Historian Robert Futrell commented further that

> Air Force planners did not grasp the distinctions between the defense, deterrent, let alone detente usages of military power. Air planners rationalized that the deterrent capabilities of strategic bombing would be readily convertible into war-fighting defense capabilities, which was not proven. Despite Air Force contentions it was untrue that forces for large wars could win small wars.[31]

The Soviet Union continued to be the main concern for Air Force planners through the end of 1955. However, Air Force planners still had to deal with the potential for future limited wars as demonstrated by the Korean conflict. The concepts derived from their planning mandated that aircraft manufactures produce sophisticated weapons to meet the needs of the country. Planners were in a unique position to help drive the procurement process to produce a highly evolved industry. Without the plan and backing of political leaders military spending would likely have continued to stay with traditional surface forces.

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[31]Futrell, "Air Power Concept," 269.

# CHAPTER V

## THE QUEST TO LIMIT PROFITS

During World War II the aircraft industry and military services began to develop a relationship that became so close by the mid 1950s that it appeared to be improper. Wartime taxation prevented aircraft companies from capitalizing on their windfall revenues that could have boosted their ability to retain earnings and reinvest profits for capital expenditures. In 1944 the aircraft industry was at the height of production turning out thousands of aircraft for the wartime economy. However, the windfall profits of war plunged in 1945 as the military terminated contracts and future work vanished. The promise of a viable private commercial market failed to appear because airlines found it less expensive to purchase surplus planes, and the demand for air travel failed to meet expectations. With rapid demobilization the aircraft industry was forced to scale back operations dramatically, placing the future of its existence into question.

The developments of the Cold War changed misfortune into fortune as new contracts poured in from the military. The industry, which had produced meager, if any, profits in the peacetime economy, began to accumulate substantial profits primarily from government business. The profits were generated primarily through Air Force and Navy procurement policies; therefore, the United States Congress launched an investigation into how procurement policies affected aircraft costs and production schedules from the viewpoint of the aircraft companies. This 1956 House Armed Services Committee investigation into aircraft production costs and profits from 1952-1955 presented a case

study for examining the procurement policies of the Air Force and the effect the relationship with the aircraft industry had on meeting strategic objectives of the military.

Chairman F. Edward Hébert, Representative from Louisiana, opened the hearings by expressing that the investigation was not a punitive expedition or a case of seeking out suspected wrongdoing by any of the companies. Rather, the investigation attempted to gain a complete picture of the procurement process from the viewpoint of the companies. To most Americans, Hébert commented, the procurement process was a mystery and there were "suggestions of excessive profits, of unfortunate or inopportune contracts; there have been failures ascribed to a multiplicity of things. But failures must be measured against the successes." The committee wanted to discover the truth of the matters involved in the important endeavor of producing weapons for vital defense requirements. In short, the investigation tried to be thorough and exhaustive.[1]

The first person questioned by the investigation of the committee was J.L. Atwood, president of North American Aviation, who took the opportunity to share his company's history filled with success and tribulation. In 1935, the company employed a few hundred people, but expanded to more than 5,000 employees by 1940 when President Roosevelt delivered his 50,000- airplane message. North American Aviation expanded its own facilities along with government facilities to deliver more than 1,400 planes a month for a total output of more than 40,000 planes, which was more than any other company during the war. Employment rose to more than 90,000 as the company turned out some of the premiere planes of the period which included the P-51 Mustang

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[1]*Aircraft Production Costs*, 1291-92.

fighter and B-25 Mitchell bomber. Nevertheless, the wholesale cancellation of contracts resulted in their backlog falling from 8,000 planes to 24 planes in a period of just two months. By 1946, employment had been reduced to 5,000 employees, 30 percent of them engaged in engineering activities.[2]

Remarkably, the company adjusted relatively well after the postwar demobilization rebuilding its workforce to 22,000 by 1948. The company attributed its success to a constant technical innovation producing the F-86 Sabre jet fighter that later ruled the skies over Korea. Nevertheless, the company's workforce failed to grow until after the Korean War started even though the Finletter Commission recommended aircraft production increase.[3] The problems and conditions faced by the aircraft industry were unique and explained the volatile nature of the business.

Atwood aptly described the unusual conditions that the aircraft manufacturing industry faced, which raised concerns for military planners who relied on the companies for their complicated weapon systems. First, only one large customer existed from which to derive business. In North American's case, government contracts represented 99 percent of its business in 1955. Second, the demand from the government fluctuated violently. For the aircraft industry 1950-1955 had been relatively stable years, an aberration when considered historically, even though the government wanted to create a stable environment that would have been beneficial for planners and aircraft companies

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[2]Ibid., 1295.

[3]By 1947 the aircraft industry had become distressed; in response President Truman established a temporary Air Policy Commission on July 18, 1947. Thomas K. Finletter of New York chaired the commission and became the namesake.

alike. Third, intense competition caused an individual company's volume to fluctuate, because competition was oriented toward design capability. Fourth, rapid technological progress increased both the hazards of competition and the capital requirements to compete in the industry. The only companies that continued to succeed and grow were ones that used innovation in design to beat other companies.[4]

Technological progress made competition more difficult for companies to be successful at creating a plane the services wanted and demanded. For example, the demand for higher speed was accompanied by problems that increased complexity and research requirements. Higher speeds required high temperature structures, temperature control systems, greater propulsive power, high speed bomb systems, high speed navigation systems, improved flight controls and maintenance of combat range. Advanced armaments required special weapons, all weather capability, more accurate fire control systems, electronic countermeasures, and new bomber defense systems. Furthermore, trends in technological advancements required elimination of crew functions, requiring companies to develop automatic and reliable equipment, and guided missiles. The time of pilots using their innate skills to fly high performance aircraft were disappearing rapidly, being replaced by the use of technological inovations.[5]

Another aspect of technological advancement aircraft companies and military planners had to consider was the time needed to produce new products. As the speed of aircraft increased, engineering hours and production time increased to attain the desired

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[4]*Aircraft Production Costs*, 1295-96.

[5]Ibid., 1297.

results. For example, the P-51 was built during a two-year period using roughly 250,000 engineering hours to produce 200 units. The F-86 took just over four years to produce 200 planes using 2.8 million engineering hours. The F-100, a supersonic fighter, was built in just over four years but required more than 4.8 million hours. Planners and manufactures realized that technical complexities were going to increase the design and production time of future aircraft which had an effect on the longtime cycle of manufacturing.[6]

The complexities of design and manufacturing created an unusually long manufacturing cycle within the aircraft industry for planes ordered by the Air Force. Atwood suggested that this "further magnifies the competitive hazards of business, since technical innovations or changed requirements may render a line of development obsolescent and result in the company having no production potential in a category for a period of several years." For example, North American received its first contract for the F-86 in the middle of 1945, began flight testing on the prototype in 1947, and initiated the first production configuration in 1949. North American risked losing its business if new designs such as swept wings were not incorporated during the design process. Subsequent contracts were placed for thirty-three planes before the first flight tests began and an order for one hundred eighty-eight was placed after the first flight test. Atwood explained that had the government waited to order production planes after flight testing was complete, the first production flight would not have occurred until after 1950, by

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[6]Ibid., 1298-1301.

which time the planes had already been deployed in combat to Korea.[7] As the company and Air Force refined the airplane, improvements continued to be applied to subsequent contracts.

The sixth unusual condition that contractors worked under was the responsibility of integrating an entire weapon system, which could delay deliveries, increase costs and cause the company to redesign parts that worked properly before the integration. Previously an aircraft maker was responsible for the airframe and relied on other manufactures to provide capable and reliable elements. For example, guns were made by other companies and it was their responsibility to make sure they functioned properly. Contractors during the 1950s were required to produce a complete and working weapon system, which incorporated engines, electronic gear, and other intricate control systems that were not under the company's control. Nevertheless, aircraft contractors became responsible for incorporating others designs into their own work, or risk losing an entire project if those factors outside their control were not brought up to satisfactory standards.

The final unusual element for the aircraft industry was the specialized nature of their capabilities and facilities, causing a continual strain on financial resources for companies and a cry for more government assistance. Wind tunnels, development facilities, production equipment, organizational skills and capabilities were all directed at the peculiar problems of Air Force requirements for aircraft, missiles, and related work. To recapitulate, single customer, fluctuating demand, intense competition on designs, explosive technological progress with high demand, longtime cycle, complete system

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[7]Ibid., 1301.

responsibility, and specialized nature of facilities and capabilities were the unusual conditions that constrained the aircraft industry.[8] These conditions made it imperative for the government to ensure the success of the companies, with the alternative choice of creating a government-run and controlled system that would not be as efficient as a free market industry supported primarily by the government. Furthermore, the industry contended that government encroachment into management was partly to blame for the United States inability to keep pace with the USSR in producing combat aircraft.[9] This belief was a paradox in the fact that the aircraft industry needed great financial assistance from the government but wanted little oversight at the same time.

Some aircraft companies teetered on the edge of financial collapse after World War II and would not have survived except for the government contracts they received. One of the pursuits of the committee was to determine what government policy should be to procure aircraft systems. Providing government facilities without cost became one method the government used to provide aircraft companies resources they were unable to obtain on their own. Most of the companies did not have the cash resources to invest in plants and equipment needed to complete existing contracts. For example, the Martin Company would not have been in business during the 1950s if it had not received government contracts that included free use of government facilities. The committee faced the dilemma of finding a new method of producing weapons or maintaining in some form the current system. The problem was that the "alternative to this system

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[8]Ibid., 1302.

[9]*New York Times*, 2 February 1956, 10.

would probably be the Russian system,"[10] where the government provided all resources and controlled all aspects of development. Costs would have been determined by what the government wanted to pay and profits eliminated, but nobody in congress wanted any system that might resemble that used by the Soviet Union.

The procurement process was complicated in the aircraft industry. The Air Force had objectives it needed to meet and asked the industry to design and build planes that could meet the requirements. Contractors had an idea if they could accomplish the assigned task but determining costs was more of an educated guess than an estimate, which made accurate pricing difficult. Therefore, different types of contracts were used at different stages of the procurement process, and reconciliation was used to make sure the government paid appropriate amounts. Furthermore, the government wanted to make sure costs were kept to a minimum and used incentives to keep prices low. The presentation by Boeing Airplane Company best represents the process the government and companies went through to build a successful product at a low price.

Clyde Skeen, Company Controller of Boeing, related the company's experiences in dealing with the government and the procurement process. Founded in 1916, Boeing produced more than 23,000 aircraft through World War II at its plants in Seattle and Renton, Washington and Wichita, Kansas. Boeing achieved dominance within the aircraft industry by following a philosophy of continual research and improvement in aircraft design and production whenever practical. Notable accomplishments during the 1930s included the 74-passenger model 314 seaplane (Pan American Clipper) and the

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[10]*Aircraft Production Costs*, 1593-95.

first four-engine pressurized cabin for the high altitude flying Stratoliner. However, what boosted the company to dominance was the development of the B-17 Flying Fortress. Known as a major innovator, the company gambled a significant portion of its financial resources to develop the four-engine bomber for the AAC in 1934. The characteristics were so impressive that the plane became the focal point for military planners until its successor, the B-29, went into service. Realizing that the B-17 could not take the fight to the Japanese mainland, planners had Boeing design the Superfortress, a plane with the same ruggedness as the B-17 but with added range and striking power. Even before the first experimental model of the Superfortress had flown, quantities of the plane were ordered to be built by Boeing and other companies. The importance of Boeing bomber design was demonstrated by the fact that the planes constituted only 17 percent of the bomber forces operating during World War II, yet "these Boeing bombers dropped 46 percent of the bombs dropped by the United States in Europe, shot down 67 percent of the fighters felled by United States bombers in Europe, and delivered 96 percent of the bombs dropped on Japan."[11]

In the postwar years, Boeing continued its success by providing the Air Force a transition bomber design, the B-50 Superfortress. With the aid of aerial refueling the plane made the first around the world nonstop flights in 1949 denoting it as a mainstay of the Air Force fleet. Boeing's position and reputation as a leader in research and development propelled the company's planes into a leadership role in the Strategic Air Command's arsenal. The importance of Boeing to the defense of the nation was

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[11]Ibid., 1756-57.

expressed in a *Fortune* magazine article in September 1951: "In terms of urgency of current production and work in progress, no manufacturer in America, in a sense not even Oak Ridge [the atomic facility] or its satellites, is more important to the free world than Boeing."[12]

Boeing's postwar production history demonstrates that even a superior company struggled to stay alive until government contracts returned in sufficient numbers to support it. From 1946 to 1948 the company delivered only 158 planes to the Air Force. Nevertheless, Boeing continued to research and develop new technologies, refurbishing the C-97 into an air refueling platform and building the B-52 Stratofortress long range bomber. On March 18, 1954, when the first B-52 came off the production line, General Nathan F. Twining, Air Force Chief of Staff, praised the aircraft and the people who built it:

> To say this is the greatest bomber in the world today is putting it very, very mildly, and the progress that this airplane has made since the proto type was put on the line is something that has never been equaled. You don't wave a magic wand to develop and build something like this. I know what has gone into it, and you people should be proud right down to your shoes. Remember this, too -- not pride just of great craftsmanship in building a bomber of this great performance, but pride in what you've done for the world. All over the world today, people who want to be free know about this bomber and they sleep much better to know that it's joined the ranks of the people of the free world.[13]

The company not only produced a weapon system that met strategic requirements, but contributed to national policy by providing a psychological symbol of American superiority. Boeing not only produced great planes, but became representative of the

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[12]Ibid., 1757-58.

[13]Ibid., 1759-60.

greatness that could be produced by a free society. Unlike many other companies that continued to rely on the government as the main means of support, Boeing effectively used its abilities and name recognition to produce planes for the commercial market.

Boeing's forward thinking and successful research department made it unique within the aircraft industry. Generally all aircraft purchased by the Air Force were a result of competitions that gave companies contracts to develop specific planes based on planners' requirements. However in 1952, Boeing took the initiative and invested $16 million of its own money to construct a prototype jet tanker that would meet future needs of the Air Force. Boeing's sound reasoning anticipated that the Air Force would need a tanker and transport that had greater range and capabilities as demanded by the B-52 they were constructing. The construction of the prototype, Boeing estimated, would save the government more than $50 million during the initial run of what became the KC-135 program, because the refinements had already been initiated and the cost of setting up production and operations would be reduced.[14]

Contracts between the Air Force and contractors were primarily two in type, cost-plus-a-fixed-fee, and the fixed price incentive type. The Air Force used cost-plus-a-fixed-fee contracts on initial contracts where experience in the production of items required was limited, and on contracts for research and development work. Generally, this contract was used where economic conditions were uncertain and past experience plus state of the art knowledge was so limited that "the normal technique for estimating fair and reasonable costs cannot be relied upon." Under cost-plus-a-fixed-fee contracts,

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[14]Ibid., 1760-61.

profit (a fixed fee) was established at the inception of the contract and was based on estimated cost and performance. The contractor received reimbursements only for contract cost incurred, regardless if they were above or below the original estimate, as allowed by the Armed Services procurement regulations. However, the profit remained the same despite any change in the cost of contract performance.[15]

Fixed-price incentive-type contracts were used according to Air Force Procurement Instructions.

> To encourage a high degree of efficiency and economy on the part of the Air Force contractors, it is Air Force policy to negotiate contracts from the incentive, or increased profit, approach both at time of original price negotiation and at the time of price redetermination, if any. This approach is based on the expectation that the ultimate cost to the government will be less than otherwise would be and, if less, the profit to the contractor will be greater. The concept recognizes that the prospect of greater earned profit reward is the strongest incentive to induce contractors to become more efficient in performing Air Force contracts.[16]

Under the incentive contract the Air Force established profits and targeted costs at the commencement of the contract or at an early stage in the performance of the contract. When the contractor completed the work, actual allowable costs were compared with the targeted costs and the incentive formula was applied. The formula provided that if the actual allowable costs were below the target costs, the sale price to the government was reduced by 80 percent of the cost reduction. In turn, the company received 20 percent of the cost reduction, which was the incentive profit. When targeted costs were exceeded, 20 percent of the costs were absorbed by the contractor and the remainder by the

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[15]Ibid., 1761.

[16]Ibid.

government.[17] Government use of incentive-type contracts provided it the opportunity to limit liabilities despite the urgency to create new weapon systems.

Department of Defense officials voiced the view that urgency could lead to waste when they distributed a press release announcing pricing and profit policies. The first principle of the policy emphasized using contracts that encouraged economy and production efficiency. The Department of Defense allowed for profit margins that provided incentive for efficiency, but limited allowances for contingencies. Officials desired forward pricing or repricing to limit costs and profits rather than recapturing excess profits through negotiation.[18] The Air Force understood that costs needed to be decreased by methods other than negotiation.

The government realized that competition was the best way to ensure a good price. The nature of the product the Air Force bought prevented competitive bidding from being practical and it used contract negotiation to maintain competitive pricing. Some members of the committee suggested throughout the hearings that in reality competition did not exist and the government might do better to take control of the industry. Nonetheless, contracts and competition provided the framework for controlling costs such as in the incentive-type contract where a ceiling price and a ceiling profit were set to limit government exposure. For example, at the targeted cost the contractor received 8 percent profit, but as the cost decreased (underrun), the contractor's profit

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[17]Ibid., 1762.

[18]Department of Defense Office of Public Information, "Department of Defense Contracting, Pricing, and Profit Policies Announced," August 30, 1950, 1-3, Record Group 330, Records of the Office of the Secretary of Defense (Hereafter RG 330), Entry 341, Box 605, National Archives at College Park (NARA).

increased to a ceiling of 15 percent; thereafter any decrease in cost was taken by the government. Conversely, as the costs increased over the targeted amount the contractor's profit decreased at a set rate until the ceiling price was reached, then the contractor had to absorb all excess costs above the government's ceiling price. Through contract negotiation the government secured a maximum price for a weapon system while encouraging cost cutting that allowed a contractor greater profit. Types of costs were controlled by negotiation at the inception of the contract so that some costs that were part of the production process were absorbed by the contractor and not the government.[19]

The Air Force and aircraft companies believed that strong competition existed in the airframe industry, although critics of the system thought competition could only exist through a general bidding process. The Air Force evaluated competition by examining design and mission requirements as well as costs involved in the production process. For example, after establishing mission requirements, the Air Force requested engineering-design proposals from qualified contractors and examined the bids from a competitive basis. Concurrently, the Air Force acquired cost proposals and considered them as part of the competitive process. Then the Air Force determined the winner of the competition after considering all factors, such as "excellence of design, demonstrated production ability (including both quality and schedule attainment), and costs. For any given competition, different weights may be assigned to each of the above factors, depending upon the urgency of the procurement and mission requirements." Following the initial contract award, the prime contractor had an advantage in receiving follow-on contracts,

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[19]*Aircraft Production Costs*, 1762-63, 2847.

because of the learning curve. Engineering and tooling existed after producing the initial number of planes, and the position of contractors on the learning or improvement curve was such that future savings in production precluded any meaningful competition on follow-on orders. Nevertheless, the government's knowledge of the industry and estimating costs assured that a reasonable price was attained by government standards.[20] Members of the committee remained unconvinced that a reasonable price equated to the best price for the government; rather it guaranteed profits for companies that relied on military contracts for virtually all their business. However, this sentiment did not prevent the aircraft industry from stressing that profits needed to be increased to defend the country properly.[21]

Boeing used its vast experience to produce proposals that ensured the government received the lowest price for volume procurement of military aircraft. Boeing developed projections of costs by examining specifications and requirements provided by the Air Force. The production schedule, engineering, and tooling philosophy were predicated on eventual quantity built, availability of facilities, degree and type of subcontracting used for production. One of the most important factors used for projecting costs was the learning or improvement curve. The curve indicates that decreasing numbers of hours were required to accomplish a repetitive task as the task was continued. Furthermore it forecasts that the time required to do the job will decrease each time it is done and that the amount of decrease will be less on each following unit. For example, on an 80

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[20]Ibid., 1762-63.

[21]"Mounting Profit on Planes Shown," *New York Times*, 29 February 1956, 20.

percent improvement curve (the aircraft industry standard), if 1,000 hours were required for the first unit the second would require 800 hours and the fourth 640 hours and so on. The curve leveled off at 200 hours a unit or 80 percent savings of the original 1000 hours per unit. During a one hundred unit run, units one through six would be above the norm and units seven through one hundred would be under the norm indicating increasing efficiency throughout the production process. The government used the learning curve principally to measure production capability and efficiency, and to analyze bids for accuracy and reasonableness. The aircraft companies used the curve in forecasting costs in proposals, developing labor loads, area requirements, equipment needs and measure efficiencies on continuing contracts.[22] Therefore, the Air Force could tell which contractors were doing a better job even if the projects were dramatically different in size and scope, and those companies not meeting standards of the industry risked losing future contracts. The intimacy between the Air Force and contractors provided procurement officers an atmosphere conducive for amicable negotiations. Bill Gunston noted that the Air Force and contractors had the vision to see a problem and seek ways of solving it. For problems to be solved cooperation could not be at one level only but at every point the organizations had contact.[23]

Follow-on contracts for a project allowed the Air Force and the contractor the full benefit of actual costs, which included the learning curve data, to negotiate a fair and reasonable price. Air Force personnel stationed at the production facilities audited actual

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[22]Ibid., 1764-67.

[23]Gunston, 171.

data and the contractor's methods of projection, and submitted their findings to a procurement representative for use in negotiations. Air Force representatives used many tools during the procurement process to evaluate the reasonableness of contractors' proposals. The learning curve produced by the contractor was compared to similar improvement trends within the industry and from past experience. Furthermore, other companies' costs were available to the procurement officers for comparison with the contractor's estimates of costs. This information served as a road map for determining the reasonableness of a given cost proposal and also provided valuable data for the procurement representative to evaluate other aspects of the contractor's operation. The information included ratios as to assorted components of costs, for example, the correlation that tool-hours carry to total direct hours, percentages of maintaining engineering effort to total effort. Since these factors could be used to compare and contrast a contractor's performance, the information became very valuable during negotiations.[24]

Air Force negotiators had certain guidelines they had to follow during the procurement process and committee investigators wanted to make sure that they were being followed. Wartime exceptions designed to speed procurement were still in place through 1954 and allowed the Air Force to skirt some of the provisions that allowed contractors to submit costs that were otherwise unacceptable. For example, bonuses, advertising costs, and contributions to organizations such as universities were no longer

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[24]*Aircraft Production Costs*, 1767.

accepted.[25] Nevertheless, regulations set forth price and profit considerations to be evaluated by negotiators. The considerations included the degree of risk the contractor assumed, efficiencies, abilities to meet schedules, volume of business, amount of government-provided facilities, capital investments of the contractor, amount of government financing required, complexity and quality of product, amount and quality of subcontracting, past experience of the reliability of estimates and prices, need for the product, and unusual services provided.[26]

Pricing during the procurement process was considered an art, according to Colonel George W. Thomson, Chief, Pricing Staff Division, Air Materiel Command. The objectives of pricing policies were to "secure needed supplies and services of desired quality when needed at fair and reasonable prices, . . . and encourage contractors to high efficiency and economy in operations and payment of fair and reasonable prices favorable to the Air Force." Air Force procurement officers achieved these objectives by negotiating fixed prices whenever possible (which were not used because of the numerous unknown factors in airframe development), developing competition, providing incentives, avoiding cost-plus contracts, and achieving cost controls through contract pricing rather than relying on profit control alone. Pricing, therefore was just one element of the overall procurement objective of obtaining a quality product at a reasonable price, which included a fair and reasonable profit.[27]

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[25]Ibid., 2820-30, 1949.

[26]Ibid., 1768, 2839.

[27]Ibid., 2836-37.

The Air Force emphasized the incentive approach, because the contractor's profit measured its performance. The better the performance the lower the costs and the greater the profit for the company building the plane. The maximum benefit to the Air Force would have been the fixed-price contract, but given the long lead times for advanced weapon systems that form of a contract was not practical. Therefore, negotiation became an art form in providing the Air Force the best price for complex aircraft.

The Air Force controlled profits and costs by negotiating close pricing with contractors. When procurement representatives for the Air Force analyzed a price proposal, they evaluated the elements of cost to ascertain which ones could be influenced by close pricing. In other words, the representatives determined which items would be allowed or disallowed. For example, the cost proposal for the KC-97 was about 75 pages in length with many complicated charts and detailed figures. The only way the procurement team could determine whether a price was fair or not was to examine each element. All proposals came with contingencies that allowed money for unknowns, such as labor rates three years in the future. Since these were unknown costs, the negotiation team wanted to eliminate them from the contract, ensuring all participants were on the same page. In general, costs were negotiated by using historical records and trends, because they had been good benchmarks in past negotiations. Profit was different and difficult to determine. The Air Force representatives did not have charts to indicate that the contractor should be able to do a particular piece of work at a lower cost because another contractor was able to do it. Profit became a matter of opinion. The risk

involved in the procurement, and how the contractor performed in the past were taken into consideration. A contractor that had poor performance or excessive costs would be scrutinized more than one that performed well, for example. There was not a set formula and items were looked at individually because some involved more risk than others. The possibility that a failed program or severe overrun would bankrupt a company provided incentives for the government and the company to make sure costs remained in check.[28] The company wanted to stay in business and the government might have to bail the company out of trouble if it were still a vital part of the mobilization plan.

While preparing for negotiations, the Air Force held pre-negotiation meetings without the contractor to set the objectives to be reached when negotiations started. Subsequent to negotiations but before the contract was signed, an Air Force committee reviewed the contract to guarantee that all elements were given due considerations. During the evaluation of the contractor's bid, estimated costs of certain items were disallowed although they were part of the normal business operations and allowed by the Internal Revenue Service. Contractors absorbed these costs out of profits. Furthermore, the Air Force placed limitations on amounts of certain costs, which included research and development, in an effort to decrease the price of a contract.[29]

Change orders could be implemented either by the contractor or the Air Force. The desire for the greatest performance of a plane coupled with research and development being done by both the Air Force and the contractor created the need for

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[28]Ibid., 2839-42.

[29]Ibid., 1768.

change orders, although they were only carried out if authorized by the Air Force. Incorporating a change into a plane already in production was generally an expensive proposition and often caused delays. Therefore, it was incumbent on both parties to plan ahead and cooperate to avoid delays in the implementation of changes. The urgency of a change determined the priority of its classification. For example, a safety related issue might have been urgent and entailed grounding the plane until the change could be incorporated. Other changes might be made through routine maintenance when a part was scheduled to be replaced. Nevertheless, economy and minimal disruption to delivery schedules was of primary importance. The effectiveness of the Air Force liaison with Boeing was demonstrated by the fact that the B-52 weapon system received more than three hundred changes that increased performance without disruption of the delivery schedules.[30]

One of the objectives of the procurement process was to expand the industrial base so that mobilization could be expanded at a faster rate. One method used to accomplish this objective required contractors to subcontract a large portion of their work. The difficulty for contractors was finding qualified companies that could accomplish the specialized work. The contractor was responsible for selecting the subcontractor and insuring the work was of superior quality to meet the government standards. One of the complaints of committee members was that the contractor received a profit for work done by the subcontractor, who also received a profit when it submitted a bill to the contractor. The criticism implied that the contractor did nothing

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[30]Ibid., 1770.

for that portion of its money and the government got double billed for profit. From Boeing's perspective, it would have been easier to do all the work in house. Peter Jansen, a production executive for Boeing, explained that subcontracting occurred at the behest of the government to expand the industrial base and this caused costs to rise because the subcontractor went through the same production learning curve. For example, if on a subsequent contract for a plane the government decided it wanted additional subcontractors on the project the result would have been that the subcontractor was at the beginning of the learning curve thus increasing costs. Therefore, subcontracting not only increased the complexity of a program but increased costs.[31]

Government requirements made the task of selecting and managing subcontractors difficult. Subcontractors had to be selected by a competitive bid process and contractors were responsible for verifying that the work could be done. Then the company had to determine how much assistance the subcontractor would need and provide engineering and management resources to get the operation started. Visits had to be made by company officials and a representative stationed at the subcontractor's location to provide assistance, surveillance and evaluations. When technical problems occurred, the contractor sent technical experts to assist. All totaled, the risks were greater to subcontract than to maintain production at one facility.[32]

Cost reduction was important to the Air force and to contractors. Lower costs for the Air Force translated to lower prices and for the contractor lower costs translated into

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[31]Ibid., 1821-22.

[32]Ibid., 1772.

increased profits. The Air Force provided the incentive and contractors implemented cost reduction activities. Boeing, for example, had a philosophy that emphasized "more Air Force per dollar" as a corporate mandate. Planning, designing, and tooling for economy was fundamental to the effectualness of a cost reduction program. Boeing controlled the overhead costs through a review committee that analyzed functions and encouraged efficiency within the organization. Projects were periodically reviewed to compare how actual performance was meeting targeted goals. Boeing's other programs for cost reduction included method studies, time standards, quality control, subcontractor surveillance and assistance, material conservation, cost reduction and efficiency program, an incentive compensation plan, employee suggestion system, and employee training program.[33] The effectiveness of these programs was demonstrated by Boeing's ability consistently to produce aircraft for less than the targeted costs. For example, the Air Force reduced the final price for the B-47 $112 million on a $684 million contract, and $20 million on a $331 million contract for the KC-97.[34]

Unit cost information contributed to the misunderstanding of the procurement process and precisely how much a plane cost through several contracts. During the first contract of an airplane, nonrecurring costs (engineering, tooling, and development) were included in the average unit costs. In future contracts, nonrecurring costs were limited to incorporate changes made and were therefore modest. Generally, substantial changes were made and improvements incorporated throughout production without an increase in

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[33]Ibid., 1774.

[34]Ibid., 1852, 1886.

costs, because of the close relationship between the Air Force and contractors that allowed implementation of changes in a timely manner. Average unit prices were also affected by implementation of the subcontracting program designed to increase the industrial base of the country for more efficient mobilization during war. Finally, labor and material costs increased from 1945-1955 which increased the unit cost of planes dramatically. Nevertheless, contractors decreased average unit costs on most projects from contract to contract. Examining Boeing's comparable statement of work on the C-97, for example, showed that costs decreased from $1,300,000 on the first contract to $260,000 on the last contract. Despite increasing complexities in aircraft design and requirements, contractors continued to decrease average unit costs. Furthermore, the Air Force benefited from increased volume, because average unit sales prices decreased along with a decrease in per unit profit for the contractor. Therefore, incentive contracts saved the Air Force money compared to fixed price contracts where all the benefits of cost reduction would have gone to the contractor.[35]

Boeing was the most efficient contractor the Air Force used from 1950-1955 and produced the most savings on contracts through underrun of target prices. For example, Boeing underran target costs by six percent, which amounted to more than $141 million in costs. Boeing's efficiency reduced the Air Force's contract sale price by $113 million and allowed the company to pocket an extra $28 million in profit before taxes. The savings would have allowed the Air Force to buy an additional 100 B-47 planes and the

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[35]Ibid., 1774-78.

company benefited by keeping eight cents of every dollar saved.[36]

One of the provoking questions of the committee was their concern that aircraft companies were reinvesting profits back into the business, because the government was providing a great measure of financial resources and facilities to keep the companies operating. Most of the companies that attended the investigation were doing more than ninety percent of their business with the government and would not have been in business otherwise (see table 1). It was evident that the military and aircraft industry had a close relationship by the way they defended each other during the hearings. Of course there was room for improvement on both parts, but they both needed each other to survive. When executives were asked to characterize the abilities of government procurement officials they responded by describing Air Force representatives as competent and tough, and other bureaucrats outside the military received muted responses.[37] Nevertheless, some of the representatives considered the profit the companies earned government money and questioned how it was used.

The main question remained, did the aircraft companies make too much profit? Table 1 gives a comparison between North American Aviation and other leading manufacturing companies. The after-tax profit for the nine-year period of 1946-1954 shows that North American's profit was one fourth to one half of other companies. Table 2 shows that the profit in the aircraft industry was comparable to that in the

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[36]Ibid., 1778-80.

[37]Ibid., 1772, 1796-97.

TABLE 1.

PROFIT AND SALES COMPARISON BETWEEN AIRCRAFT COMPANIES AND SHIPBUILDING COMPANIES

| Company | Year | Profit Percent (loss) | Profit Dollars (millions) | Sales (millions) | Percent Government Business |
|---|---|---|---|---|---|
| North American Aviation | 1952 | 2.5 | 7.8 | 315 | 97.02 |
| | 1953 | 2.0 | 12.7 | 634 | 99.02 |
| | 1954 | 3.4 | 22.1 | 646 | 99.56 |
| | 1955 | 3.9 | 32.4 | 817 | 99.66 |
| Glenn L Martin Company | 1952 | 3.9 | 5.8 | 146 | 69.5 |
| | 1953 | 7.2 | 15 | 208 | 98.3 |
| | 1954 | 7.3 | 20 | 271 | 99.6 |
| Boeing Aircraft Company | 1946 | (1.9) | (.327) | 16.6 | |
| | 1947 | (2.0) | (.448) | 21.7 | |
| | 1948 | 1.3 | 1.7 | 126.9 | |
| | 1949 | 1.5 | 4.4 | 286.7 | |
| | 1950 | 3.5 | 10.8 | 307.2 | |
| | 1951 | 2.1 | 7.1 | 337.3 | |
| | 1952 | 1.8 | 14.1 | 739.0 | 99.6 |
| | 1953 | 2.2 | 20.3 | 918.2 | 99.8 |
| | 1954 | 3.5 | 37.0 | 1,033. | 99.8 |
| | 1955 | | | | 99.7 |
| Fairchild Engine & Airplane | 1952 | 2.2 | 3.2 | 141 | N/A |
| | 1953 | 2.3 | 4.0 | 170 | |
| | 1954 | 2.9 | 4.1 | 140 | |
| | 1955 | 2.7 | 4.2 | 155 | |

TABLE 1. Continued

| Company | Year | Profit Percent (loss) | Profit Dollars (millions) | Sales (millions) | Percent Government Business |
|---|---|---|---|---|---|
| McDonnell Aircraft Corporation | 1952 | 3.6 | 3.1 | 81.7 | 100 |
| | 1953 | 3.1 | 4.2 | 133.5 | 100 |
| | 1954 | 2.9 | 3.6 | 123.1 | 100 |
| | 1955 | 3.1 | 4.5 | 154.5 | 100 |
| Douglas Aircraft Company | 1952 | 1.7 | 7.6 | 449.3 | 85.9 |
| | 1953 | 1.7 | 13.1 | 770 | 88.0 |
| | 1954 | 2.5 | 18.8 | 754.4 | 82.6 |
| | 1955 | 2.5 | 19.3 | 772.8 | 90.5 |
| Newport News Ship-building | 1949 | 10.5 | 8.1 | 77.6 | N/A |
| | 1950 | 4.4 | 2.3 | 52.2 | |
| | 1951 | 3.8 | 3.4 | 88.8 | |
| | 1952 | 2.6 | 3.9 | 147.4 | |
| | 1953 | 3.3 | 5.2 | 157.0 | |
| | 1954 | 4.7 | 7.1 | 149.4 | |
| | 1955 | 3.9 | 4.8 | 122.5 | |
| General Dynamics (electric boat) | 1949 | 0.8 | 0.4 | 45.2 | N/A |
| | 1950 | 3.4 | 1.4 | 41.7 | |
| | 1951 | 4.6 | 3.8 | 82.6 | |
| | 1952 | 3.6 | 4.9 | 134.5 | |
| | 1953 | 3.0 | 6.2 | 206.6 | |
| | 1954 | 3.2 | 20.8 | 648.7 | |
| | 1955 | 3.1 | 21.2 | 687.3 | |

*Source*: Hearings, "Aircraft Production Costs and Profits," 1346, 1394, 1566, 1749-53, 1781, 1817, 1921, 1981, 2170, 2172-76, 2214, 2216. General Dynamics and Newport News Shipbuilding from *Moody's Industrial Manual, 1956* (New York: D.B. McCruden, 1956), 184, 1016.

TABLE 2.

PROFIT COMPARISON BETWEEN NORTH AMERICAN AND LEADING U.S. MANUFACTURING COMPANIES
(percent of sales after tax)

| Year | North American Aviation | US manufacture companies average | Average of 10 companies in selected industries *a* | General Motors | Du Pont | Standard Oil New Jersey | United States Steel |
|---|---|---|---|---|---|---|---|
| 1946 | 3.8 | 6.0 | 10.19 | 4.46 | 17.36 | 11.00 | 5.97 |
| 1947 | 0.1 | 7.1 | 12.49 | 7.55 | 15.32 | 11.41 | 6.00 |
| 1948 | 7.2 | 7.5 | 13.01 | 9.37 | 16.25 | 11.09 | 5.24 |
| 1949 | 5.9 | 6.8 | 10.89 | 11.51 | 20.85 | 9.32 | 7.23 |
| 1950 | 5.7 | 7.7 | 11.9 | 11.07 | 23.71 | 13.07 | 7.31 |
| 1951 | 3.6 | 6.2 | 9.24 | 6.78 | 14.42 | 13.91 | 5.25 |
| 1952 | 2.5 | 5.4 | 8.37 | 7.4 | 13.98 | 12.84 | 4.59 |
| 1953 | 2.0 | 5.3 | 8.07 | 5.96 | 13.46 | 13.36 | 5.76 |
| 1954 | 3.4 | 5.9 | 8.84 | 8.2 | 20.41 | 10.33 | 6.03 |
| 9 year weighted average | 3.32 | 6.4 | 9.94 | 8.15 | 17.14 | 11.88 | 5.88 |

*a* The 10 companies comprise the most profitable company (in terms of profit ratio to sales for 1954) with 1954 sales between $400 million and $1 billion in each of 10 selected industries. Industries and companies represented are agricultural implements (Catapillar Tractor C.); aviation parts (the Sperry Corp.); chemicals (Union Carbide & Carbon Corp.); glass and glassware (Pittsburgh Plate Glass Co.); machinery and tools (Allis-Chalmers); metal products (Kennecott Copper Corp.); office equipment (International Business Machines Corp.); petroleum producing, refining, etc. (Phillips Petroleum Co.); steel and iron (Inland Steel Co.); tires, rubber, and rubber goods (the B.F. Goodrich Co.).

*Source*: North American Aviation data from company records. United States manufacturing average data from First National City Bank of New York, monthly letters. All other data from Moody's Manual of Investments (Industrials). Quoted in Hearings, "Aircraft Production Costs and Profits," 1303.

shipbuilding industry. The amount of profit the aircraft industry received does not appear to be excessive and allowed the industry to reinvest money into new facilities.

Boeing was typical in the aircraft industry for how earnings were used and answered committee questions effectively, unlike the other companies before the committee that were grilled about their use of profits to further their business. Taxes from the federal and state governments consumed 60 percent of profits and most companies paid 10-15 percent in dividends, with the remainder reinvested in the business. Boeing for the nine-year period of 1946-1954 had income of more than $236 million, paid more than $31 million in dividends or 33 percent of after-tax earnings, $141 million in taxes, and reinvested more than $64 million in the business.[38]

One problem Boeing had with the government was its ability to keep the profits it had earned. Under the procurement system, companies that were determined to have received too much profit from a contract were forced to repay the profit. "On December 2, 1955, the Renegotiation Board issued to Boeing a notice of order determining excessive profits wherein it was stated that excessive profits in the amount of $9,822,340 had been realized during the year 1952." A 1951 law required all contracts be reviewed to determine if a company made too much profit. The law designed to prevent abuse of government contracts entrapped Boeing during a year when it received profits for work done over several years. The Renegotiation Act provided that companies were allowed only reasonable profit. Boeing had increased sales more than 100 percent over the previous year and earnings more than 200 percent. The Renegotiation Board considered

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[38]Ibid., 1782-87. *New York Times*, 10 March 1956, 34.

the profit for that year excessive and disallowed the profit. Boeing's after-tax profit rates declined from 2.2 percent to 1.9 percent which was less than the acceptable rate of 5-7 percent. The problem for Boeing and other aircraft companies was the way profits came in from contracts. In 1952, Boeing received payments for completion of contracts it had worked on since 1945. Boeing argued that if the contracts had been spread out over a three year period the Board would have not taken the profits away. However, the peculiarities of the aircraft industry prevented Boeing from reaping the rewards of its labor.[39] (See Tables 1 and 2 for profit comparisons)

The relationship between customer and contractor was close during the early Cold War period. Correcting problems was costly in time and resources and forced designs to be right the first time around. Ironically, the Cold War forced production to proceed before all research data were received. The government provided many resources for contractors to further progress. Nevertheless, companies wanted the government to do more in the area of research and facilities, such as providing wind tunnels for high speed development. The aircraft industry had to overcome problems of low earnings, and slow depreciation because they tended to discourage investment and forced the continued reliance on government finance and facilities.[40]

Nevertheless, the aircraft industry was faced with the perpetual problem of being the hero during war and an orphan during peace. John Jay Hopkins, Chairman of the Board and President of General Dynamics, asked the representatives of the committee to

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[39]*Aircraft Production Costs*, 1787-97. *New York Times* , 21 February 1956, 27.

[40]*Aircraft Production Costs*, 2124-33.

help the United States avoid the recurring cycle war. In the cycle, the United States appears weak to aggression. War is started by an aggressor nation, and the United States goes to war unprepared. By heroic measures that include waste and confusion the United States out-produces the aggressor and wins the war only to demobilize and appear weak again. Defense must be a permanent business in Hopkin's view, with the economy balanced with both commercial and military aims in mind.[41]

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[41]Ibid., 2573-74.

# CHAPTER VI

# CONCLUSION

The role of the United States Air Force in the aircraft industry stimulated and allowed for increased spending on technologically advanced aircraft weapon systems. Moreover it responded to the mission mandated by national security directives and fulfilled the militarization of American policy. The World War II ability of projecting aircraft en masse with overwhelming firepower was lost during rapid demobilization and regained using fewer, technologically superior aircraft, delivering greater destructive force than at the height of the war. The Soviet threat and fear of losing the only industry that could counter that threat encouraged cooperation among government, military, and aircraft industry leaders, producing dramatic technological advancements supported by huge amounts of defense dollars. The procurement process, influenced by strategic thinking, technological advances, government and institutional bureaucracy, transformed the fledgling aircraft industry into the cornerstone of the military industrial complex.

The health of the aircraft industry became linked with the health of the military. Strategic objectives provided the Air Force an opportunity to prove that successes in strategic bombing could be translated into Cold War projection of power. Aircraft companies had to produce the weapon systems to make American power felt on the other side of the world and protect United States and European concerns. The Air Force developed requirements that continued to push the technological envelope, inherently creating an atmosphere for obsolescence until a plateau was reached in development of

aircraft where future models included incremental advancements.

The origins of interdependency between the aircraft industry and the Air Force began to blossom after successfully selling their pleas for help to the Finletter Commission of 1947. The Air Force received a favorable response from the commission after it presented a "logical, comprehensive, specific system which seemed appropriate to the nascent Cold War, while the Navy's testimony was vague and chaotic." The commission accepted the recommendation of the Air Force on strategy and strength, and set procurement at levels that could sustain the industry and provide a foundation for mobilization. Members of Congress and their staffs comprised the Aviation Policy Board, whose findings were analogous to those of the Finletter Commission and sanctioned a nuclear-deterrent air strategy.[1]

The Finletter Commission started the Air Force toward its goal of seventy combat wings under a nuclear monopoly. But the goal was not attained before the Korean War as other events transformed the aircraft industry. Russian postwar imperialism had intensified the Cold War when the Soviets moved against Berlin in 1948 and the United States used air power to overcome the aggression. Bombers were not the only resources available to show the determination of the nation, which encouraged the Air Force to broaden the scope of its procurement activities to include transport planes with greater capacity. Alarmed by Soviet actions and intentions, the United States and Western Europe formed NATO (North Atlantic Treaty Organization) in 1949 to stop the spread of communism. NATO relied on the United States to provide the equipment to nations that

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[1]Bright, 13.

were unable to build highly sophisticated airplanes, resulting in expanded exports to NATO nations.[2] In 1949, the Soviet Union exploded an atomic bomb, dissolving the United States nuclear monopoly. Air defense became a priority, spurring the development of interceptors. By 1950, commercial travel began to sustain itself and the aircraft industry saw a rise in the demand for airliners. Finally, the Korean War erupted, which showed the need for tactical aircraft, but also revitalized the Navy's carrier aviation program. By the end of 1953, the aircraft industry had gone through a mammoth expansion to regain its World War II role as the largest American industry.

By the beginning of the Korean War, the jet had replaced the piston engine. The MIG-15 proved in Korea that a plane designed to kill the B-29's successor was capable of decimating planes in service. The Soviet Union dispelled the myth that it was technologically incapable. Air Force planners pressured contractors to develop planes that were superior to the Soviet military and could survive missions into the heart of densely defended Russia. Procurement for the Air Force became more expensive and the aircraft industry began to avoid the cyclical wave of boom or bust production.

Pricing during the procurement process was complicated by the dilemma that too high of a price for a weapon system was politically unacceptable and too low a price might bankrupt the company. In the postwar years, profits were not a great concern for the government, because the industry made no profit from 1945-1950. Aircraft prices, although high, were not considered excessive and were controlled through the contract

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[2]Lawrence S. Kaplan, *NATO and the United States: The Enduring Alliance* (New York: Twayne, 1994), 27-38.

process. Furthermore, the Air Force influenced the procurement process by requiring that all procurement decisions be reviewed by the Senior Officers Board. The board was composed of senior air force officers who got to their positions by following the big bomber doctrine, and continued to shape the service to reflect a service dominated by big bombers. Historian Charles D. Bright commented that it "is difficult to exaggerate the importance of this parochialism in Air Force procurement and the combat capability of the service itself, aside from the delays caused by high level review."[3]

Planning for mobilization became critical during the postwar years. However, the start of a regional conflict in Korea made those plans useless. The United States had anticipated that the next war would be total war, and mobilization would be simply a matter of opening reserve plants and increasing production. However, China became involved in October 1950, and Truman called for emergency expenditures of $17 billion and 15,000 planes in one year, a fivefold increase, which dictated that plans for mobilization be changed.

Increased subcontracting continued to grow into an important element of the government's plan to mobilize. Aircraft companies, always reluctant to subcontract, did so at the government's behest. Nevertheless, attitudes about subcontracting changed during the Korean crisis because companies were hesitant to overexpand their facilities. The industry had good reason to be hesitant about expansion because after the cessation of hostilities in Korea, the government attempted to decrease procurement costs. Air Force officials continued to grant new contracts, but they emphasized the importance of

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[3]Bright, 61.

maintaing low costs by threatening to take away contracts from those companies that did not perform up to expectations and by increasing the testing of new weapon systems before there was a commitment to production.[4]

Air power, while underutilized in the military from its inception through the 1930s, became the main tool of planners seeking to avoid a future war. The Air Force, after achieving autonomy, continued to push for an atomic air force in 1947. The rationale that wars in the future would be short and that mass armies would become unneeded, provided leaders an inexpensive way of preparing for war by relying on air power as the means to victory. Aircraft companies benefited from the strategy because the number of aircraft needed to implement the strategic air campaign coincided with the number of airframes needed to keep the aircraft industry healthy. However, Bright suggested that the minimum number of planes the Air Force needed was actually less than the number of planes required to keep the aircraft industry vibrant. Nonetheless, events in Berlin hastened the pace at which the deterrent atomic air forces were developed, and the emphasis was decreased on other air forces. However, the Soviet Union's possession of nuclear weapons, and the poor performance of the Air Force's ground support missions in Korea, diversified the need for advanced weapon systems that could provide air defense and ground attack capabilities.

It is remarkable that the Air Force and contractors had the vision to anticipate technological problems and find methods to solve them. Nevertheless, the price was not cheap. From 1951-1954 the amount of effort put forth on supersonic fighters was

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[4]Ibid., 63-65, Futrell, "Air Power Concept," 261-65.

prodigious. The aircraft called for advanced structures, techniques, materials, propulsion systems, and aerodynamics that transcended any earlier effort. During this time aerodynamic research exceeded $360 million, propulsion more than $280 million, and heavy presses for forging bodies $397 million. In total, the money spent to acquire the capability to build supersonic fighters was more than $2 billion. Generally, when a new complicated weapon system is built, it does not work right the first time. Nevertheless, the Air Force continued with the contractors and developed aircraft that met an expanding role.[5]

By 1955, the perceived threat of the Soviet Union translated into millions of dollars in new procurement contracts for the aircraft industry. The Air Force came close to reaching its goal of 137 wings, but lacked the support to sustain a force of that size. NATO became the trip wire in Europe and measures examined in *Project Control* were implemented to support the forward defense forces. The Air Force continued to benefit from the strategy that required air delivery of atomic weapons. Nevertheless, Air Force planners failed to capitalize on the flexibility they flaunted. Rather, they maintained strategic bombing as the only savior of the country, instead of building an interdependent force with all services included thus creating a synergy of military power.

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[5]Gunston, 142-43, 171-73.

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# VITA

William Cline graduated from Graceland College at Lamoni, Iowa in May 1982 with a Bachelor of Arts in Business Administration. In the Summer of 1983, Cline entered employment with Payless ShoeSource as a Manager. During his association with Payless, Cline opened stores in the Mid-Atlantic region and Florida, received a promotion to Training Supervisor in 1986, and received a Manager of the Year award as recognition for outstanding profit, sales and human resources performance. Cline also worked for Honeymoon Hill Constructors as a Vice President in charge of residential construction. In the Fall of 1995, Cline entered the History Masters program at Old Dominion University. Correspondence should be mailed to the Department of History, Old Dominion University, Norfolk, VA 23529.